

Automation  
Power management

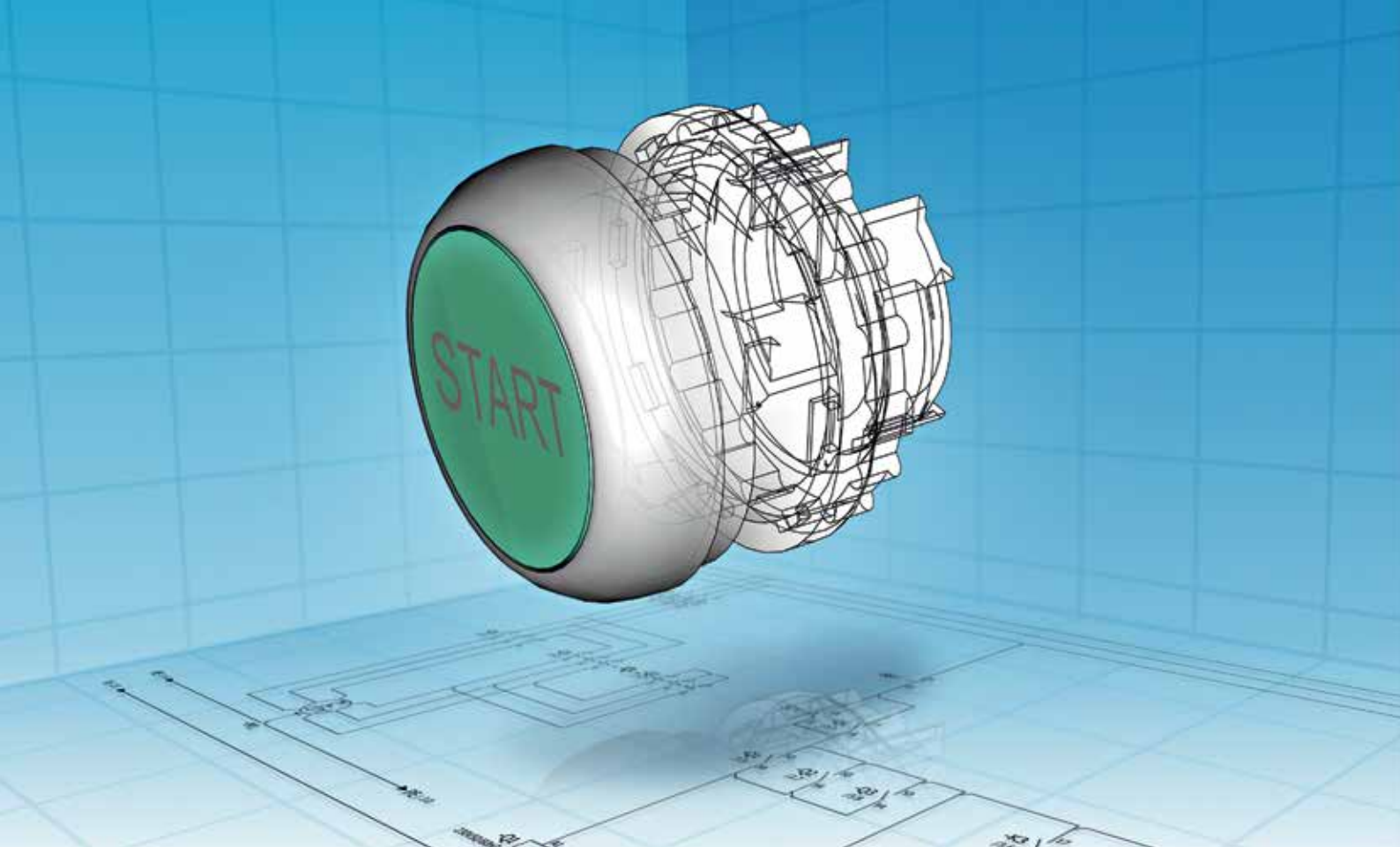
Command and Signaling  
Switching, protecting  
and driving motors

# Solutions for machinery and systems



**EATON**

*Powering Business Worldwide*



# Planning safety and process optimization – eCAD and mCAD data at the push of a button



- Data and macros for 22,000 articles
- Available for download on the EPLAN Data Portal
- Available for version P8

To optimally support our customers during the planning process, we provide CAD data for our products. Both electrical and mechanical design data can be conveniently and accessed via the internet, quickly and around the clock. This reduces the processing times for switchgear, equipment and machinery during the planning phase, thereby minimizing errors and saving costs.



- Models for approximately 22,000 products
- 80 different neutral and native formats

**eCAD:** We provide product data and macros for the EPLAN Electric P8 planning system via the EPLAN Data Portal. The portal contains more than 22,000 products, which are available for download.

**mCAD:** We provide 2D and 3D data for about 20,000 products. More than 80 different neutral and native formats guarantee compatibility with customer-specific project planning systems. The models can either be obtained online from the Partcommunity portal or integrated directly into the planning software via the CADENAS Partsolution software.



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Providing and communicating data

Operation and visualization

Control

Signaling and monitoring

Switching and operating motors

Power management

Service and support



# The latest machine-building trends

## Future fit with Eaton



[Eaton.com/Brightlayer](https://Eaton.com/Brightlayer)

### **Machine building megatrend: digitalization and IoT**

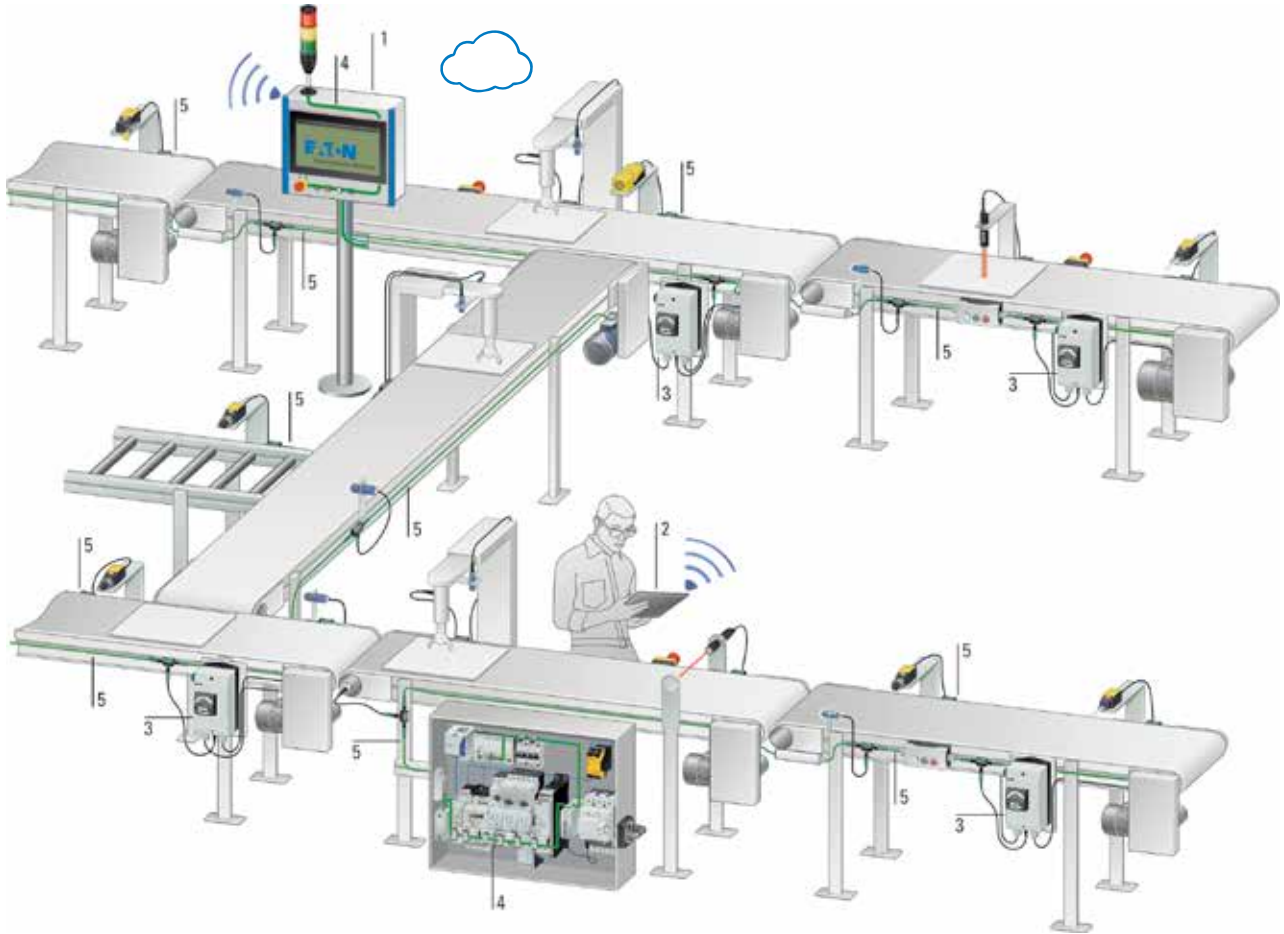
Eaton has been driving the digitalization of the machine building sector for many years. For more than 10 years, our SmartWire-DT system has been providing digital information from peripheral control devices, sensors and motor starters to the control cabinet. SmartWire-DT delivers comprehensive data ranging from current values to the switching states of individual components. Our new catalog again expands our portfolio of digital switchgear, frequency converters and programmable controllers. With the Brightlayer Industrial Suite, the collected data can be securely transmitted, visualized and evaluated quickly and easily. And the NubisNet gateways, which are available for both wired and wireless networks, are guaranteed to meet our stringent cyber security requirements.

## Energy efficiency is another of one today's hot topics

Our new **NZM PXR** digital circuit breaker is an outstanding example of what digitalization can do. In addition, it also offers Class 1 energy metering, which is important for the implementation of energy management systems and the ISO 50001 standard. The latest update of the ErP Directive for electric motors, which will come into force in 2021/2023, is already looming large, as are the discussions about the introduction of an energy efficiency label for machines. Our motor starters and variable frequency drives offer solutions that meet or even exceed the current regulations. Contact us to find out more, for example if you want to improve the energy efficiency of existing systems or integrate **energy metering** into your machine or plant.



 Get more information



- 1 NubisNet gateways provide data from machines and systems to the Brightlayer Cloud to optimize machine performance and processes, deliver better energy management and improve maintenance planning and logistics, etc.
- 2 Data from the cloud can be visualized on mobile devices. Smartphones and tablets can also be used for control inputs.
- 3 Enclosed distributed motor starters or variable frequency drives up to IP66 enable on-site control of assembly lines, pumps and fans as well as other industrial applications.
- 4 In addition to SmartWire-DT and Modbus, various other bus systems are available for connecting Eaton switchgear and supplying data to the control system.
- 5 SmartWire-DT with IP67 protection can be used to connect peripheral sensors or distributed drive systems, signal towers and pilot devices.

### View this catalog online.

The online version of the product overview can be used like a flipbook. It also offers many additional advantages thanks to extensive interlinking:

1. A data sheet is provided for each item
2. Each catalog page features a deep link to the available accessories and our complete product offer
3. Navigation and search aids, parts list function, etc.

Click here for the online catalog: [Eaton.com/flipcat](https://Eaton.com/flipcat)



# MOEM Solution Center

Implement megatrends successfully with the help of the Eaton Solution Team

When it comes to current and future challenges, including megatrends such as the Internet of Things (IoT) and energy efficiency, choosing the right partner is essential. The Eaton Innovation & MOEM Solution Center supports machine builders and system integrators in their efforts to find and create unique solutions tailored to their individual needs. The starting point of any project are consultations on new machine designs and the search for the ideal system architecture. A good example of such a project is the retrofitting of existing machines with an IoT connection, but

our service portfolio also includes support with programming, computer-aided engineering (CAE), the mechanical design of control cabinets, and commissioning. The Solution Team focuses on customer needs and market requirements in order to develop solutions that combine standard components with customized products.

## We support you in every phase of the machine life cycle

### Customer-driven innovation

Are you facing the challenge of launching a completely new machine generation or system type? We'll give you peace of mind by supporting you with customized products based on the latest megatrends and innovations. Our Innovation Center will also support you in this process.



### Phase-out and retrofit

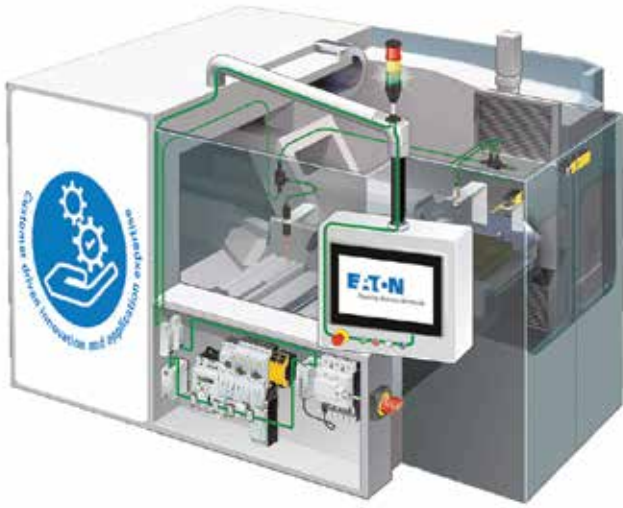
Before you decide to phase out your machine, we can still help you to optimize its energy consumption. This may include analyzing the machine and examining the possibility of incorporating new drive technologies, for example, or connection to a cloud via an IoT solution to give you an edge in the market even at this later stage of the machine life-cycle. Should the machine or system nevertheless be phased out, we can assist you with appropriate life-cycle management tools.



### Optimization

Optimization starts once your machines and systems have been in operation for a certain period of time. During this phase, we'll work together with you to adapt your application to market requirements or to implement new machine guidelines, for example, aided by our certified network of solution and technology partners.





Contact us if you need an optimized solution tailored to your individual requirements:

[SolutionCenter@eaton.com](mailto:SolutionCenter@eaton.com)



### Project planning and engineering

We will support you right from the start, whether it's drawing up performance specifications or the design of the right control cabinet and the corresponding system architecture.

During this phase, we'll create initial 3D CAD models or provide you with an industrial prototype, and we'll also handle the application software development for your control and visualization systems.



### Installation and commissioning

You'll also benefit from our expertise during the commissioning and learning phase of your new machine and system. Together with our colleagues from the Eaton After Sales Service, we stand ready to support you throughout this process, whether you require special machine measurements and analytics or application software modifications, for instance. We'll also be happy to assist you during acceptance testing.



### Operation and maintenance

Once your machine or system is operational, either at your own premises or those of your end customers, our technical support hotline will be at your service in the event of a fault or if you have any questions about our products. Our After Sales Service will also support you on site. In addition, we offer you a fast spare parts service that is optimized to match your needs.



# Win-win with Push-in: technology + procurement

## Eaton's push for Push-in



Download the brochure:  
[Eaton.com/win-win](http://Eaton.com/win-win)

Simplify and optimize the installation and design of your machines and systems with Eaton's tool-free Push-in technology, which can be used anywhere in the world without any restrictions.

Compared to conventional screw terminals, the connection time can thus be reduced by up to 50 percent. Even compared to cage clamps, this represents significant time savings.

Connections made by means of Push-in terminals are secure and maintenance-free, even under harsh environmental conditions and vibrations.



### We have significantly expanded our Push-in portfolio

Products with Push-in technology can be easily identified by means of the Push-in icon.



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**XN300**  
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**easyE4**  
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**RMQ-Titan**  
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**XC300**  
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**DILM**  
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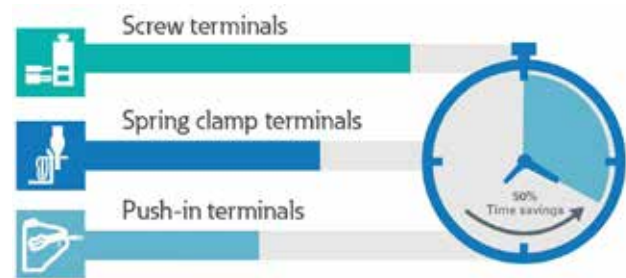


### Technical advantages

- Tool-free installation of ferrule-terminated wires
- Easy to use
- Suitable for global use, including UL Type E
- Same footprint as standard contactors
- Can be integrated into established busbar systems
- Compatible with three-phase busbar blocks
- Only one tool required for disassembly and cable removal

### Cost advantages

- Time savings
- Secure connections without any rework
- Globally available and approved
- Optimal installation and servicing



### We have significantly expanded our Push-in portfolio

In this updated product overview for machinery, we have again significantly expanded our portfolio of Push-in products. In particular, we've added many contactors, motor-protective circuit breakers and motor starters with Push-in technology. Our overall portfolio also includes controllers, power supplies for the SmartWire-DT intelligent communication system,

as well as control relays, circuit breakers, variable frequency drives and the pilot devices of the RMQ series. Eaton thus offers a comprehensive range of products based on this highly efficient connection technology, all from a single source.



**PKZ**  
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**MSC motor starters**  
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**DB1**  
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**PKE**  
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**EMS2**  
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**NZM**  
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**PXS24**  
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# Increasing productivity with the Digital Twin for motor applications



We will gladly put together an IIoT solution that is tailored to your specific needs.

Contact us:  
[IIoTSolutions@eaton.com](mailto:IIoTSolutions@eaton.com)

With the Brightlayer Industrial Machinery portal Eaton offers an easy-to-use toolset for machinery and system manufacturers who are looking to provide new services and improve the availability of their applications.

As a specialist for motor protection and control Eaton has put special attention on motor health and operations. The Digital Twin for the motor application is the virtual representation of the motor starter and / or drive application in the field. Its 24/7 monitoring and alarming capabilities help to operate the motor in optimal conditions and by that increase the availability of the application and help to reduce maintenance efforts.



### Make your application "smart"

Operating and servicing machines and applications remotely is becoming an ever-increasing demand for today's industrial applications. The advantages for both, the operator and the servicing organization are obvious: Data insight provides helpful information and supports predictive activities to avoid downtimes. Remote Access to the application helps to create faster service availability and reduce service costs at the same time. A win-win situation for both partners that also allows them to enter into new business models like service contracts and pay-per use.



### Connecting new and existing machines made simple.

The modularity and flexibility of the Brightlayer tool allows to easily integrate 3rd party devices and products. This facilitates the implementation of a digitalization concept for both, new and existing machines, as it is rare for production facilities to be fully rebuilt and fitted with new machinery. And it is often existing machinery that harbors the greatest potential for process improvements.



### Getting existing machines IoT-ready.

To make existing equipment IoT-ready not only the Cloud connectivity has to be considered during a retrofit intervention. Especially additional sensors and measurement equipment could make the business case for such a measure uneconomical. Intelligent devices from Eaton, like PKE, DE11 or NZM offer integrated sensing capabilities on the same footprint as conventional switchgear. Using such devices allows to make installed assets IoT-ready with reasonable effort.



### Optimized productivity!

Real-time status monitoring and anomaly detection are already standard practice in machinery today. But to further optimize productivity, it is necessary not only to react, but to act predictively. By developing predictive maintenance cycles based on real-time data from machines and production processes, companies are able to further reduce downtime and optimize their processes, which allows them to realize additional efficiency gains.



# In three steps to a smart factory cloud

## Step 1: Get your machine IoT-ready with intelligent components

The approach starts with the selection of the environmental and process data that is required. Smart devices such as electronic motor starters, variable frequency drives or sensors transmit their data via a field bus connection to the central control unit or directly to the NubisNet Gateway.

## Step 2: Conveniently manage the transfer of your data to the cloud

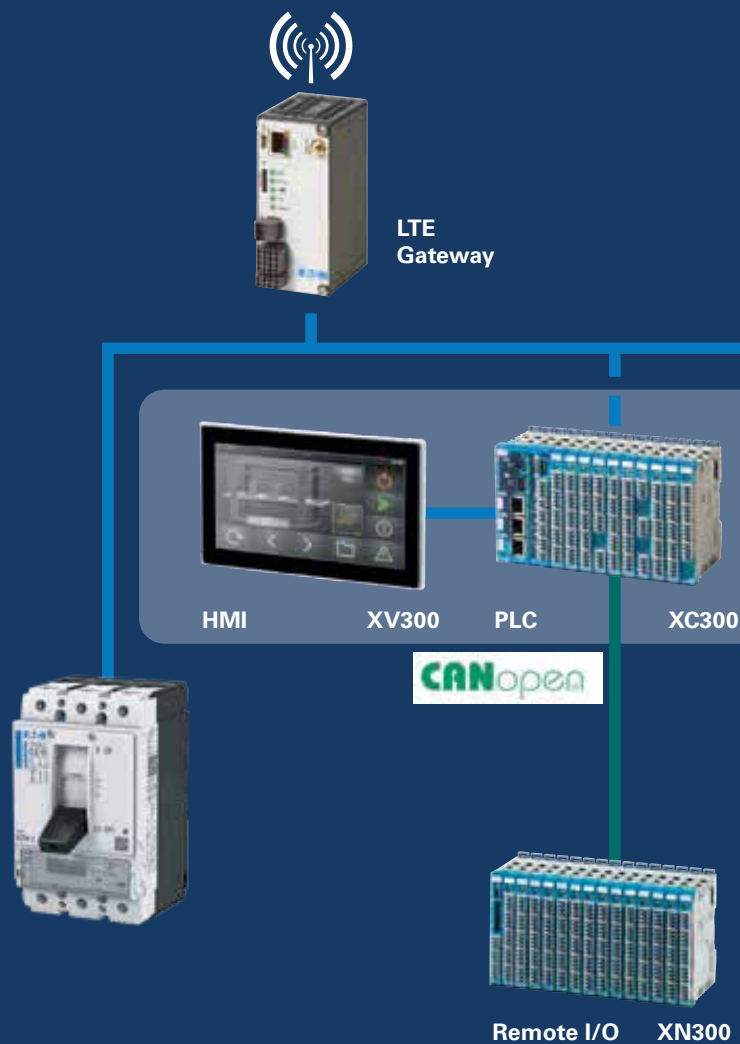
Each customer application comes with different requirements for the data transfer to the cloud. With the Eaton IoT connectors the data can be easily structured before being transferred to the Azure cloud using the assigned structure. This significantly reduces the costs associated with setting up the dashboards in Azure. The transfer rate for each sensor value can be individually defined and adjusted at any time. Should the data connection be interrupted, the generated messages will be automatically cached and then sent out with the correct time stamp once the connection is back up.

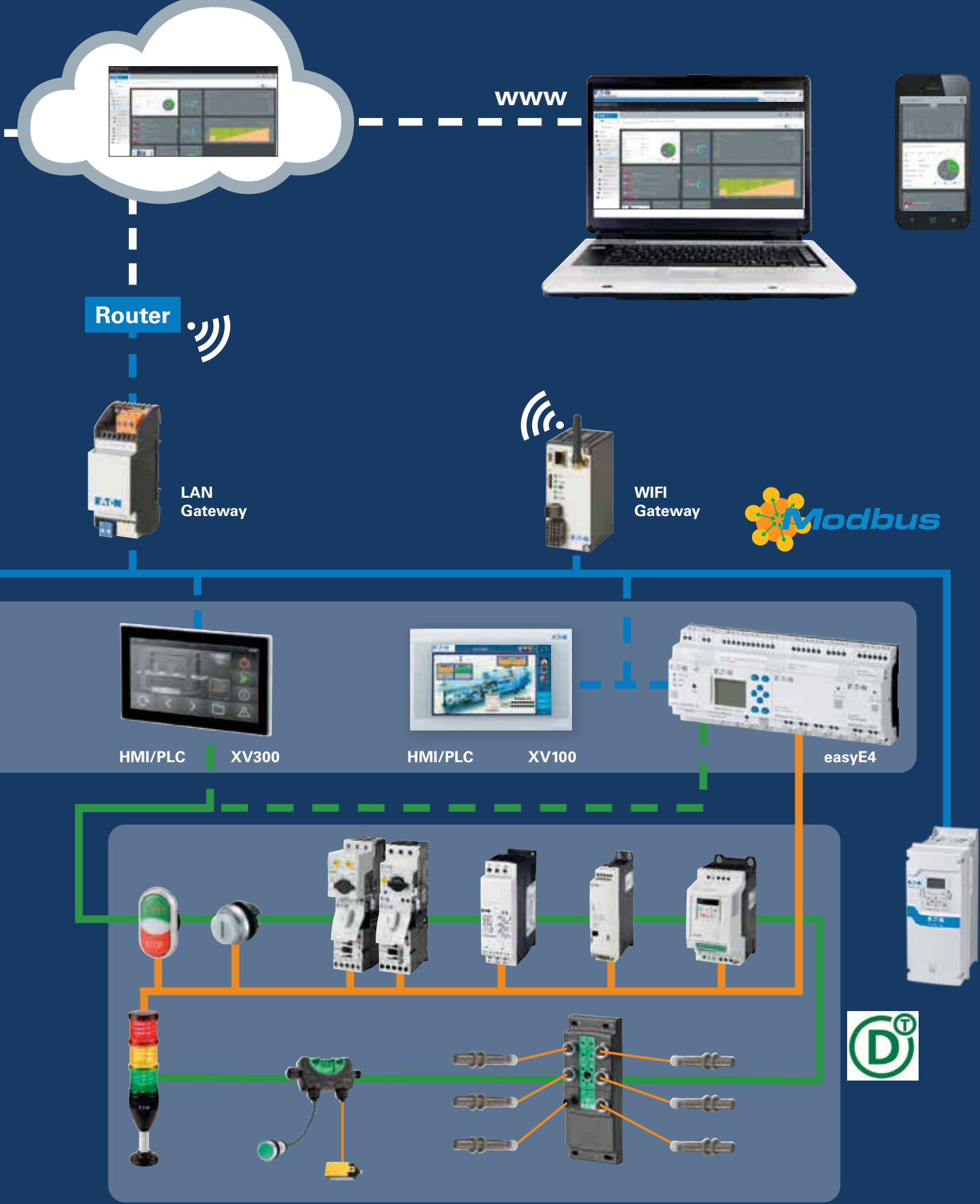
## Step 3: Connect your machine to the cloud

Once the machine data have been configured, they can be transferred into the cloud via the customer's existing IT infrastructure. Eaton also has products in store for machines that lack the requisite IT connection: a fixed line DSL router or a GSM/LTE router, as well as data packets from a single source. In either case, our Industry partners has full control of the cloud connection and can intervene at any time, if necessary.

## The analytics can be accessed from any browser,

whether from your office PC or on the road using your smartphone or tablet. From now on, you will be able to access your machine data from anywhere. You can either generate ad-hoc analytics or download data in order to investigate any unusual events. Should you need any assistance with the interpretation of your data, our Industry partners and its team of experts stand ready to help.







## SmartWire-DT: An innovative wiring system for greater productivity.



Download the catalog:

Customers today expect more compact designs that offer higher performance, shorter delivery times and the right price. To meet these expectations, manufacturers need to build machines quickly, with smaller control cabinets and using intelligent, energy-saving components. When it comes to higher efficiency, system availability is key. SmartWire-DT is a unique wiring solution that also enables the communication between switchgear inside and outside the control panel. More and more machine builders and system integrators around the world are discovering how easy it is to integrate SmartWire-DT into machines and small control cabinets. Compared to conventional systems, SmartWire-DT can reduce the amount of wiring by up to 85 %. Digital and analog data can be used to improve performance and avoid downtime, which significantly increases the efficiency of machines and systems.



Get more information





### Simplified wiring. Reduce costs. Improve flexibility.

Until now, control cables were commonly used to connect machine components to the I/O modules of a PLC. Thanks to SmartWire-DT, both these modules and the control cables are now a thing of the past. Our intelligent wiring system makes it possible to connect all associated devices, which translates into lower installation costs for machine builders.

### Less complexity means more compact machines

Eliminating the I/O modules of the PLC and the associated control cables allows for more compact control panels and machines and simplifies the design and configuration of automation structures.

### Simplified wiring technology

By replacing conventional, time-consuming control-circuit wiring with one single cable, SmartWire-DT simplifies the connection of switchgear and pilot devices as well as sensors and actuators outside of the control panel. This guarantees safe and error-free installation with significantly shorter commissioning times.

### Greater flexibility

By means of industrial fieldbus gateways, SmartWire-DT can be connected to any PLC, regardless of the manufacturer. This gives machine builders more flexibility and enables them to better meet the demands of their customers.

### Using Eaton controllers to implement more compact machines

For small and medium-sized machines, Eaton offers HMI/PLCs, compact PLCs and control relays with integrated SmartWire-DT communication interface, enabling machine builders to develop simpler and more compact automation solutions.



### Enhanced communication capabilities for improved system efficiency

The planning, installation and control of industrial systems requires multiple drives, controllers and pilot devices, alongside local sensors and actuators. System automation poses many challenges, especially where continuous availability is required. SmartWire-DT is an intelligent wiring system that can supply additional information about the installed devices, which is a crucial criterion for greater availability and preventive maintenance.

### More data leads to greater availability

More detailed information ensures better process control, more detailed diagnostics, reduced downtime and increased availability. SmartWire-DT switchgear provides continuous real-time data on motor load, allowing operators to intervene before an overload occurs and the system fails. Monitoring motor-current values also supports the implementation of preventive maintenance, which translates into improved system availability and significant efficiency gains.

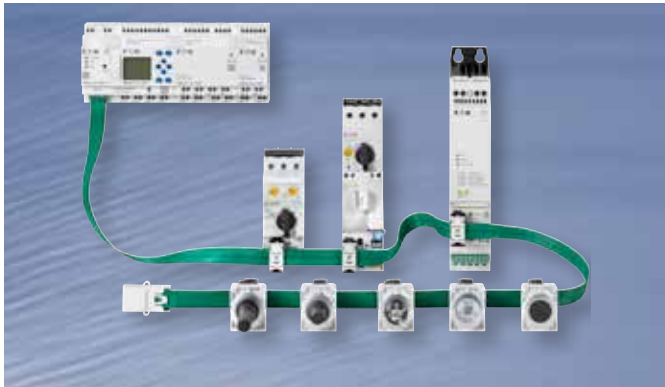
### Expansion made easy

With SmartWire-DT, adding expansions during operation is easy. New devices can be easily connected to the communication cable, both inside and outside the control panel. Thanks to the maximum length of up to 600 m, it is also possible to implement distributed control architectures.



### CODESYS-based automation

The XC152 series of compact controllers combines a modern control architecture with comprehensive communication interfaces in a single device. An HMI/PLC integrates state-of-the-art IT technology with the functions of conventional PLC and HMI devices by merging control, visualization and data management tasks together in a single device. In both cases, the built-in SmartWire-DT interface makes the communication with the switchgear significantly easier.



### SmartWire-DT - twice as simple with easySoft

Thanks to the SmartWire-DT communication module, the easyE4 control relay can be used very flexibly for different application tasks. Instead of connecting the inputs and outputs of the switchgear individually to the control relay, they are simply connected via the SmartWire-DT line. The program is entered in the usual way using easySoft version 7.



### Different gateways for connection to any network

To support communication with any controller, Eaton offers gateways for a wide range of standard fieldbus systems, including PROFIBUS-DP, CANopen, EtherNet/IP, Modbus/TCP, PROFINET, Powerlink and SERCOS III.



### Control and signaling made easy

The conventional wiring of pilot devices is highly complex, as each contact or indicator light needs to be separately wired to the controller's input/output modules. With SmartWire-DT, however, pilot devices can be connected with a simple "click." Various functions that previously had to be installed separately, for example in the case of double pushbuttons with LED indicators, now require only one SmartWire-DT function element. Moreover, our SL signal towers can also be connected to SmartWire-DT.



### SmartWire-DT : Comprehensive information about your motor

Via SmartWire-DT, the PKE motor-protective circuit breakers up to 65 A can be easily integrated into automation systems. In addition to the trip setting, the function element also reports the switch status and the trip reason. The transmission of information about the motor current and the thermal motor load provides advance warning of errors and possible shutdowns due to overload, which in turn increases the serviceability and availability of the system.





### Compact motor starters

In combination with SmartWire-DT, the EMS2 electronic motor starter provides compact control and monitoring of motor feeders up to 3 kW (400 V) at a width of only 22.5 mm. Moreover, the integrated functions for DOL starting, reversing starting, motor protection and emergency stop up to SIL 3 eliminate the need for multiple standard components and the associated wiring. Using SmartWire-DT to control and monitor the drive of the electronic motor starter speeds up wiring and enables critical machine states to be detected early.



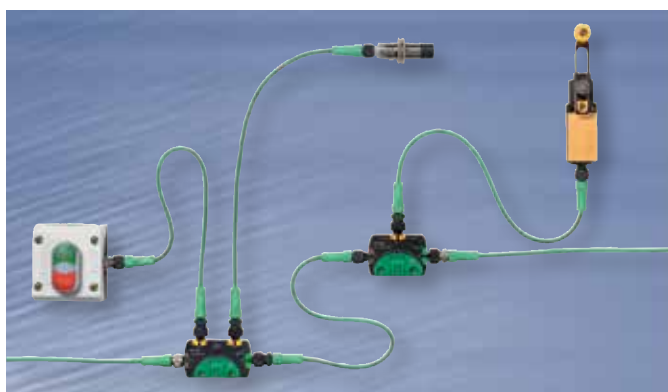
### PowerXL variable frequency drives/variable speed starters – efficient communication

The variable frequency drives and variable speed starters of the PowerXL family can also be combined with SmartWire-DT. All that is required is a simple plug-in SmartWire-DT function element, which eliminates the need for any control-circuit wiring. This interface can be used to centrally configure the variable frequency drives, to transmit control commands to the devices via the network, and to read out diagnostics data.



### DS7 soft starters – direct access to all parameters

The DS7 soft starters cover the power range from 1.1 kW to 110 kW, and their parameters can easily be accessed by connecting them to SmartWire-DT. Users are able to read and overwrite the potentiometer settings and to directly retrieve status, error and diagnostic messages, which ensures maximum data transparency. And thanks to the plug-in technology, connecting the function element, which also includes the soft starter's power supply, is fast and error-free.



### Connecting sensors directly inside the machine

The IP67 I/O modules for SmartWire-DT systems provide a fine-grained I/O solution with a high degree of protection that can be used directly on a machine. Due to the small number of I/O channels, the IP67 I/O modules also permit the direct integration of individual sensors and actuators into the SmartWire-DT system at field level, which reduces the amount of wiring required. This means that any number and sequence of digital and analog sensors and actuators can be easily connected, while expansions can be simply added by means of additional modules.



# One system, countless possibilities.

The distributed intelligence of SmartWire-DT is changing the automation industry, as the digital and analog I/O level of the controller can now be replaced by interface modules mounted on standard switchgear. Gateways to all standard industrial fieldbus systems facilitate easy access to SmartWire-DT networks, regardless of the control system. At the same time, SmartWire-DT is already integrated into our controllers, thereby enabling the implementation of linear automation structures with only few components that are easy to configure.

## Powerful technology

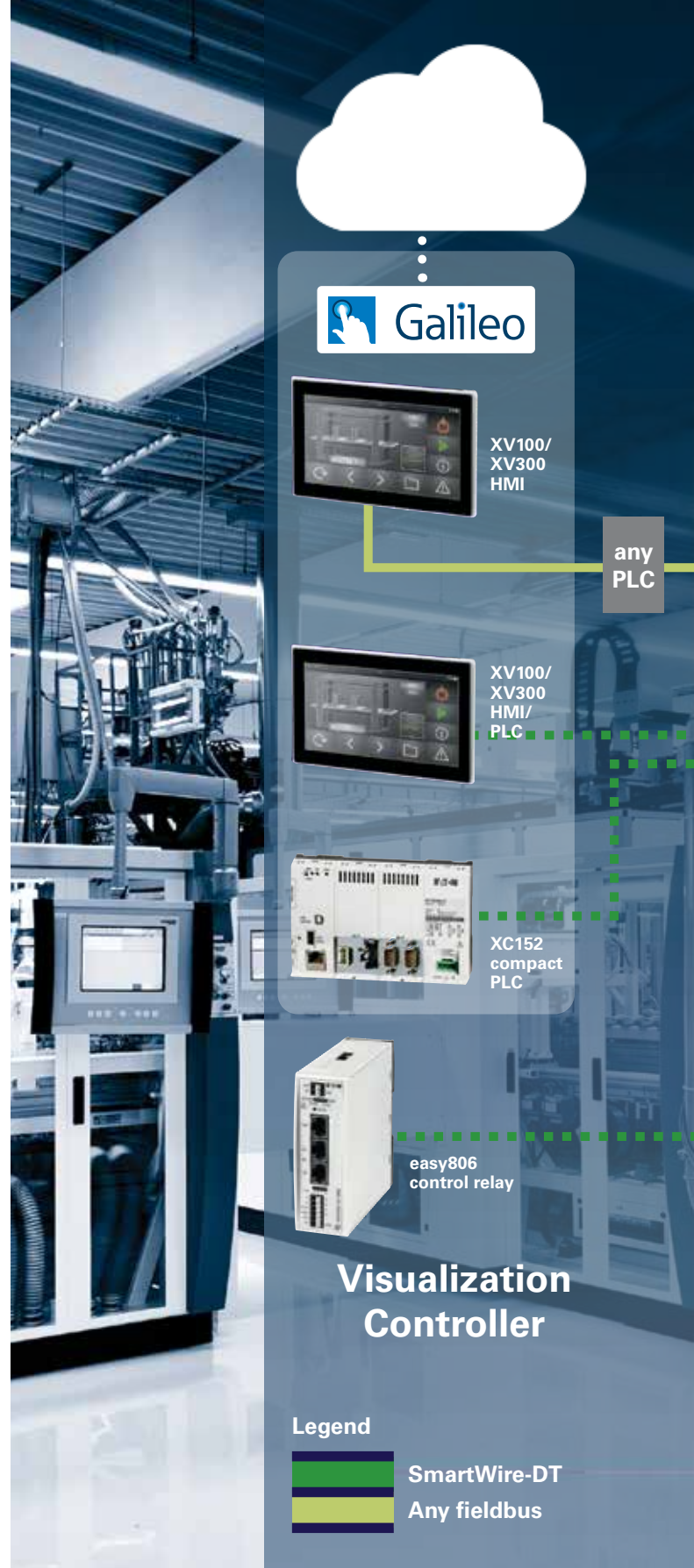
Up to 99 devices can be connected via a single SmartWire-DT cable. The maximum cable length is 600 m, and the maximum volume of cyclical process data is 1,000 bytes. The SmartWire-DT cables also contain the power supply for the SmartWire-DT modules and the relevant switchgear (e.g. contactors).

## Flexible integration into any automation environment

Fieldbus gateways facilitate the connection of the SmartWire-DT communication system to your controller. SmartWire-DT uses industrial fieldbus systems to communicate and relies on the relevant standardized configuration mechanisms.

## SmartWire-DT modules

Various SmartWire-DT modules are available. Special function modules replace the electrical interfaces to contactors, pushbuttons, pilot devices and auxiliary contacts. Intelligent devices such as electronic motor-protective circuit breakers, soft starters and drives transmit digital and analog information (e.g. about currents, overload, etc.) directly to the SmartWire-DT network.



## Inside and outside the control cabinet

SmartWire-DT can also be used to directly connect sensors and actuators in the field. This is done using T connectors, which are available as digital and analog I/O modules with IP67 protection.

## Operation

## Starting a motor

## Input/output

SmartWire-DT gateway



SL signal tower



RMO-Titan pilot devices



Pilot devices in surface mounting enclosures



NKM circuit breakers



Module for NKM



PKE 65 motor-protective circuit breaker



FAZ miniature circuit breaker



FRC residual current circuit breaker

## Circuit protection



DC1, DA1 variable frequency drives



DE1 / DE11 variable speed starter



DS7 soft starters



EMS2 electronic motor starter

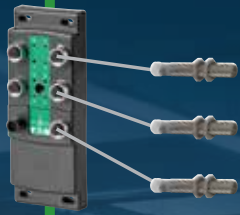


Motor-starter combination with PKE/PKZ

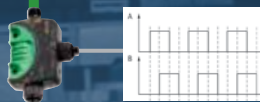
Inside the control cabinet

IP20 modules, EU5E-SWD...

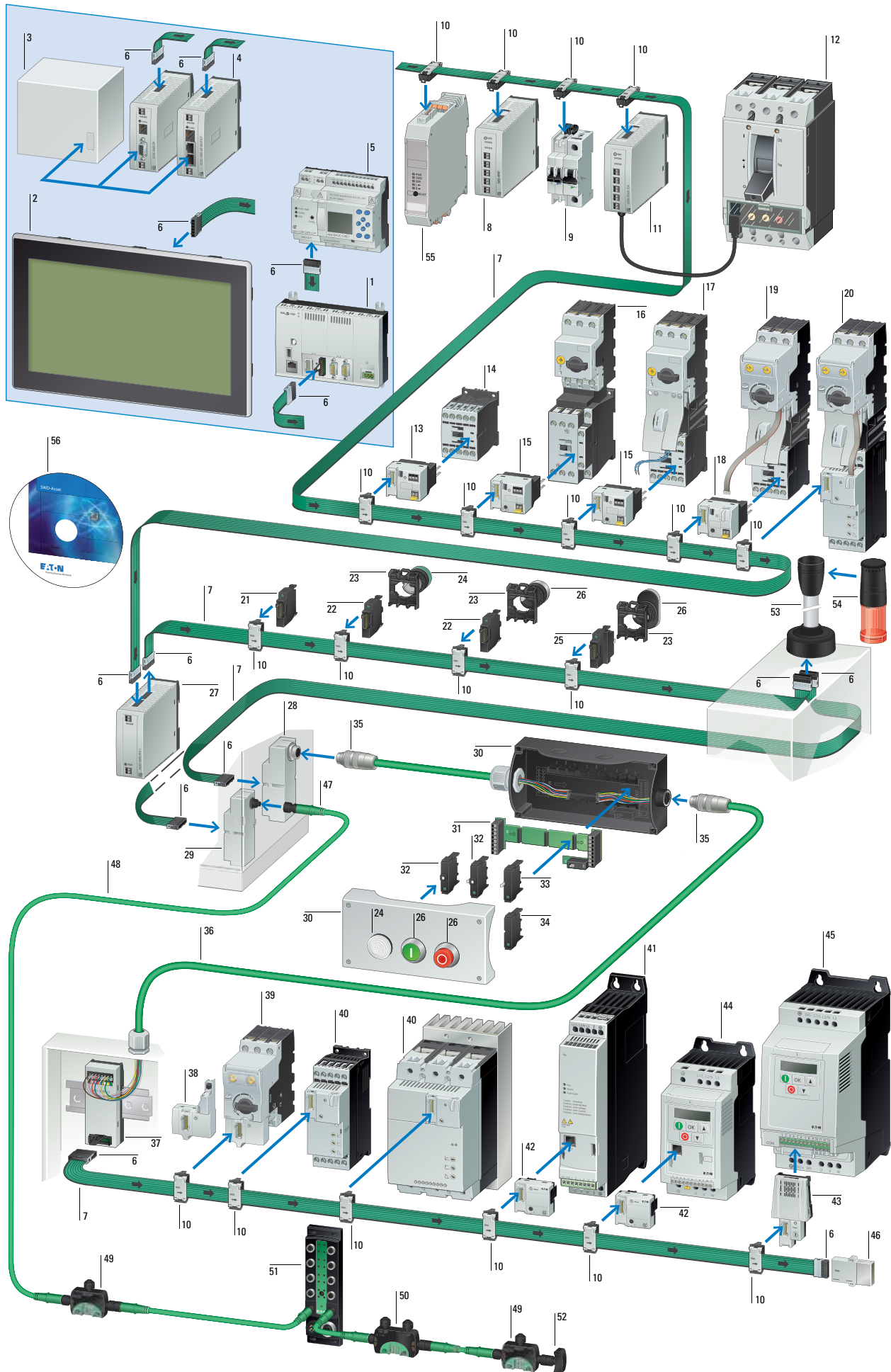
Digital  
Analog  
Temperature



IP67 modules, EU1E-SWD... / EU2E-SWD...









## Moeller series

1 Compact PLC	17 MSC motor starter	30 RMQ-Titan surface mounting enclosure	44 DC1 variable frequency drive
2 Touch panel	18 SWD PKE module (motor starter)	31 SWD PCB for function elements, base mounted	45 DA1 variable frequency drive
3 PLC with fieldbus interface	19 Motor starter with PKE electronic motor protection	32 SWD LED elements for base mounting	46 SWD bus-termination resistor for 8-pole ribbon cable
4 Gateways	20 DS7 soft starter with PKE electronic motor protection	33 SWD function elements for base mounting	47 M12 connector, 5-pole
5 Control relays	21 SWD universal module, front mounting	34 SWD universal modules, base mounted	48 Round cable, 5-pole
6 SWD blade terminal, 8-pole	22 SWD LED elements, front mounting	35 SWD plug-in connector, 8-pole	49 SWD I/O module, IP67, 2 I/Os
7 SWD ribbon cable, 8-pole	23 RMQ-Titan mounting clamps for flush mounting plates	36 SWD round cable, 8-pole	50 SWD I/O module, IP67, 4 I/Os
8 SWD I/O modules	24 RMQ-Titan indicator light	37 SWD flat/round cable adapter for DIN-rail mounting	51 SWD I/O module, IP67, max. 16 I/Os
9 SWD module for circuit breakers and residual current circuit breakers	25 SWD function elements for front mounting	38 SWD PKE module (motor-protective circuit breaker)	52 SWD bus-termination resistor, IP67, for 5-pole round cable, M12
10 SWD external device plug, 8-pole	26 SWD operating elements	39 PKE motor-protective circuit breaker	53 Base module for SL4/SL7 signal towers
11 SWD interface for NZM	27 SWD power feed module	40 DS7 soft starters	54 SL4/SL7 signal towers
12 NZM circuit breaker	28 SWD control-panel cable gland from ribbon cable to 8-pole round cable, M20	41 DE1 variable speed starter	55 EMS2 electronic motor starter
13 SWD contactor module	29 SWD control-panel cable gland from ribbon cable to 5-pole round cable, M12	42 SWD function element for DC1 variable frequency drives/DE1 variable speed starters	56 SmartWire-DT planning and ordering tool (SWD-Assist)
14 DILM contactor		43 SWD function element for DA1 variable frequency drives	
15 SWD contactor module with manual-0-automatic switch			
16 Motor-protective circuit breaker			

## Features

### SmartWire-DT coordinators

#### Touch panel

With SmartWire-DT master interface and PLC function TFT LCD screen (3.5", 5.7", 7", 10" or 15") with additional fieldbus interfaces, Ethernet, web server

#### Compact PLC

With SmartWire-DT master interface  
Additional fieldbus interfaces, Ethernet, web server

#### Control relays

With SmartWire-DT master interface

#### Gateways

To connect SmartWire-DT to fieldbus systems (e.g. CANopen, PROFIBUS, PROFINET ...)  
Supply voltage for the SmartWire-DT modules  
Control-voltage feeder unit for motor starters or contactors Supports up to 99 SmartWire-DT modules

### SmartWire-DT modules

I/O modules for connecting digital and analog input/output signals, with IP20, IP67 degree of protection

DS7 soft starter with integrated SWD connection

Function element for connecting:

- RMQ-Titan pilot devices
- SL4/7 signal towers
- DILM contactors
- PKZ/PKE motor-protective circuit breakers
- PKE32/PKE65 circuit breakers
- NZM2/NZM3/NZM4 circuit breakers
- Miniature circuit breakers
- DE1 variable speed starters
- DC1, DA1 variable frequency drives
- XNH fuse switch-disconnectors

### SmartWire-DT Assist (SWD-Assist)

Simplifies the design of SmartWire-DT networks, with integrated plausibility check  
Can be used to generate order lists

Online functionality:








- Configuration check and comparison
- All input/output data can be displayed and the outputs can be set
- Parameters and diagnostics data can be displayed


Free download at [www.eaton.eu/swd](http://www.eaton.eu/swd)


### SmartWire-DT accessories





To ensure the functioning of the SWD ribbon, various connecting elements are required:

- Power feed module
- SWD connecting cables
- Cable glands for SWD enclosures and control panels
- Plugs and connectors
- Links
- Couplings, cable adapters
- Bus-termination resistors
- Tools
- Programming accessories







	Display size (in)	Built-in interfaces										Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB-Host 2.0	1 x USB device	1 x CANopen@/ easyNet	1 x PROFIBUS/MPPI	1 x SmartWire-DT			
<b>Touch display with integrated controller</b>													
XV100 Windows CE 5.0 (license included), approvals: cUL (UL508) SD card slots: 1 Resistive touch with TFT display, 64k colors Standard front with standard membrane (fully enclosed)													
XV-102, with marine approval Plastic enclosure and plastic front plate													
	3.5 QVGA, 320 x 240	✓	-	-	-	-	✓	-	-	✓	<b>XV-102-BE-35TQRC-10</b>	153524	
	5.7 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	<b>XV-102-E6-57TVRC-10</b>	153525	
		✓	-	-	✓	✓	✓	-	✓	✓	<b>XV-102-E8-57TVRC-10</b>	153526	
	7 WVGA, 800 x 480	✓	-	-	✓	✓	✓	✓	-	✓	<b>XV-102-E6-70TWRC-10</b>	153527	
		✓	-	-	✓	✓	✓	-	✓	✓	<b>XV-102-E8-70TWRC-10</b>	153528	
XV-152 Metal enclosure and metal front plate													
	5.7 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	<b>XV-152-E6-57TVRC-10</b>	166700	
		✓	-	-	✓	✓	✓	-	✓	✓	<b>XV-152-E8-57TVRC-10</b>	166701	
	8.4 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	<b>XV-152-E6-84TVRC-10</b>	166702	
		✓	-	-	✓	✓	✓	-	✓	✓	<b>XV-152-E8-84TVRC-10</b>	166703	
	10.4 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	<b>XV-152-E6-10TVRC-10</b>	166704	
✓		-	-	✓	✓	✓	-	✓	✓	<b>XV-152-E8-10TVRC-10</b>	166705		
XV300, for front mounting - XV313, for rear mounting Windows Embedded Compact 7 Pro, approvals: cUL, marine approvals for 7" and 10.1" devices SD card slots: 1 PLC license included Capacitive multi-touch (PCT), number of colors: 16 million													
	7 WSVGA, 1024 x 600 Version: Plastic enclosure with glass front in plastic bezel	✓	-	✓	✓	✓	✓	✓	-	✓	<b>XV-303-70-BE0-A00-1C</b>	179655	
		-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-303-70-CE0-A00-1C</b>	179656	
		✓	-	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-70-BE2-A00-1C</b>	179657
		-	✓	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-70-CE2-A00-1C</b>	179658
	10.1 WSVGA, 1024 x 600 Version: Plastic enclosure with glass front in plastic bezel	✓	-	✓	✓	✓	✓	✓	-	✓	<b>XV-303-10-BE0-A00-1C</b>	179667	
		-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-303-10-CE0-A00-1C</b>	179668	
		✓	-	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-10-BE2-A00-1C</b>	179669
		-	✓	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-10-CE2-A00-1C</b>	179670
	15.6 WSVGA, 1366 x 768 Version: Die-cast aluminum enclosure with glass front in aluminum bezel	-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-303-15-CE0-A00-1C</b>	191075	
		-	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-15-CE2-A00-1C</b>	191076	
<b>XV-313 for rear mounting</b>													
Windows Embedded Compact 7 Pro, approvals: cUL 61010-2-201, marine approval SD card slots: 1 PLC license included Capacitive multi-touch (PCT), number of colors: 16 million Front type: Anti-glare tempered glass front without bezel													
	7 WSVGA, 1024 x 600 Front type: Anti-glare tempered glass front without bezel	-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-313-70-CE0-A00-1C</b>	191003	
	10.1 WSVGA, 1024 x 600 Front type: Anti-glare tempered glass front without bezel	-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-313-10-CE0-A00-1C</b>	191002	

	Built-in interfaces							Part no.	Article no.
	1 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB host 2.0	1 x CANopen®/easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT		
<b>XC compact PLCs</b>									
24 V DC power supply Memory card slot OPC server, integrated web server Application / marker / retained data 64 MB/4 KB/32 KB Cycle time for 1 k instructions (bit, byte) 0.04 ms; approvals: cUL, marine approval									
	✓	✓	-	✓	-	-	✓	<b>XC-152-E3-11</b>	167850
	✓	-	✓	✓	✓	-	✓	<b>XC-152-E6-11</b>	167851
	✓	-	✓	✓	-	✓	✓	<b>XC-152-E8-11</b>	167852



	Baud rate	Number of SmartWire-DT modules	Part no.	Article no.	
<b>SmartWire-DT communication module for easyE4 control relay</b>					
Combines the functionality of an easyE4 with direct connection to the SmartWire-DT communication system Supply voltage 24 V DC Screw terminal					
	Connection of SmartWire-DT stations with a total of up to 244 digital and/or 88 analog inputs/outputs can be connected via one SmartWire-DT line	125/250 kBd	Max. 99	<b>EASY-COM-SWD-C1</b>	199452



















<b>Gateways</b>					
For connecting the SmartWire-DT communication system to industrial fieldbus systems. For supplying the SWD modules and switchgear with power					
	For connection to the CANopen® fieldbus Fieldbus connection via 9-pole SUB-D plug Separate RS232 diagnostics interface (RJ45)	Up to 1 Mbit/s	Max. 99	<b>EU5C-SWD-CAN</b>	116307
	For connection to the PROFIBUS-DP fieldbus Fieldbus connection via 9-pole SUB-D socket Separate RS232 diagnostics interface (RJ45)	Up to 12 Mbit/s	Max. 58	<b>EU5C-SWD-DP</b>	116308
	For connection to the Ethernet-IP/MODBUS-TCP fieldbus Fieldbus connection via Ethernet switch Separate RS232 diagnostics interface (RJ45)	10/100 Mbit/s	Max. 99	<b>EU5C-SWD-EIP-MODTCP</b>	153163
	For connection to the PROFINET fieldbus as a PROFINET I/O device Fieldbus connection via Ethernet switch Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	<b>EU5C-SWD-PROFINET</b>	170124
	For connection to the POWERLINK fieldbus (as a slave) Fieldbus connection via Ethernet hub Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	<b>EU5C-SWD-POWERLINK</b>	171797
	For connection to the EtherCAT fieldbus (as a slave) Fieldbus connection via Ethernet switch Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	<b>EU5C-SWD-ETHERCAT</b>	177354
	For connection to the SERCOS III fieldbus (as a slave); fieldbus connection via Ethernet switch Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	<b>EU5C-SWD-SERCOS</b>	184982










		Inputs	Outputs			Part no.	Article no.
		Digital	Analog	Relay	Transistor		
<b>I/O modules (IP20)</b>							
<b>Digital modules IP20</b> For connecting digital I/O signals							
		8	-	-	-	-	<b>EU5E-SWD-8DX</b> 116381
	Outputs are short-circuit proof	4	-	-	4	-	<b>EU5E-SWD-4D4D</b> 116382
	Outputs are short-circuit proof	4	-	-	4	-	<b>EU5E-SWD-4D4D-R</b> 191941
		4	-	2	-	-	<b>EU5E-SWD-4D2R</b> 116383
	Outputs are short-circuit proof	-	-	-	8	-	<b>EU5E-SWD-X8D</b> 144061
	Inputs with power supply for sensors	4	-	-	-	-	<b>EU5E-SWD-4DX</b> 144060
<b>Analog modules IP20</b> For connecting analog I/O signals							
	Inputs are configurable: 0-10 V, 0-20 mA	-	4	-	-	-	<b>EU5E-SWD-4AX</b> 144062
	Inputs/outputs are configurable: 0-10 V, 0-20 mA	-	2	-	-	2	<b>EU5E-SWD-2A2A</b> 144063
	Inputs are configurable: PT100, PT1000, Ni1000 Temperature range °C: PT100, PT1000: -50 to +200 Ni1000: -50 to +150	-	4	-	-	-	<b>EU5E-SWD-4PT</b> 144064
	Inputs are configurable: PT100, PT1000, Ni1000 Temperature range °C: PT100, PT1000: -100 to +400 Ni1000: -50 to +200	-	4	-	-	-	<b>EU5E-SWD-4PT-2</b> 172560
Description	Output current	Inputs Digital	Outputs Transistor		Part no.	Article no.	
<b>I/O modules (IP67), block module</b>							
<b>Digital modules IP67</b> For connecting digital I/O signals							
	-	-	4	-	<b>EU6E-SWD-4DX</b> 174735		
	-	-	8	-	<b>EU6E-SWD-8DX</b> 174736		
	Inputs/outputs are configurable Max. 8 outputs are short-circuit proof.	0.5 A	≤ 8	≤ 8	<b>EU6E-SWD-8DD</b> 174742		
	With power supply	0.5 A	2	2	<b>EU6E-SWD-2D2D-1</b> 183264		
		0.5 A	4	4	<b>EU6E-SWD-4D4D-1</b> 183266		
		0.5 A	-	4	<b>EU6E-SWD-4XD-1</b> 183268		
		0.5 A	-	8	<b>EU6E-SWD-8XD-1</b> 183270		
		2 A	2	2	<b>EU6E-SWD-2D2D-2</b> 183265		
		2 A	4	4	<b>EU6E-SWD-4D4D-2</b> 183267		
		2 A	-	4	<b>EU6E-SWD-4XD-2</b> 183269		
	-	-	16	-	<b>EU8E-SWD-16DX</b> 174744		
	Inputs/outputs are configurable Max. 16 outputs are short-circuit proof	0.5 A	≤ 16	≤ 16	<b>EU8E-SWD-16DD</b> 174750		
	With power supply	0.5 A	4	4	<b>EU8E-SWD-4D4D-1</b> 183272		
		0.5 A	8	8	<b>EU8E-SWD-8D8D-1</b> 183273		
		0.5 A	-	8	<b>EU8E-SWD-8XD-1</b> 183274		
		0.5 A	-	16	<b>EU8E-SWD-16XD-1</b> 183271		

Moeller series






	Description	Inputs		Outputs		Part no.	Article no.
		Digital	Analog	Transistor	Analog		
<b>I/O modules (IP67) T connector</b>							
<b>Digital modules IP67</b> For connecting digital I/O signals							
	-	1	-	-	-	<b>EU1E-SWD-1DX</b>	174710
	-	2	-	-	-	<b>EU1E-SWD-2DX</b>	174711
	Inputs/outputs are configurable Max. 2 outputs are short-circuit proof	≤ 2	-	≤ 2	-	<b>EU1E-SWD-2DD</b>	174715
	-	2	-	-	-	<b>EU2E-SWD-2DX</b>	174725
	-	4	-	-	-	<b>EU2E-SWD-4DX</b>	174726
	Inputs/outputs are configurable Max. 4 outputs are short-circuit proof Plug configuration (X1: 2 E/A, X2: 2 E/A)	≤ 4	-	≤ 4	-	<b>EU2E-SWD-4DD</b>	174732
	Inputs/outputs are configurable Max. 4 outputs are short-circuit proof Plug configuration (X1: 1 E/A, X2: 3 E/A)	≤ 4	-	≤ 4	-	<b>EU2E-SWD-4DD-1</b>	180406
<b>Analog modules IP67</b> For connecting analog I/O signals							
	Input: 0-10 V	-	1	-	-	<b>EU1E-SWD-1AX-1</b>	174717
	Input: 0-20 mA	-	1	-	-	<b>EU1E-SWD-1AX-2</b>	174718
	Output: 0-10 V	-	-	-	1	<b>EU1E-SWD-1XA-1</b>	174719
	Output: 0-20 mA	-	-	-	1	<b>EU1E-SWD-1XA-2</b>	174720
	Inputs are configurable: PT100, PT1000, Ni1000 Temperature range °C: PT100, PT1000: -100 to +400 Ni1000: -50 to +200	-	2	-	-	<b>EU2E-SWD-2PT</b>	174733
<b>Counter module IP67</b> For connecting a counter							
	Counter/incremental encoder 24 V DC, Max. 30 kHz	-	-	-	-	<b>EU1E-SWD-1CX</b>	174721

Contacts	Color	Front mounting Part no.	Article no.	Base mounting Part no.	Article no.	
<b>SmartWire-DT RMQ connections</b>						
For combination with RMQ-Titan M22-... control elements Function elements with LED are dimmable						
<b>Function elements</b>						
	1 changeover contact	Without LED	<b>M22-SWD-K11</b>	115964	<b>M22-SWD-KC11</b>	115995
	2 changeover contacts	Without LED	<b>M22-SWD-K22</b>	115965	<b>M22-SWD-KC22</b>	115996
	1 changeover contact		<b>M22-SWD-K11LED-W</b>	115972	<b>M22-SWD-K11LEDC-W</b>	116003
			<b>M22-SWD-K11LED-B</b>	115973	<b>M22-SWD-K11LEDC-B</b>	116004
			<b>M22-SWD-K11LED-G</b>	115974	<b>M22-SWD-K11LEDC-G</b>	116005
			<b>M22-SWD-K11LED-R</b>	115975	<b>M22-SWD-K11LEDC-R</b>	116006
	2 changeover contacts		<b>M22-SWD-K22LED-W</b>	115978	<b>M22-SWD-K22LEDC-W</b>	116009
			<b>M22-SWD-K22LED-B</b>	115979	<b>M22-SWD-K22LEDC-B</b>	116010
			<b>M22-SWD-K22LED-G</b>	115980	<b>M22-SWD-K22LEDC-G</b>	116011
			<b>M22-SWD-K22LED-R</b>	115981	<b>M22-SWD-K22LEDC-R</b>	116012
	-		<b>M22-SWD-LED-W</b>	115966	<b>M22-SWD-LEDC-W</b>	115997
	-		<b>M22-SWD-LED-B</b>	115967	<b>M22-SWD-LEDC-B</b>	115998
	-		<b>M22-SWD-LED-G</b>	115968	<b>M22-SWD-LEDC-G</b>	115999
	-		<b>M22-SWD-LED-R</b>	115969	<b>M22-SWD-LEDC-R</b>	116000
	-		<b>M22-SWD-LED-RGB</b>	197576	<b>M22-SWD-LEDC-RGB</b>	195898

Description	Tube length	For use with	Part no.	Article no.
<b>Signal tower base modules</b>				
For horizontal installation, cover included, max. 5 modules				
	100 mm	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	<b>SL4-SWD</b>	171311
	100 mm	SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	<b>SL7-SWD</b>	171459




Description	Configuration	Part no.	Article no.
<b>Potentiometer</b>			
	Front element for SWD potentiometer Can only be used in conjunction with the M22-SWD-R function element	<b>M22-R-SWD</b>	179292
	Function element for SWD potentiometer Can only be used in conjunction with the M22-R-SWD front element	<b>M22-SWD-R</b>	179293
	Standard pack consists of: M22-R-SWD, M22-SWD-R, M22-A	<b>M22-R-SWD-R</b>	179294
<b>Encoder</b>			
	Front element for SWD encoder With actuation function Can only be used in conjunction with the M22-SWD-INC function element	<b>M22-INC-SWD</b>	179981
	Function element for SWD encoder Can only be used in conjunction with the M22-INC-SWD front element	<b>M22-SWD-INC</b>	179982
	Standard pack consists of: M22-INC-SWD, M22-SWD-INC, M22-A	<b>M22-INC-SWD-INC</b>	179983














	Description	For use with	Part no. Article no.
<b>Contactor modules<sup>1),2)</sup></b>			
For connecting contactors to SmartWire-DT One module is needed for each contactor.			
	<b>Messages</b> Switch state of the contactor, status of the digital inputs 1 and 2 <b>Commands</b> Contactor actuation	DILM(C)7... - DILM(C)32 DILM38 DILA MSC-D(E)-...(24VDC)	<b>DIL-SWD-32-001</b> 118560
	1-0-A switch for manual or automatic operation. <b>Messages</b> Switch state of the contactor, status of the digital inputs 1 and 2, switch state of the 1-0-A switch <b>Commands</b> Contactor actuation	DILM(C)7... - DILM(C)32 DILM38 DILA MSC-D(E)-...(24VDC)	<b>DIL-SWD-32-002</b> 118561
<b>PKE module (motor-starter combinations)<sup>1)</sup></b>			
For connecting MSC-DEA... PKE motor-starter combinations with PKE-XTUA-... trip blocks and a rated motor output of 15 kW/400 V to SmartWire-DT One module is needed per contactor and PKE.			
	For mounting on a DILM contactor with 24 V DC control voltage. One module is needed for each contactor. An additional SWD contactor module is required to control reversing starters. 1 electrical interlock for surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Selectable overload relay function (ZMR) for switching off the contactor in the event of overload. Cable for connecting the module and the PKE-XTUA-... trip block included as standard. <b>Messages</b> Switch position of contactor/PKE/1-0-A switch Motor current in % Thermal motor image in % Trip indications (overload, short circuit, etc.) Set value of overload release Set time lag (CLASS) Part no. of trip block <b>Commands</b> Contactor actuation Activation of the overload relay function (ZMR)	DILM(C)7... - DILM(C)32 MSC-DEA	<b>PKE-SWD-32</b> 126895
<b>PKE module (motor-protective circuit breaker)</b>			
For connecting motor-protective circuit breakers with PKE-XTU(W)A-... trip blocks (motor protection) to SmartWire-DT			
	To be fitted on PKE motor-protective circuit breakers <b>Messages</b> PKE contactor state Motor current in % Thermal motor image in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block <b>Commands</b> Remote disconnection of motor-protective circuit breakers	PKE12 PKE32 PKE65	<b>PKE-SWD-SP</b> 150614
<b>PKE module (circuit breaker)</b>			
For connecting PKE circuit breakers with PKE-XTU(W)ACP-... trip blocks (motor protection) to SmartWire-DT For two M22-SWD-K22... function elements			
	For side mounting on PKE circuit breakers <b>Messages</b> PKE contactor state All phase currents in % Thermal load in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set value of the short-circuit release Part no. of trip block <b>Commands</b> Remote disconnection of circuit breaker	PKE32 PKE65	<b>PKE-SWD-CP</b> 172735

**Notes**






- If the contactor coils have a current consumption > 3 A (UL: 2 A), an additional power feed module must be used.  
A2 connections must not be bridged  
The DILM 12-XRL and PKZM0-XRM12 wiring sets may not be used.
- Connection terminals for electrical interlocking are not suitable for use with safety technology.










Description		Setting range of overload release	Part no.	Article no.
		$I_r$ A 		
<b>Electronic motor starter</b>				
For connection to SmartWire-DT to implement expanded diagnostics				
	DOL starters (complete devices)	0.18 - 3 1.5 - 7 (AC-53a) 9 (AC-51)	<b>EMS2-DO-T-3-SWD</b> <b>EMS2-DO-T-9-SWD</b>	192383 192387
	Reversing starters (complete devices)	0.18 - 3 1.5 - 7 (AC-53a) 9 (AC-51)	<b>EMS2-RO-T-3-SWD</b> <b>EMS2-RO-T-9-SWD</b>	192384 192388
	Emergency stop via an additional enable terminal up to SIL3/Plc.	DOL starters (complete devices)	<b>EMS2-DOS-T-3-SWD</b> <b>EMS2-DOS-T-9-SWD</b>	192385 192389
		Reversing starters (complete devices)	<b>EMS2-ROS-T-3-SWD</b> <b>EMS2-ROS-T-9-SWD</b>	192386 192390

	Rated operational current of device (AC-53)	Assigned motor rating		Part no. Article no.
	$I_o$ A	At 400 V, 50 Hz P kW	At 460 V, 60 Hz P HP	
<b>Soft starters</b>				
Soft starters for three-phase loads, mains supply voltage (50/60 Hz) $U_{LN}$ 200-480 V AC Control voltage $U_c$ = 24 V DC, supply voltage $U_s$ = 24 V DC				
	4	1.5	2	<b>DS7-34DSX004N0-D</b> 134943
	7	3	5	<b>DS7-34DSX007N0-D</b> 134945
	9	4	5	<b>DS7-34DSX009N0-D</b> 134946
	12	5.5	10	<b>DS7-34DSX012N0-D</b> 134947
	16	7.5	10	<b>DS7-34DSX016N0-D</b> 134948
	24	11	15	<b>DS7-34DSX024N0-D</b> 134949
	32	15	25	<b>DS7-34DSX032N0-D</b> 134950
	41	22	30	<b>DS7-34DSX041N0-D</b> 134952
	55	30	40	<b>DS7-34DSX055N0-D</b> 134953
	70	37	50	<b>DS7-34DSX070N0-D</b> 134954
	81	45	60	<b>DS7-34DSX081N0-D</b> 134955
	100	55	75	<b>DS7-34DSX100N0-D</b> 134956
	135	75	100	<b>DS7-34DSX135N0-D</b> 134957
	160	90	125	<b>DS7-34DSX160N0-D</b> 134958
	200	110	150	<b>DS7-34DSX200N0-D</b> 134959

Terminal type	For use with	Part no. Article no.
<b>Power XL™ variable frequency drives</b>		
Fieldbus interface (optional)		
	For connecting DA1 variable frequency drives (IP20/IP55) to SmartWire-DT Plug-in module with slot for SWD4-8SF2-5 external device plug	DA1 (IP20, IP55) <b>DX-NET-SWD1</b> 169129
	For connecting DE1 variable speed starters and DC1 variable frequency drives (IP20) to SmartWire-DT Plug-in module (at the front) with slot for SWD4-8SF2-5 external device plug	DE1, DC1 (IP20) <b>DX-NET-SWD3</b> 169131
Description		Part no. Article no.
<b>NZM molded-case circuit breakers</b>		
SWD interface for NZM The module establishes a data connection between an NZM2/NZM3/NZM4 with electronic release and SmartWire-DT.		
	The module can also be used to remotely control switches with remote operator. 2 digital inputs for the switch state 2 transistor outputs for remote switching Retentive memory for energy data (kWh) Energy data from the NZN...-XMC-SO external energy metering module is transmitted via a digital input (S 0). A cable (1.90 m) for connecting the circuit breaker and two NZM auxiliary contacts (1 x NO, 1 x NC) are included as standard.	<b>NZM-XSWD-704</b> 135530
Description	Mounting type	Part no. Article no.
<b>xEffect protective switchgear</b>		
The module establishes a connection to MCBs, RCCBs and RCBOs		
	Auxiliary contacts Accessories for residual current operated circuit breakers with overcurrent protection Accessories for residual current circuit breakers Accessories for miniature circuit breakers	For mounting on left side of: RCCBs For mounting on right side of: MCBs, RCBOs <b>MCB-HK-SWD</b> 177175
Description		Part no. Article no.
<b>Power feed module</b>		
	For supplying voltage to connect additional motor starters and contactors to the SWD ribbon cable For forming emergency-stop groups for motor starters and contactors	<b>EU5C-SWD-PF1-1</b> 116309
	For supplying voltage to connect additional SmartWire-DT modules to the SWD ribbon cable To supply additional control voltage for motor starters and contactors For forming emergency-stop groups for motor starters and contactors	<b>EU5C-SWD-PF2-1</b> 116380
	For supplying voltage to connect additional SmartWire-DT modules (IP67) and the associated sensors/actuators	<b>EU1S-SWD-PF1-2</b> 174724














Description	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Length m	Part no. Article no.	
<b>SWD connecting cables</b>				
<b>SWD ribbon cable</b> For connecting SmartWire-DT modules inside the control panel				
	8-pole Not pre-assembled	IP20	100	<b>SWD4-100LF8-24</b> 116026
	8-pole Pre-assembled with two SWD4-8MF2 blade terminals	IP20	10	<b>SWD4-10LF8-24-2S</b> 116029
		IP20	5	<b>SWD4-5LF8-24-2S</b> 116028
		IP20	3	<b>SWD4-3LF8-24-2S</b> 116027
		IP20	0.5	<b>SWD4-M5LF8-24-2S</b> 197658
<b>SWD round cable</b> For connecting pilot devices inside CI surface mounting enclosures				
	8-pole HK-S0-Li2YY, 8 mm diameter	IP67	50	<b>SWD4-50LR8-24</b> 116030
		IP67	250	<b>SWD4-250LR8-24</b> 144878
<b>SWD round cable</b> For connecting peripheral SmartWire-DT modules				
	5-pole Pre-assembled with M12 socket and M12 plug, A coded	IP67	0.1	<b>SWD4-M1LR5-2S</b> 174760
		IP67	0.3	<b>SWD4-M3LR5-2S</b> 174761
		IP67	0.6	<b>SWD4-M6LR5-2S</b> 174762
		IP67	1	<b>SWD4-1LR5-2S</b> 174763
		IP67	1.5	<b>SWD4-1M5LR5-2S</b> 174764
		IP67	2	<b>SWD4-2LR5-2S</b> 174765
		IP67	3	<b>SWD4-3LR5-2S</b> 174766
		IP67	4	<b>SWD4-4LR5-2S</b> 174767
		IP67	5	<b>SWD4-5LR5-2S</b> 174768
		IP67	10	<b>SWD4-10LR5-2S</b> 174769
		IP67	20	<b>SWD4-20LR5-2S</b> 174770
<b>I/O round cable</b> For direct connection of sensors/actuators to IP67 SWD modules				
	5-pole Pre-assembled on one side with M12 plug, A coded	IP67	0.3	<b>SWD4-M3LR5-S</b> 174771
		IP67	0.6	<b>SWD4-M6LR5-S</b> 174772
		IP67	1	<b>SWD4-1LR5-S</b> 174697
		IP67	2	<b>SWD4-2LR5-S</b> 174698
<b>I/O round cable</b> For direct connection of sensors/actuators to IP67 SWD modules				
	5-pole Pre-assembled with M12 socket and M12 plug, A coded	IP67	0.3	<b>SWD4-M3LR5-1-2S</b> 179543
		IP67	0.6	<b>SWD4-M6LR5-1-2S</b> 179544
		IP67	1	<b>SWD4-1LR5-1-2S</b> 179545
		IP67	2	<b>SWD4-2LR5-1-2S</b> 179546

	Description	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Length m	Part no. Article no.
<b>Cable glands for SWD enclosures and control panels</b>					
	8-pole M20 socket 8 pre-assembled cables for connection to PCB M22-SWD-I...	For flush mounting in M22-I... surface mounting enclosure	IP67	0.15	<b>SWD4-SF8-20</b> 116031
	8-pole M20 plug 8 pre-assembled cables for connection to M22-SWD-I... PCBs		IP67	0.15	<b>SWD4-SM8-20</b> 116032
	Connection to round cable via socket Connection to ribbon cable with SWD4-8MF2 blade terminal 8-pole Pluggable on either side To supply additional control voltage for motor starters and contactors.	For transition from the SWD ribbon cable to the SWD4-...LR8-24 round cable	IP67	-	<b>SWD4-SFL8-20</b> 121380
	Connection to round cable via plug Connection to ribbon cable with SWD4-8MF2 blade terminal 8-pole Pluggable on either side To supply additional control voltage for motor starters and contactors.		IP67	-	<b>SWD4-SML8-20</b> 121381
	SmartWire-DT control-panel cable gland for 8-pole ribbon cable to the 5-pole round cable, separate 24 V DC / 4 A power supply for round cable	For transition from the SWD ribbon cable to the SWD4-...LR5-2S round cable	IP67	-	<b>SWD4-SFL8-12</b> 174756
	From IP67 to IP20, from 5-pole round cable to 8-pole ribbon cable, integrated 15 V DC / 180 mA power supply unit for SmartWire-DT modules on the ribbon cable	For transition from the SWD4-...LR5-2S round cable to the SWD ribbon cable	IP67	-	<b>SWD4-SML8-12</b> 174755
	Control-panel cable gland for 5-pole SWD4-...LR8-24 M12 SmartWire-DT round cable, M12 plug/socket	For flush mounting in enclosure	IP67	-	<b>SWD4-SML5-12</b> 174757
	5-pole M12 socket, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	1	<b>SWD4-PRF5-1-S</b> 174758
	5-pole M12 plug, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	1	<b>SWD4-PRM5-1-S</b> 174759
	5-pole M12 socket, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	0.15	<b>SWD4-PRF5-2-S</b> 179541
	5-pole M12 plug, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	0.15	<b>SWD4-PRM5-2-S</b> 179542
	Description	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)		Part no. Article no.
<b>SWD plugs and plug-in connections</b>					
	8-pole SmartWire-DT external device plug that can be connected at any point on the ribbon cable. The external device plug can be used to connect the function elements of any SmartWire-DT module inside the control panel.	For connecting the ribbon cable to SmartWire-DT modules inside the control panel	IP20		<b>SWD4-8SF2-5</b> 116022
	8-pole SmartWire-DT blade terminal that can be installed at either end of the SmartWire-DT ribbon cable. The following components can be connected: SmartWire-DT coordinators such as the easy800-SWD / SWD gateways, SWD power feed modules, SWD couplings, SWD bus-termination resistors, SWD control-panel cable glands	For connecting the ribbon cable to a gateway, power feed module, coupling or SWD4-RC8-10 bus-termination resistor	IP20		<b>SWD4-8MF2</b> 116023
	Cover cap with monitoring function for M12 sockets on the SWD connector (IP67)	Cover cap with monitoring function for M12 socket	IP67		<b>SWD4-ACAP-10</b> 174751
	Cover cap for M12 sockets on the SWD connector (IP67)	Cover cap for M12 socket	IP67		<b>SWD4-PCAP-F</b> 174752
	Cover cap for M12 plugs on the SWD connector (IP67)	Cover cap for M12 plug	IP67		<b>SWD4-PCAP-M</b> 174753

	Description	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Part no. Article no.
<b>SWD plugs and plug-in connections</b>				
	8-pole socket Straight Solder connector	Connector for 8-pole SWD4-... LR8-24 round cables	IP67	<b>SWD4-SF8-67</b> 116033
	8-pole plug Straight Solder connector		IP67	<b>SWD4-SM8-67</b> 116034
	Splitter with IP67 degree of protection, with M12 plug for two M12 sockets with I/O signal on pin 4	For splitting the I/O signals of an M12 I/O connection	IP67	<b>SWD4-SP-4124</b> 174703
	Splitter with IP67 degree of protection, with M12 plug for two M12 sockets with I/O signal on pin 2		IP67	<b>SWD4-SP-4122</b> 174704
	Splitter with IP67 degree of protection, with M12 plug for two 4-pole M8 sockets with I/O signal on pin 4		IP67	<b>SWD4-SP-4084</b> 174705
	Splitter with IP67 degree of protection, with M12 plug for two 4-pole M8 sockets with I/O signal on pin 2		IP67	<b>SWD4-SP-4082</b> 174706
	Splitter with IP67 degree of protection, with M12 plug for two 3-pole M8 sockets		IP67	<b>SWD4-SP-3084</b> 174707
	5-pole socket Straight Screw terminal	Connector for 5-pole SWD4-... LR5-... round cables	IP67	<b>SWD4-SF5-67</b> 179547
	5-pole connector Straight Screw terminal	Connector for 5-pole SWD4-... LR5-... round cables	IP67	<b>SWD4-SM5-67</b> 179548
<b>SWD coupling</b>				
	Coupling via two 8-pole blade terminals	For connecting SWD ribbon cables via an SWD4-8MF2 blade terminal	IP20	<b>SWD4-8SFF2-5</b> 116024
<b>SWD cable adapters</b>				
	For connecting a ribbon cable (plug) to a round cable (terminal)	SWD cable adapters	IP20	<b>SWD4-8FRF-10</b> 121377
	SWD power supply module for the modules (IP20) of a local SWD segment	SWD power supply module	IP20	<b>SWD4-FFR-PF1-1</b> 168880
	SWD cable adapter to set up a local SWD segment	SWD cable adapters	IP20	<b>SWD4-FFR-ST1-1</b> 168881
	To set up a local SWD network with SWD modules (IP67)	Local SmartWire-DT branch	IP67	<b>EU2A-SWD-PBWN</b> 174734
<b>SWD bus-termination resistor</b>				
	SmartWire-DT bus-termination resistor; to be connected to the SWD4-8MF2 blade terminal at the end of the SmartWire-DT ribbon cable	SWD bus-termination resistor for the SmartWire-DT ribbon cable	IP20	<b>SWD4-RC8-10</b> 116020
	SWD bus-termination resistor with IP67 degree of protection; to be connected to the SWD4-...LR5.. 5-pole round cable or directly to the SWD T connectors (IP67 I/O modules)	for M12 SWD bus termination (IP67)	IP67	<b>SWD4-RC5-10</b> 174754



Moeller series

	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Part no. Article no.
<b>Link</b>			
	For bridging open slots for SWD4-8SF2-5 external device plugs	-	<b>SWD4-SEL8-10</b> 116021
<b>RMQ</b>			
	For two M22-SWD-K22... function elements For two M22-SWD-NOP universal modules	-	<b>M22-SWD-A4</b> 116016
	For mounting 1 base-mounted function element	-	<b>M22-SWD-I1-LP01</b> 115990
	For mounting 2 base-mounted function elements	-	<b>M22-SWD-I2-LP01</b> 115991
	For mounting 3 base-mounted function elements	-	<b>M22-SWD-I3-LP01</b> 115992
	For mounting 4 base-mounted function elements	-	<b>M22-SWD-I4-LP01</b> 115993
	For mounting 6 base-mounted function elements	-	<b>M22-SWD-I6-LP01</b> 115994
	For bridging open slots on the PCB	-	<b>M22-SWD-SEL8-10</b> 116698
<b>Universal module</b>			
	For configured SWD modules on the SWD ribbon cable that have not yet been installed	IP20	<b>M22-SWD-NOP</b> 147637
	For configured SWD modules on the M22-SWD-I... PCB that have not yet been installed	IP20	<b>M22-SWD-NOPC</b> 147638
	For configured SWD modules on the SWD4-..LR5-2S round cable that have not yet been installed	IP67	<b>EU1M-SWD-NOP</b> 174716
<b>Tools for plugs</b>			
	Crimping tool for connecting external device plugs to the ribbon cable	-	<b>SWD4-CRP-1</b> 116025
	Crimping tool for contact making between blade terminals and ribbon cable	-	<b>SWD4-CRP-2</b> 116699
<b>Programming accessories</b>			
	For transferring user programs to a PLC and for SmartWire-DT network diagnostics	-	<b>EU4A-RJ45-CAB1</b> 106726
	For transferring user programs to a PLC and for SmartWire-DT network diagnostics	-	<b>EU4A-RJ45-USB-CAB1</b> 115735
	Programming and visualization software	-	<b>EASY-SOFT-PRO</b> 266040

**GALILEO visualization tool**



- HMI
- HMI/PLC
- PLC
- Industrial PC

**HMI and HMI/PLC**



**XV-303**

- 7"; 10.1"; 15.6"
- devices for front-mounting, plastic, capacitive multi-touch

**XV-313**

- 7" and 10.1"
- devices for rear-mounting, plastic, capacitive multi-touch



**XV-363**

- 5.7"; 10.4"; 12.1"
- devices for front-mounting, metal, infrared touch



**XV-102**

- 3.5"; 5.7"; 7"
- devices for front-mounting, plastic, resistive

**XV-152**

- 5.7"; 8.4"; 10"
- devices for front-mounting, metal, resistive

**Industrial PC**



**XP-504**

- 10.1"; 15.6"; 21.5"
- devices for front-mounting, metal, capacitive multi-touch



**Pushbuttons, flush / extended**

IP66, IP67, IP69 – momentary / maintained



**Mushroom pushbuttons**

IP66, IP67, IP69 – momentary / maintained



**Double actuator pushbuttons**

IP66 – extended / flush



**4-position pushbuttons**

IP66



**Indicator lights, flush or extended**

IP66, IP67, IP69



**Illuminated pushbuttons, flush or extended**

IP66, IP67, IP69 – momentary / maintained



**Potentiometers**

IP66 – selectable resistance value



**Selector switches / illuminated selector switches**

IP66



**Key-operated buttons**

IP66 – momentary / maintained 2/3 positions



**Joystick**

IP66 – momentary / maintained 2 or 4 positions horizontal or vertical



**Pushbuttons, flush**

IP66, IP67, IP69 – momentary / maintained



**Indicator lights, flush**

IP66, IP67, IP69



**Illuminated pushbuttons, flush**

IP66, IP67, IP69 – momentary / maintained



**Potentiometers**

IP66 – selectable resistance value



**Selector switches / illuminated selector switches**

IP66



**Key-operated buttons**

IP66 – momentary / maintained 2/3 positions



**Joystick**

IP66 – momentary / maintained 2 or 4 positions horizontal or vertical

**Emergency-stop/ emergency switching-off buttons**



**Mushroom-shaped, 30 mm**

IP66, IP69 pull- or turn-to-release illuminated/non-illuminated



**Mushroom-shaped, 38 mm**

IP66, IP69 pull- or turn-to-release illuminated/non-illuminated



**Palm shaped 45 and 60 mm**

IP66, IP69 pull- or turn-to-release, mechanical switch-position indicator

**Bulkhead interfaces**



**for USB 3.0**  
IP65 with closed cover  
IP20 open



**RJ45 cat 5e**  
IP65 with closed cover  
IP20 open, with plug connected

**Contact and LED elements**



For front and base mounting, screw/spring-loaded terminals, LED elements

**Self-monitoring contacts (SMC)**



Single-channel, dual-channel, dual channel with signaling contact, for front and base mounting

**Contact and LED elements, self-monitoring contacts (SMC), Flat Rear**



For front mounting, Cage Clamp / push-in, LED elements

**SmartWire-DT connections**



For front and base mounting, with and without LED



**Pushbuttons, flush**  
IP66, IP67, IP69 (at the front), IP65 (at the rear) momentary / maintained



**Illuminated pushbuttons, flush**  
IP66, IP67, IP69 (at the front), IP65 (at the rear) momentary / maintained



**Indicator lights, flush**  
IP66, IP67, IP69 (at the front), IP65 (at the rear)



**Selector switches**  
IP69 (at the front), IP65 (at the rear)



**Key-operated pushbuttons**  
IP66 (at the front) IP65 (at the rear)



**Emergency-stop/emergency switching-off buttons**



**Pushbuttons, flush**  
IP66, IP67, IP69 (at the front), IP65 (at the rear) momentary / maintained



**Illuminated pushbuttons, flush**  
IP66, IP67, IP69 (at the front), IP65 (at the rear) momentary / maintained



**Indicator lights, flush**  
IP66, IP67, IP69 (at the front), IP65 (at the rear)

**FAK switches**

**Foot and palm switches**



IP67, IP69 momentary

**Emergency-stop/emergency switching-off buttons**



IP66, IP67, IP69 tamper-proof maintained

**Encoders**



**Encoders**  
IP65 with confirmation function, adjustable 16-bit value range

**Signal towers**

**IP66 complete devices**



**Continuous light modules, flashing light modules and acoustic modules**



**Base modules**



**RMQ 16 pilot devices**

**Indicator lights, illuminated pushbuttons, pushbuttons**



IP65 – flush / extended 18 x 18 mm / 25 x 25 mm

**Illuminated selector switches**



IP65 momentary / maintained 2 / 3 positions 18 x 18 mm / 25 x 25 mm

**Emergency-stop/emergency switching-off buttons**



IP65, 25 x 25 mm illuminated / non-illuminated

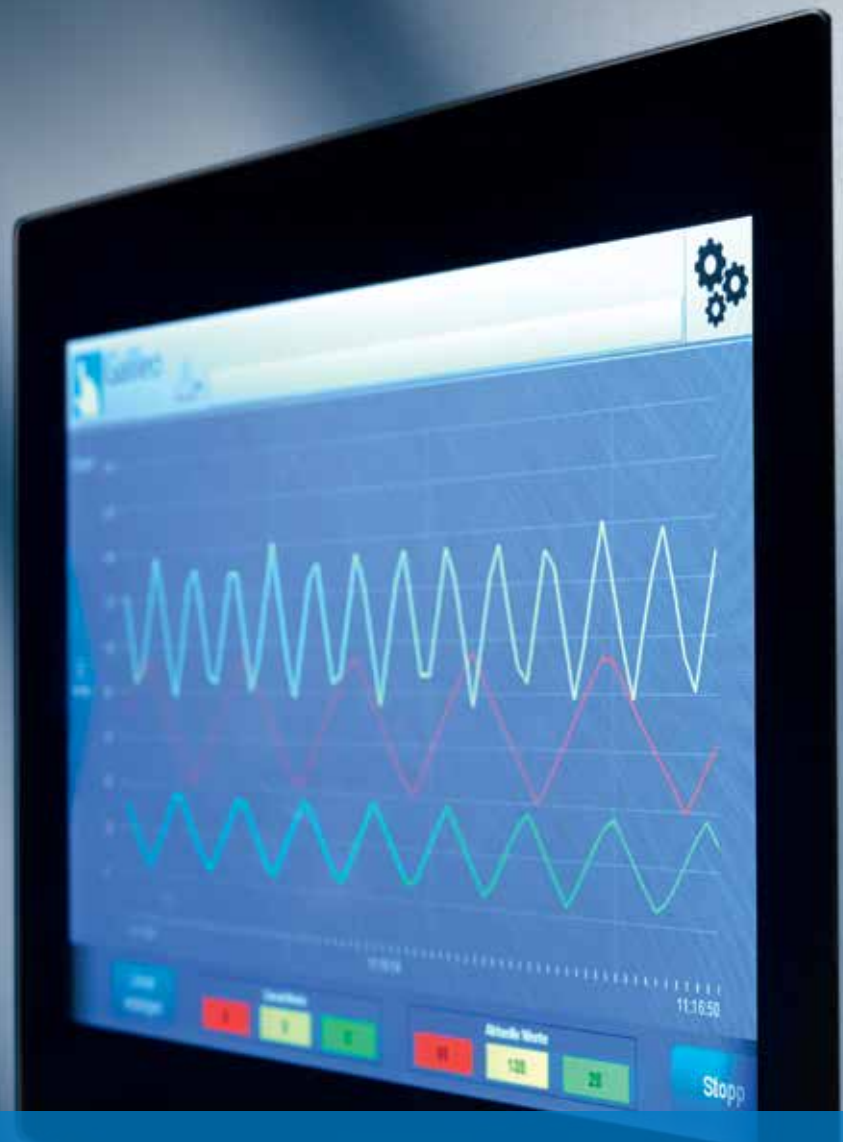
**Contact elements**

N/C / N/O terminal connection



Screw connection via screw adapter for N/C, N/O and lamp sockets

# Meeting the demands of the next generation. The future of machine operation.



In line with the current trend towards digitalization, the operating and communication levels of machines are becoming ever more important. The next generation of machine operators and entrepreneurs already have different expectations when it comes to the operating level: Apart from design aspects, user acceptance of the entire machine now depends on features such as high-resolution graphics, gesture control and the integration of mobile display devices.

Eaton will support you along the way, from the design of the operating concept all the way to implementation. Our innovative XV300 touch display not only offers the same ease of use as a smartphone, but it can also be connected to smart factories or the cloud via the OPC UA industrial standard.

Pilot devices continue to be indispensable for many core functions. With their high-quality design and larger size, they make it possible to implement attractive machine designs that complement other types of input devices.





**40 %**  
of people aged  
32 to 45 believe  
that they use better  
IT tools at home than at  
work.



**Slimmer, sleeker and more striking than ever**

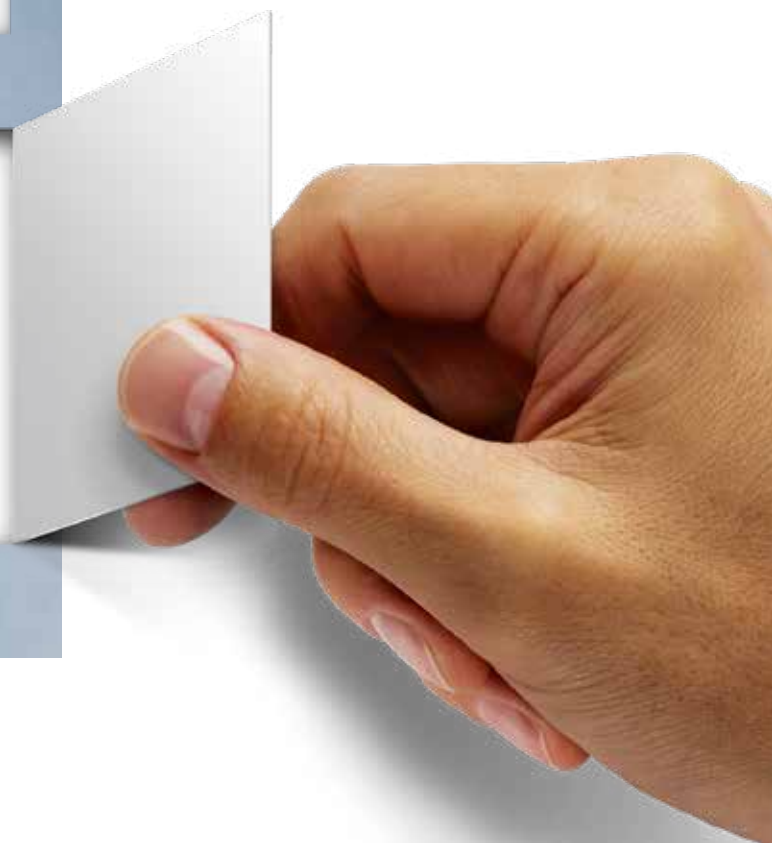
The new premium design of Eaton's XV300 HMIs and RMQ-Titan pilot devices adds value to your machine. The XV300 HMI for rear mounting will merge with the body of the machine to form a single unit. And its premium black finish will catch everyone's eye.

Since pilot devices frequently control the core functions of a machine, they are usually prominently positioned. In order to make them stand out and meet the demands for innovative design, Eaton has equipped its RMQ-Titan pilot devices with larger, extremely flat front elements featuring a metallic surface. Update the look and feel of your machine with the proven and versatile devices from our RMQ family.

**The future of machine operation**

Intuitive user guidance, precise gesture control, integration of multimedia elements – the latest generation of Eaton devices offers the same ease of use that you've come to expect from your smartphone or tablet.

Role-based operating concepts open up new possibilities for machine builders and end customers when it comes to human-machine interaction. For example, you can determine who can see what, where and on which visualization device, and what types of interventions users are able to perform.



Find out more about the latest trends in machine operation at [Eaton.com/HMI](http://Eaton.com/HMI).

# Flexible machine control and operation

## Visualization and control

Our new HMI devices are seamlessly integrated into Eaton's overall machine control concept.

The touch panels of the XV100 and XV300 series can either be used as HMIs only or as HMI/PLCs with CODESYS programming. Our latest generation of devices also includes the ultra-fast and compact XC300 controllers, as well as the XN300 remote I/Os. All devices can be connected by means of various fieldbus types. And the XP500 industrial PC complements this extensive portfolio.

## Pilot devices – design is increasingly important

Eaton launched its new RMQ Flat Design series to meet customer demands for slimmer pilot devices with a premium appearance. The new RMQ-Titan Flat Design front elements are not only stylish to look at, but are also rugged and highly functional. In addition, the easy-to-install RMQ-AFX mounting module secures the pilot devices in place and ensures easy installation.



## Stylish, sturdy and efficient

With the practical all-in-one devices of the RMQ *compact* solution, the cables, connectors and housings are already integrated. Thanks to their high degree of protection at the front (up to IP69K) and the back (IP65), the devices are fully protected against dirt and liquids. In fact, they can even be directly installed in woodworking or metalworking machinery without the need for any additional enclosures. A cost-effective solution, from project planning through ordering and warehousing all the way to assembly.





# Automation and visualization



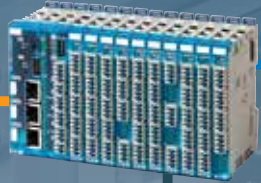
XV300 HMI



XV300 HMI/PLC



XP500 industrial PC



XC300 PLC



XC152 compact PLC



XC300 PLC



XN300 remote I/O



XN300 remote I/O

Operation & visualization

## Command and signaling

High degree of protection at the front (of up to IP69K)



Flat Front



Flat Front



RMQ-Titan



RMQ-Titan

All-around protection: up to IP69K at the front, IP65 at the back



RMQ compact solution



RMQ compact solution



Signal tower



Surface-mounting enclosure

SWD I/O modules



Safety Technology



easySafety

## Safety



Emergency-stop buttons

Any I/O

— Ethernet    — CAN    — SWD    — Wiring    — Modbus TCP/IP



## GALILEO – visualization at a whole new level



Eaton's powerful and comprehensive GALILEO visualization program can be used to configure any device from the XV and XP touch panel families.

The powerful and intuitive GALILEO project planning tool is easy to master, while also meeting all the requirements of on-site machine operation. This Eaton-developed visualization software has been designed to meet the needs of any industry and offers integrated project planning for all XV devices and PC runtime solutions. Project engineers have all GALILEO functions at their disposal, without any limitations regarding screens or nested variables.

GALILEO WEB is an integral part of GALILEO, making it possible to create HTML5-based web visualizations with one simple click, even for users without any programming knowledge. Accessing the XV visualization from any remote device, such as a PC, tablet or laptop, is therefore quick and easy.







**Easy and intuitive to use and test**

- An intuitive and powerful project planning tool
- Reduce the project planning and commissioning times by simulating the project on a PC
- All projects are fully forward-compatible, thereby protecting your investment in the long run
- All functions are available without any limitations regarding the number of nested variables or images



**Tailored to the needs of the international machine building sector**

- Pre-defined, language-specific keypad configurations
- Automatic online language switching if a different language is selected
- Option to change runtime-related units (e.g. from °C to °F or from cm to inches)
- Unicode support (including Asian character sets)
- The Excel text import/export option enables the creation of error-free translations



**Wide range of communication options**

- The protocols of most control systems will GALILEO to be used in conjunction with PLC systems from other manufacturers
- Communication with CODESYS-V2 and CODESYS-V3 controllers
- Easy import of PLC variables in XML format
- Secure and easy connection to the control level and to Office environments
- Remote client/server and OPC client
- Option to connect a webcam
- Cloud communication



**Additional GALILEO highlights**

- Integrated web visualization
- The integrated video player can play MPEG-4 videos
- Graphics can be resized without loss of quality (scalable vector graphics)
- Design features such as styles, color gradients, semi-transparency and full transparency
- Gesture controls (swipe, scroll, zoom)
- Object groups can be reused
- Viewing window for easy scrolling through sub-screens that are too large to be displayed at once
- Supports switching between 16:9 and 4:3 aspect ratios
- Single-line and multi-line alarm messages with integrated variables
- Variables, objects, bitmaps and styles can be copied between projects

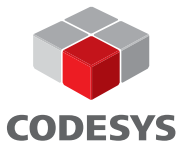
**The right visualization software for every device**

	XV-102-A...	XV-102-H...	XV-102-B/-D/-E-...	XV-112...	XV-152...	XV-3x3-...	XV(S)-4...	XC-152-...	XP-503-...-1B
GALILEO 8	•	•	•	•	•		•	•	•
GALILEO 10		•	• <sup>1</sup>	•	•	•	• <sup>2</sup>	•	•
GALILEO 10 web server						•			•

<sup>1</sup> except for the XV-102 with monochrome 3.5" display    <sup>2</sup> except for all XV(S) devices with 256 colors

Description	Part no. Article no.
<b>GALILEO</b>	
<b>Licensing certificate for GALILEO visualization software</b> MS Windows™-based intelligent and intuitive visualization tool, single-user license	<b>SW-GALILEO-S</b> 171500
<b>Licensing certificate for GALILEO visualization software</b> MS Windows™-based intelligent and intuitive visualization tool, multi-user license	<b>SW-GALILEO</b> 140379
<b>GALILEO Open license for PC</b> For continuous, unrestricted use of the GALILEO runtime system on a standard PC	<b>LIC-GALILEO-OPEN-PC</b> 140385





# XV HMI/PLC: Systematic visualization and control



All devices can also be used in portrait mode

With the XV system of HMI/PLC touch panels, Eaton offers machine builders and system integrators a coordinated product range that can be precisely matched to various performance classes.

In combination with powerful processors, the intelligent implementation of the PLC runtime as part of a lean and efficient embedded platform strategy leads to modern, scalable and cost-effective automation concepts. The use of the CODESYS programming standard and the comprehensive interfaces illustrate the openness of the system. Display sizes from 3.5" to 15", plastic and metal versions, and the option of using capacitive, resistive, or infrared touch panels allow for an extremely wide range of applications.

A unique technology: XV panel with integrated SmartWire-DT master interface. The control wiring has been replaced by a single cable, which makes it easy to connect the switching, signaling and operating devices as well as any sensors and actuators outside the control panel.



# XV300 – the new face of modern industry

Intuitive user guidance, precise gesture control, multimedia integration – industrial applications that offer the same ease of use that we have come to expect from smartphones and tablets.

The new XV300 panels with capacitive multi-touch or infrared technology are not only easy to operate, but are also redefining the possibilities of human-machine interaction. Modern, high-resolution devices that meet your needs – even in harsh industrial environments.

## General features

- Can be used either in portrait or landscape mode
- Removable SD card
- Interface combinations: 1 or 2 Ethernet interfaces 10/100Mbps, CAN, PROFIBUS-DP/MPI, SmartWire-DT, RS485, RS232
- Integrated web server
- HMI / HMI/PLC functionality
- High system performance and a powerful graphics processing unit
- PLC function programmable with CODESYS V2 and V3
- Visualization via GALILEO, CODESYS or Visual Designer
- UL approval
- Marine approval for the 7" and 10" XV-303/313 devices



### XV-303

- Capacitive multi-touch panel for front mounting
- Display sizes: 7", 10.1" and 15" in 16:9 format
- Flat front panel made from non-reflective tempered glass
- Plastic housing
- Interfaces: 1 or 2 x Ethernet, 1 x CAN, 1 x RS232, 1 x RS485
- Optional: 1 x Profibus-DP, SmartWire-DT



### XV-313

- Capacitive multi-touch panel for rear mounting
- Display sizes: 7" and 10.1" in 16:9 format
- Flat front panel made from non-reflective tempered glass
- Plastic housing with aluminum bezel
- Flush-mounted, resulting in a flat surface without any sharp edges
- Interfaces: 1 or 2 x Ethernet, 1 x CAN, 1 x RS232, 1 x RS485
- Optional: 1 x Profibus-DP, SmartWire-DT



### XV-363

- Infrared touch panel for front mounting
- Display sizes: 5.7", 10.4" and 12.1" in 4:3 format
- Laminated safety glass, non-reflective
- Metal housing with aluminum bezel
- The dimensions are identical to those of the XV(S)400 series
- PLC function can be added later by means of 181585 (LIC-PLC-A)
- Communication options: 2 x Ethernet, 1 x CAN, 1 x RS232, 1 x RS485
- Optional: 1 x Profibus-DP



### SmartWire-DT on board

SmartWire-DT is an integral component of Eaton's automation concept, which is characterized by flexible solutions with fewer components and less engineering: SmartWire-DT supports the integration of the communication and I/O level directly into the control, display and switching devices. In addition to executing control commands, the PLC can thus directly access digital and analog data, from sensors all the way to circuit breakers. This eliminates the need for a separate gateway and I/O layer.

# XV100 – compact and powerful control devices

The **XV100** touchscreen panels are based on a common hardware platform. They are available with different housings and come with a wide range of interface options.

All devices are UL certified and are also suitable for marine applications. The touchscreen panels can either be used as control and display devices (HMI) only, or with additional PLC functionality.

## General features:

- Can be used either in portrait or landscape mode
- Removable SD card
- Multiple interface combinations are possible: CAN, PROFIBUS/MPI, SmartWire-DT, 1 x Ethernet interface 10/100 Mbps, RS485, RS232
- Integrated web server
- HMI / HMI/PLC functionality
- PLC function programmable with CODESYS V2 and V3
- Visualization via GALILEO or CODESYS TargetVisu
- UL approval



## XV-102

Resistive touchscreen panel in plastic housing with plastic bezel

- Display sizes: 3.5" and 5.7" in 4:3 format; 7" in 16:9 format
- Affordable devices that can be tailored to the needs of the application at hand, either as a simple HMI, an HMI/PLC, or with the option to add PLC functionality later on.
- Shallow mounting depth
- Marine approval

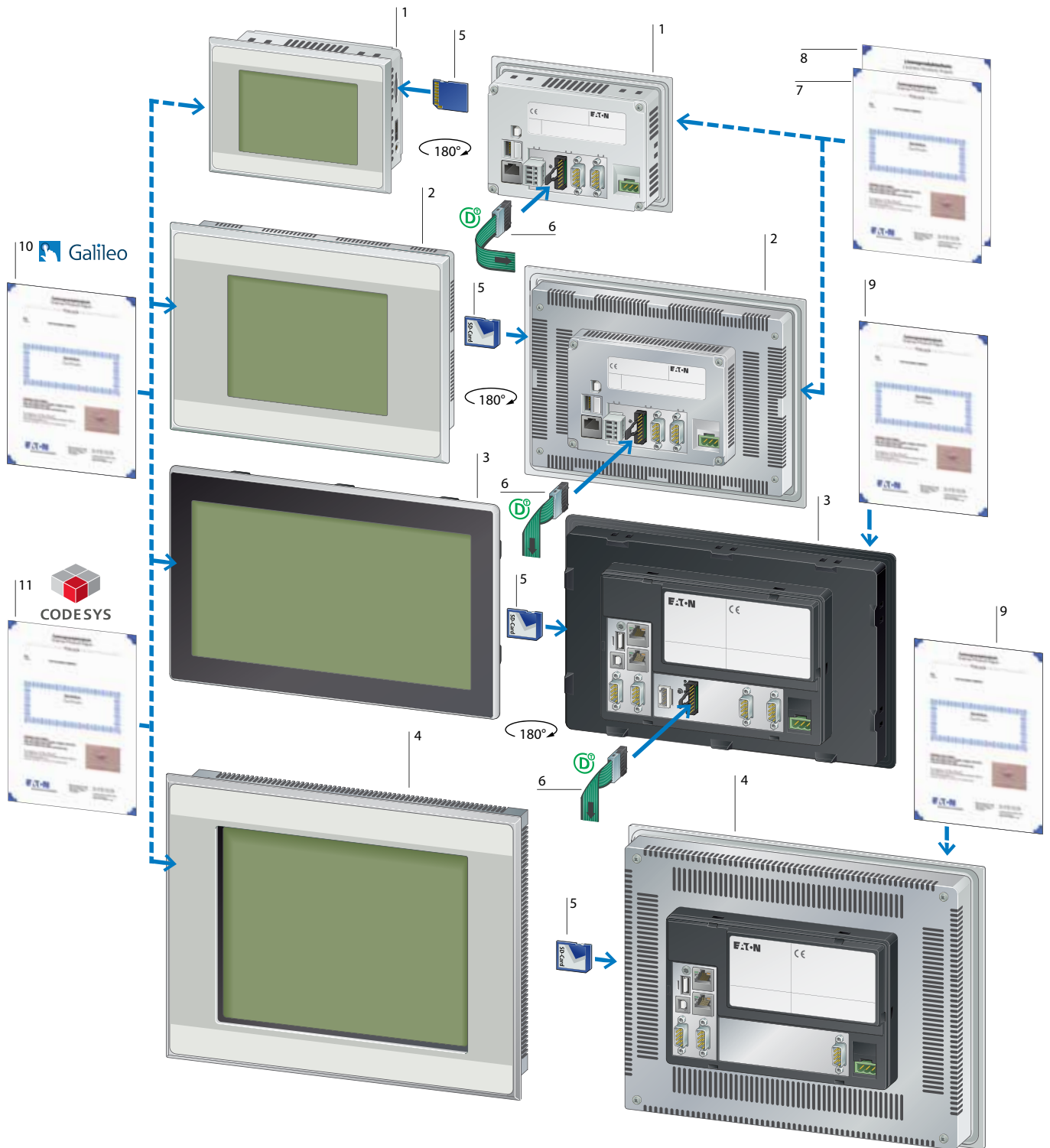


## XV-152

Resistive touch panel in metal housing with aluminum bezel

- Display sizes: 5.7"; 8.4"; 10.4" in 4:3 format
- For both HMI and HMI/PLC applications (the PLC functionality can also be added later)
- The dimensions are identical with those of the XV(S)400 devices






















- 1 XV-102 touch display with/without PLC, resistive touch 3.5", 5.7" in 4:3 format, 7" in 16:9 format
- 2 XV-152 touch display with/without PLC, resistive touch 5.7", 8.4" and 10.4" in 4:3 format
- 3 XV-303/XV-313 touch display with/without PLC, capacitive multi-touch 7", 10.1" and 15.6" in 16:9 format
- 4 XV-363 touch display with/without PLC, infrared touch 5.7", 10.4" and 12.1" in 4:3 format
- 5 SD memory card

- 6 SmartWire-DT
- 7 PLC licensing certificate for XV-1x2
- 8 Licensing certificate for XV-1x2 communication expansion
- 9 PLC licensing certificate for XV-3x3
- 10 GALILEO licensing certificate
- 11 XSOFT-CODESYS-2/3 licensing certificate




# XV300

HMI/PLC touch display

PLC license		Built-in interfaces									Part no.	Article no.	
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB-Host2.0	1 x USB device	1 x CANopen®/easyNet	1 x PROFIBUS/MPPI	1 x SmartWire-DT			
<b>XV-303 for front mounting</b> Windows Embedded Compact 7 Pro Approvals: cUL 61010-2-201, 7" and 10" devices: marine approvals, BV, LR SD card slots: 1 Resolution 7" and 10.1": 1024 x 600 pixels Resolution 15.6": 1366 x 768 pixels Capacitive multi-touch (PCT), number of colors: 16 million													
<b>7", front type: anti-glare tempered glass with plastic bezel</b>													
	can be retrofitted with article no. 181585 LIC-PLC-A	✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-303-70-B00-A00-1B</b>	179647	
		-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-303-70-C00-A00-1B</b>	179648	
		✓	-	✓	✓	✓	✓	✓	✓	-	<b>XV-303-70-B02-A00-1B</b>	179651	
		-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-303-70-C02-A00-1B</b>	179652	
	includes PLC license		✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-303-70-B00-A00-1C</b>	179649
			-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-303-70-C00-A00-1C</b>	179650
			✓	-	✓	✓	✓	✓	✓	✓	-	<b>XV-303-70-B02-A00-1C</b>	179653
			-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-303-70-C02-A00-1C</b>	179654
			✓	-	✓	✓	✓	✓	✓	-	✓	<b>XV-303-70-BE0-A00-1C</b> 	179655
			-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-303-70-CE0-A00-1C</b> 	179656
			✓	-	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-70-BE2-A00-1C</b> 	179657
			-	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-70-CE2-A00-1C</b> 	179658
<b>10.1", front type: anti-glare tempered glass with plastic bezel</b>													
	can be retrofitted with article no. 181585 LIC-PLC-A	✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-303-10-B00-A00-1B</b>	179659	
		-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-303-10-C00-A00-1B</b>	179660	
		✓	-	✓	✓	✓	✓	✓	✓	-	<b>XV-303-10-B02-A00-1B</b>	179663	
		-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-303-10-C02-A00-1B</b>	179664	
	includes PLC license		✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-303-10-B00-A00-1C</b>	179661
			-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-303-10-C00-A00-1C</b>	179662
			✓	-	✓	✓	✓	✓	✓	✓	-	<b>XV-303-10-B02-A00-1C</b>	179665
			-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-303-10-C02-A00-1C</b>	179666
			✓	-	✓	✓	✓	✓	✓	-	✓	<b>XV-303-10-BE0-A00-1C</b> 	179667
			-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-303-10-CE0-A00-1C</b> 	179668
			✓	-	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-10-BE2-A00-1C</b> 	179669
			-	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-10-CE2-A00-1C</b> 	179670
<b>15.6", front type: anti-glare tempered glass in die-cast aluminum enclosure</b>													
	can be retrofitted with 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-303-15-C00-A00-1B</b>	191071	
		-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-303-15-C02-A00-1B</b>	191073	
	includes PLC license		-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-303-15-C00-A00-1C</b>	191072
			-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-303-15-C02-A00-1C</b>	191074
			-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-303-15-CE0-A00-1C</b> 	191075
			-	✓	✓	✓	✓	✓	✓	✓	✓	<b>XV-303-15-CE2-A00-1C</b> 	191076






PLC license		Built-in interfaces									Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB-Host 2.0	1 x USB device	1 x CANopen®/easyNet	1 x PROFIBUS/MPPI	1 x SmartWire-DT		
<b>XV-313 for rear mounting</b> Windows Embedded Compact 7 Pro, approvals: cUL 61010-2-201, marine approvals SD card slots: 1 Resolution: WSVGA 1024 x 600 pixels capacitive multi-touch (PCT), number of colors: 16 million Front type: anti-glare tempered glass without bezel Can be installed in walls with a thickness of 1.5 mm												
<b>7"</b>												
	includes PLC license	✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-313-70-B00-A00-1C</b>	179671
		-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-313-70-CEO-A00-1C</b> 	191003
		-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-313-70-C00-A00-1C</b>	191059
<b>10.1"</b>												
	includes PLC license	✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-313-10-B00-A00-1C</b>	179672
		-	✓	✓	✓	✓	✓	✓	-	✓	<b>XV-313-10-CEO-A00-1C</b> 	191002
		-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-313-10-C00-A00-1C</b>	191060
		✓	-	✓	✓	✓	✓	✓	-	-	<b>XV-313-10-B00-A11-1C *</b>	197898

\*Can be installed in walls with a thickness of 2 mm







PLC license		Built-in interfaces									Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x CANopen®/easyNet	1 x USB device	1 x USB-Host 2.0	1 x PROFIBUS/MPPI	1 x SmartWire-DT		
<b>XV-363 for front mounting</b> Windows Embedded Compact 7 Pro, Approvals: cULus, Card slots: for SD card: 1 Resolution: 640 x 480 (5.7" and 10.4"); 800 x 600 (12.1") Infrared touch, number of colors: 65 k Front type: Laminated safety glass, non-reflective												
<b>5.7"</b>												
	can be retrofitted with article no. 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-363-57-C00-A00-1B</b>	197664
		-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-363-57-C02-A00-1B</b>	197667
<b>10.4"</b>												
	can be retrofitted with article no. 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-363-10-C00-A00-1B</b>	197665
		-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-363-10-C02-A00-1B</b>	197668
<b>12.1"</b>												
	can be retrofitted with article no. 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	<b>XV-363-12-C00-A00-1B</b>	197666
		-	✓	✓	✓	✓	✓	✓	✓	-	<b>XV-363-12-C02-A00-1B</b>	197669

# XV100

HMI / HMI/PLC touch display with PLC










	Screen diagonal Inch	PLC license	Built-in interfaces					Part no.	Article no.
			1 x RS232	1 x RS485	1 x USB-Host 2.0	1 x CANopen®/ easyNet	1 x PROFIBUS/MPPI		
<b>XV100 without PLC</b>									
Resistive touch Approvals cUL (UL508), marine approvals SD card slots: 1 1 x Ethernet 10/100 Mbps 1 x USB device									
Number of colors 32 grey levels									
	3.5	no PLC function possible	-	-	-	-	-	<b>XV-102-A0-35MQR-10</b>	141759
			-	-	-	-	✓	<b>XV-102-A2-35MQR-10</b>	141820
			✓	-	-	-	-	<b>XV-102-A3-35MQR-10</b>	141821
			-	✓	-	-	-	<b>XV-102-A4-35MQR-10</b>	141822
			✓	-	-	✓	-	<b>XV-102-A5-35MQR-10</b>	141823
Number of colors: 64 k									
	3.5	no PLC function possible	✓	-	-	-	-	<b>XV-102-H3-35TQRL-10</b>	171158
			-	✓	-	-	-	<b>XV-102-H4-35TQRL-10</b>	171159
	5.7		✓	-	✓	-	-	<b>XV-102-H3-57TVRL-10</b>	171160
			-	✓	✓	-	-	<b>XV-102-H4-57TVRL-10</b>	171161
			✓	-	✓	-	-	<b>XV-102-H3-70TWRL-10</b>	171162
7	-	✓	✓	-	-	<b>XV-102-H4-70TWRL-10</b>	171163		
<b>XV100 3.5"</b>									
Resistive touch, QVGA 320 x 240 pixels Approvals cUL (UL508), marine approvals SD card slots: 1 1 x Ethernet 10/100 Mbps 1 x USB device									
Number of colors 32 grey levels									
	included		-	-	-	-	-	<b>XV-102-B0-35MQR-10-PLC</b>	140012
			✓	-	-	-	-	<b>XV-102-B3-35MQR-10-PLC</b>	140013
			✓	-	✓	-	-	<b>XV-102-B5-35MQR-10-PLC</b>	140015
			-	✓	✓	-	-	<b>XV-102-B6-35MQR-10-PLC</b>	140016
			-	✓	-	✓	-	<b>XV-102-B8-35MQR-10-PLC</b>	140017
Number of colors: 64 k									
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT		-	-	-	-	-	<b>XV-102-B0-35TQR-10</b>	140007
			-	-	-	✓	-	<b>XV-102-B2-35TQR-10</b>	140008
			✓	-	-	-	-	<b>XV-102-B3-35TQR-10</b>	140009
			-	✓	-	-	-	<b>XV-102-B4-35TQR-10</b>	140010
			✓	-	✓	-	-	<b>XV-102-B5-35TQR-10</b>	140011
	included		-	-	-	-	-	<b>XV-102-B0-35TQR-10-PLC</b>	140018
			✓	-	-	-	-	<b>XV-102-B3-35TQR-10-PLC</b>	140019
			-	✓	-	-	-	<b>XV-102-B4-35TQR-10-PLC</b>	140020
			✓	-	✓	-	-	<b>XV-102-B5-35TQR-10-PLC</b>	140021
			-	✓	✓	-	-	<b>XV-102-B6-35TQR-10-PLC</b>	140022
			-	✓	-	✓	-	<b>XV-102-B8-35TQR-10-PLC</b>	140023
-	-	-	-	✓	<b>XV-102-BE-35TQRC-10</b> 	153524			





PLC license	Built-in interfaces							Part no.	Article no.	
	1 x RS232	1 x RS485	1 x CANopen@/easyNet	2 x CANopen@/easyNet (electrically isolated)	1 x USB-Host 2.0	1 x PROFIBUS/MPI	1 x SmartWire-DT			
<b>XV100 5.7"</b>										
Resistive touch, VGA 640 x 480 pixels Approvals cUL (UL508), marine approvals SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB device										
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	✓	-	-	<b>XV-102-D0-57TVR-10</b>	142530
		✓	✓	-	-	✓	-	-	<b>XV-102-D4-57TVR-10</b>	150620
		✓	✓	✓	-	✓	-	-	<b>XV-102-D6-57TVR-10</b>	142531
		✓	✓	-	-	✓	✓	-	<b>XV-102-D8-57TVR-10</b>	142532
	included	✓	✓	✓	-	✓	-	-	<b>XV-102-D6-57TVRC-10</b>	142533
		✓	✓	-	-	✓	✓	-	<b>XV-102-D8-57TVRC-10</b>	142534
		-	✓	✓	-	✓	-	✓	<b>XV-102-E6-57TVRC-10</b> 	153525
		-	✓	-	-	✓	✓	✓	<b>XV-102-E8-57TVRC-10</b> 	153526
<b>XV100 7"</b>										
Resistive touch, WVGA 800 x 480 pixels Approvals cUL (UL508), marine approvals SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB device										
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	✓	-	-	<b>XV-102-D0-70TWR-10</b>	142535
		✓	✓	-	-	✓	-	-	<b>XV-102-D4-70TWR-10</b>	150621
		✓	✓	✓	-	✓	-	-	<b>XV-102-D6-70TWR-10</b>	142536
		✓	✓	-	-	✓	✓	-	<b>XV-102-D8-70TWR-10</b>	142537
	included	✓	✓	✓	-	✓	-	-	<b>XV-102-D6-70TWRC-10</b>	142538
		✓	✓	-	-	✓	✓	-	<b>XV-102-D8-70TWRC-10</b>	142539
		-	✓	✓	-	✓	-	✓	<b>XV-102-E6-70TWRC-10</b> 	153527
		-	✓	-	-	✓	✓	✓	<b>XV-102-E8-70TWRC-10</b> 	153528

# XV150

HMI/PLC touch display with PLC

	PLC license	Built-in interfaces					Part no.	Article no.
		1 x RS232	1 x RS485	1 x CANopen®/easyNet	1 x PROFIBUS/MPPI	1 x SmartWire-DT		
<b>XV150 5.7"</b>								
Resistive touch, VGA 640 x 480 pixels, recommended cutout diameter 198 x 142 mm Approvals cUL (UL508), SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB-Host 2.0 1 x USB device								
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	-	<b>XV-152-D0-57TVR-10</b>	150525
		✓	✓	-	-	-	<b>XV-152-D4-57TVR-10</b>	150526
		✓	✓	✓	-	-	<b>XV-152-D6-57TVR-10</b>	150527
		✓	✓	-	✓	-	<b>XV-152-D8-57TVR-10</b>	150528
	included	✓	✓	✓	-	-	<b>XV-152-D6-57TVRC-10</b>	150529
		✓	✓	-	✓	-	<b>XV-152-D8-57TVRC-10</b>	150600
		-	✓	✓	-	✓	<b>XV-152-E6-57TVRC-10</b> 	166700
		-	✓	-	✓	✓	<b>XV-152-E8-57TVRC-10</b> 	166701
<b>XV150 8.4"</b>								
Resistive touch, VGA 640 x 480 pixels, recommended cutout diameter 261 x 194 mm Approvals cUL (UL508), SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB-Host 2.0 1 x USB device								
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	-	<b>XV-152-D0-84TVR-10</b>	150601
		✓	✓	-	-	-	<b>XV-152-D4-84TVR-10</b>	150602
		✓	✓	✓	-	-	<b>XV-152-D6-84TVR-10</b>	150603
		✓	✓	-	✓	-	<b>XV-152-D8-84TVR-10</b>	150604
	included	✓	✓	✓	-	-	<b>XV-152-D6-84TVRC-10</b>	150605
		✓	✓	-	✓	-	<b>XV-152-D8-84TVRC-10</b>	150606
		-	✓	✓	-	✓	<b>XV-152-E6-84TVRC-10</b> 	166702
		-	✓	-	✓	✓	<b>XV-152-E8-84TVRC-10</b> 	166703
<b>XV150 10.4"</b>								
Resistive touch, VGA 640 x 480 pixels, recommended cutout diameter 329 x 238 mm Approvals cUL (UL508), SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB-Host 2.0 1 x USB device								
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	-	<b>XV-152-D0-10TVR-10</b>	150607
		✓	✓	-	-	-	<b>XV-152-D4-10TVR-10</b>	150608
		✓	✓	✓	-	-	<b>XV-152-D6-10TVR-10</b>	150609
		✓	✓	-	✓	-	<b>XV-152-D8-10TVR-10</b>	150610
	included	✓	✓	✓	-	-	<b>XV-152-D6-10TVRC-10</b>	150611
		✓	✓	-	✓	-	<b>XV-152-D8-10TVRC-10</b>	150612
		-	✓	✓	-	✓	<b>XV-152-E6-10TVRC-10</b> 	166704
		-	✓	-	✓	✓	<b>XV-152-E8-10TVRC-10</b> 	166705

	Description	for use with	Part no.	Article no.
<b>Memory cards</b>				
	SD memory card with at least 1 GB without operating system	XV-3... XV-1..	<b>MEMORY-SD-A2-S</b>	181638
	SD memory card with at least 256 MB without operating system	XV-3... XV-1..	<b>MEMORY-SD-A1-S</b>	139807
	Micro-SD card with at least 2 GB, with SD adapter without operating system	XV-3... XV-1... XC-3... EASY-E4..	<b>MEMORY-SDU-A1</b>	191087
<b>XV licensing certificates</b>				
	Licensing certificate for PLC upgrade	XV-3.3-...-...-1B	<b>LIC-PLC-A</b>	181585
	Licensing certificate for PLC upgrade	XV-1...-B... and XV-1...-D...	<b>LIC-PLC-MXP-COMPACT</b>	142581
	Licensing certificate 40 points	XV-1... XV-4... XVS-4...	<b>LIC-OPT-1ST-LEVEL</b>	140391
	Licensing certificate 80 points	XV-1... XV-4... XVS-4...	<b>LIC-OPT-2ND-LEVEL</b>	140392

**Notes**

**Licensing for XV300 panel**

To add the PLC function to the XV-3.3-...-...-1B panel, an additional license must be purchased. The LIC-PLC-A licensing certificate is required for this purpose.

**Licensing for XV100 panel**

The panels of the XV100 device family come with a set number of license points that are stored in the device. These license points are required in order to perform certain device functions:

- XSOFT-CODESYS runtime for the PLC function (not possible on the XV-102-A... and XV-102-H...)
- GALILEO runtime for visualization
- Communication interfaces (e. g. Ethernet, CANopen, Siemens MPI)

The standard devices are supplied with the following default license points:

- 140 license points: XV100 (without PLC function)
- 240 license points: XV100 with PLC function

Additional license points must be purchased if the license points of the device are not sufficient for the required functions, or if the XV panel is to be upgraded with the PLC function. One or more licensing certificates are required for this purpose. The following licensing certificates are available:

- Licensing certificate for the PLC function: To add the PLC function to the XV-1...-B... or XV-1...-D... devices, an additional license must be purchased. The LIC-PLC-MCP-COMPACT licensing certificate is required for this purpose.
- Licensing certificates for extended communication with GALILEO (LIC-OPT-...)

**Determining the required license points**

Add the necessary license points for each visualization/communication function. Communication options for several devices with the same protocol only have to be counted once. From this number, subtract the points already stored in the device (e.g. 140 points). The result indicates the number of the license points that need to be installed by adding licensing certificates for the communication options (LIC-OPT-...).

Detailed information and examples are available at [www.eaton.eu/XV](http://www.eaton.eu/XV) under the "Licensing" tab in the section on XV devices



## XP500 industrial PC with multi-touch panel

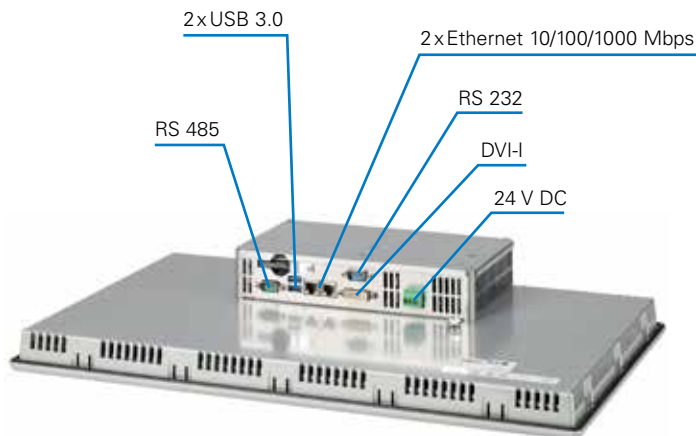


Two-finger zooming, scrolling and swiping – introducing intuitive operation to the industrial world.

With the XP500 series, which was developed specifically for the needs of machine builders and system integrators, Eaton has adapted the modern user interfaces and habits of consumer electronics to the world of automation. The intuitive projected capacitive touch (PCT) technology ensures ease of use, while the multi-touch feature enables users to operate the functions keys on the display intuitively, either with several fingers or with both hands.

The devices are available with widescreen displays in three sizes: 10.1", 15.6" and 21.5". They feature a slim, modern design with a non-reflective glass front. Thanks to their robust, scratch-resistant front and the open Windows operating system, the IPC panels can be used in almost all areas of machine building and system integration.

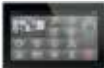







**XP-504**

- An elegant, sleek design
- Sturdy glass front with protective aluminum bezel
- Industrial capacitive multi-touch (PCT)
- Widescreen displays
- Tempered single-pane safety glass with anti-glare coating
- Powder-coated die-cast aluminum housing for flush mounting
- Passive cooling

High degree of availability thanks to the **Eaton ProtectMode**, even without a UPS. Thanks to the Eaton Protect Mode and two separate mass memory devices, drive C (an internal solid-state drive) can be protected against data corruption. Process data can be written to the second mass memory device. The devices are UL are also suitable for marine applications. All three device sizes are also available with GALILEO or Visual Designer runtime license.

	Display	Resolution	Installation dimensions	Part no. Article no.
<b>XP-504-xx-A10-</b>				
DualCore CPU 1,60 GHz powerful integrated graphics processor 8 GB RAM 64 GB mSATA 8-GB SD card 2x Ethernet 10/100/1000 Mbps 4x USB 3.0 1 x RS232/RS422/485 1 x DP 1 x HDMI Windows 10 Enterprise LTSC GALILEO Open runtime license CE, cUL508 cUL Class 1 Div 2				
	10.1" widescreen	1024 x 600	261 x 164 mm	<b>XP-504-10-A10-A01-2B</b> 199996 <b>XP-504-10-A10-A01-2V <sup>1)</sup></b> 199997
	15.6" widescreen	1366 x 768	388 x 239 mm	<b>XP-504-15-A10-A01-2B</b> 199998 <b>XP-504-15-A10-A01-2V <sup>1)</sup></b> 199999
	21.5" widescreen	1920 x 1080	519 x 313 mm	<b>XP-504-21-A10-A01-2B</b> 360002 <b>XP-504-21-A10-A01-2V <sup>1)</sup></b> 360003

**Note:** <sup>1)</sup> Visual Designer runtime license

Description	for use with	Part no.	Article no.
<b>Memory card</b>			
 SD memory card with min. 1 GB Without operating system	XP-504-...	<b>MEMORY-CFAST-A1-S</b>	181638



## Proven and versatile: RMQ-Titan pilot devices

Product selection made easy



Click here for the pushbutton  
configurator  
[www.eaton.eu/config/rmq](http://www.eaton.eu/config/rmq)

Combining a modern design with optimum functionality. The perfect look for use in machines and systems. The ergonomic pushbuttons are adapted to the shape of a fingertip, making them even easier to operate.

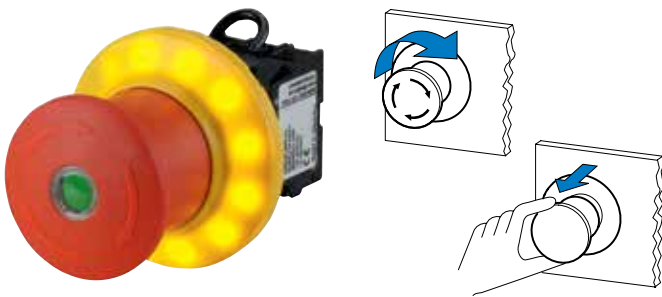
Thanks to their high degree of protection (IP67/IP69K), the RMQ-Titan pilot devices are suitable for a wide range of applications. The RMQ *compact* solution series not only features a compact design, but also a very high degree of protection (IP65) at the rear.

The emergency-stop buttons of the RMQ-Titan series enable safe machine operation. They offer a high degree of flexibility and can also be used for emergency switching-off applications. The palm-shaped and mushroom-shaped models are available in diameters of 30 mm, 38 mm, 45 mm and 60 mm.

Thanks to their comprehensive approvals, including marine approvals, the pilot devices of the RMQ family are suitable for global use.

With SmartWire-DT, the RMQ-Titan pilot devices can be easily and cleverly connected.





### Safe shutdown with RMQ-Titan

The emergency-stop buttons are available either with or without key, with pull-to-release or turn-to-release mechanism, non-illuminated, and illuminated with standard LEDs or a mechanical switch position indicator (green/red) at the center of the pushbutton. The self-monitoring contact elements ensure comprehensive operational safety, even in the event of faulty installation or if actuated with excessive force.



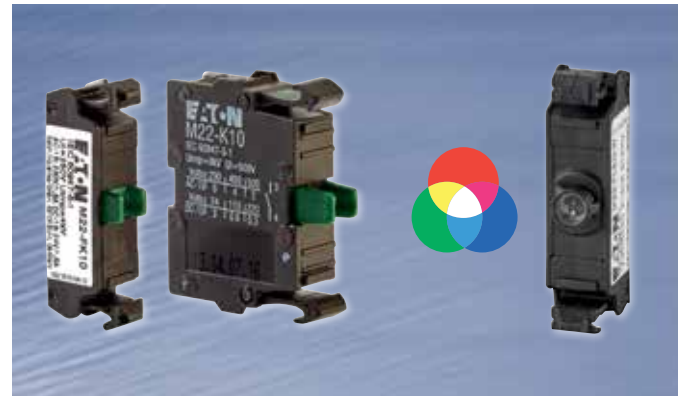
### For direct installation in machine rooms

The devices of the RMQ *compact* solution series already come with pre-installed cables, connectors and housings. This all-in-one solution features a special enclosure for protection against dust, fine particles and liquids with IP67/IP69 degree of protection at the front and IP65 at the rear. The devices are therefore suitable for use directly in machine rooms without any additional housing.



### RMQ-Titan flat pushbuttons

The sleek pushbuttons of the RMQ-Titan series contribute to a cutting-edge machine design that can be tailored to the needs of different areas of application. The flat, modular pushbuttons are the perfect match for the flat contact and LED elements of the RMQ-Titan series. The flush transition between actuator and bezel makes them ideal for cutting-edge applications.



### Flat and modular: Flat Rear elements

With a mounting depth of only 30 mm, these sleek contact and LED elements save space on small control panels. The series stands out for its unique modular design in terms of the available control elements, contacts, LED colors and accessories. The flat multi-color LED elements allow for new intelligent machine operating concepts.



### Fast and flexible labeling – the label editor

With the label editor function in the pushbutton configurator, you can easily create company- and project-specific labels, logos or images for the RMQ button plates and housings.



### Compelling all around

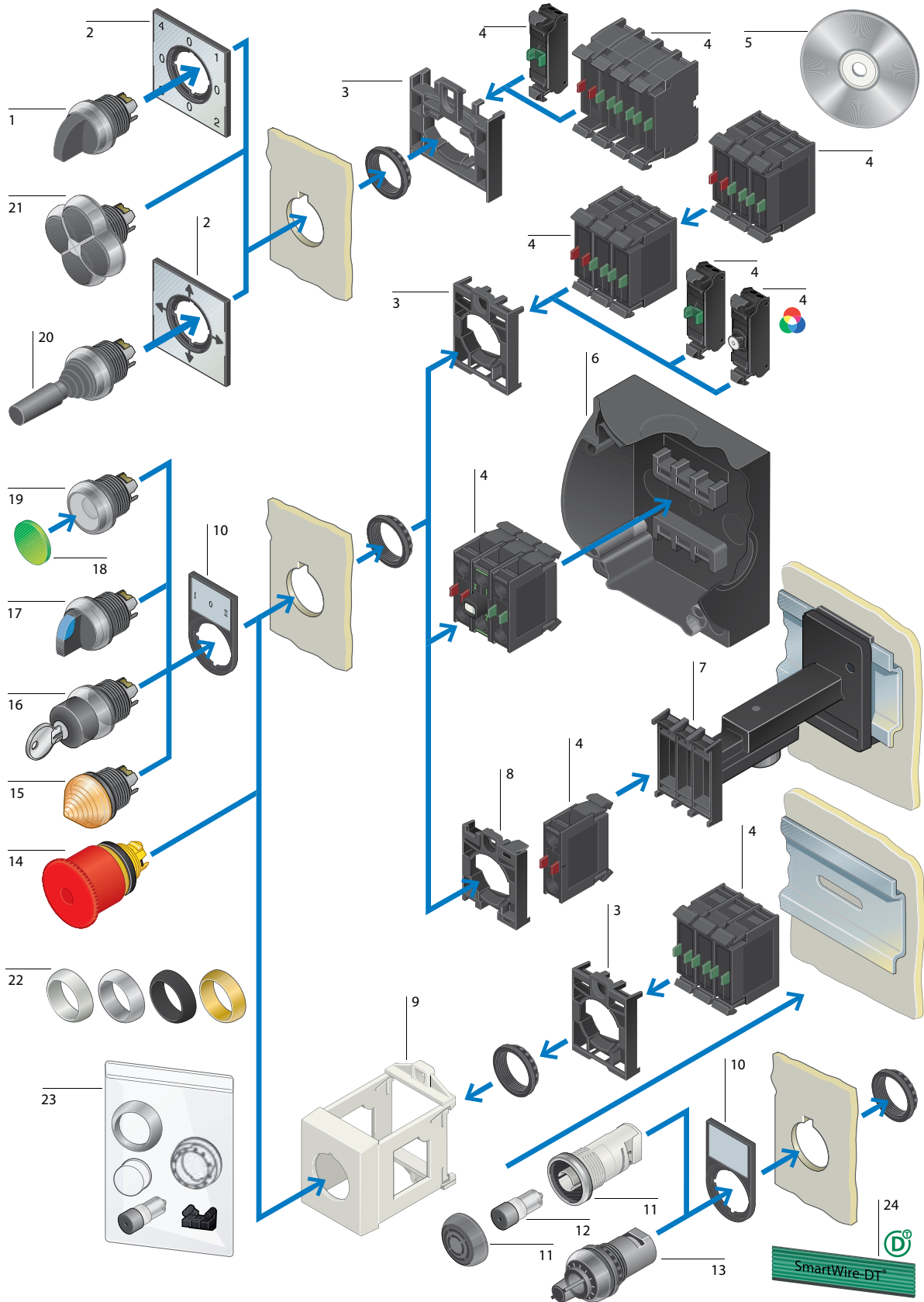
Our new emergency-stop button combines functionality and safety with a unique and space-saving design. Thanks to the innovative 360° illuminated RGB LED ring with seven colors, the pushbutton can be adapted to a broad range of applications. And the high degree of protection (IP69) means that it can be used in almost all environments. This compact emergency-stop button is available in diameters of 22 mm and 30 mm. With a size of only 30 mm, the pushbutton is the perfect match for cutting-edge panels, machines and many other applications.



# RMQ-Titan pilot devices















M22 system overview




































Moeller series



- |   |                          |    |                          |    |  |    |                           |
|---|--------------------------|----|--------------------------|----|--|----|---------------------------|
| 1 | 4-way selector switches  | 7  | Telescopic clip          | 13 | Potentiometers                                 | 19 | Pushbuttons               |
| 2 | Labels with label mounts | 8  | Centering adapters       | 14 | Emergency-stop/emergency switching-off buttons | 20 | Joystick                  |
| 3 | Mounting adapters        | 9  | IVS top-hat rail adapter | 15 | Indicator lights                               | 21 | 4-way pushbuttons         |
| 4 | Contact/LED elements     | 10 | Label mounts             | 16 | Key-operated pushbuttons                       | 22 | Bezels                    |
| 5 | Customized inscriptions  | 11 | Acoustic devices         | 17 | Selector switches                              | 23 | Accessories               |
| 6 | Enclosures               | 12 | Buzzers                  | 18 | Button plates/lenses                           | 24 | SmartWire-DT ribbon cable |





















	Button plate	Part no.	Article no.		
<b>Double actuator pushbuttons</b>					
IP66 White lens					
	Extended pushbuttons and indicator lights	<b>momentary</b>			
			<b>M22-DDL-GR</b>	216698	
			<b>M22-DDL-GR-X1/X0</b>	216700	
			<b>M22-DDL-GR-GB1/GB0</b>	216702	
			<b>M22-DDL-WS</b>	216704	
			<b>M22-DDL-WS-X1/X0</b>	216706	
			<b>M22-DDL-WS-GB1/GB0</b>	216708	
			<b>M22-DDL-S-X4/X5</b>	218145	
			<b>M22-DDL-S-X7/X7</b>	216710	
			<b>M22-DDL-S-X226/X26</b>	105227	
		Flush pushbuttons and indicator lights		<b>M22-DDLF-GR-X1/X0</b>	284814
				<b>M22-DDLF-WS-X1/X0</b>	284816
		Pushbutton I and indicator light are flush, pushbutton O is extended		<b>M22-DDLM-GR-X1/X0</b>	284830
				<b>M22-DDLM-WS-X1/X0</b>	284832

		Button plate	Part no.	Article no.	Part no.	Article no.		
<b>Pushbuttons</b>								
IP67, IP69								
	flush		<b>momentary</b>		<b>maintained<sup>1)</sup></b>			
			M22-D-S	216590	M22-DR-S	216613		
			M22-D-W	216592	M22-DR-W	216615		
			M22-D-R	216594	M22-DR-R	216617		
			M22-D-G	216596	M22-DR-G	216619		
			M22-D-Y	216598	M22-DR-Y	216621		
			M22-D-B	216600	M22-DR-B	216623		
		-	M22-D-GR	132671				
			M22-D-X	216602	M22-DR-X	216625		
			M22-D-R-X0	216605	M22-DR-R-X0	216628		
			M22-D-G-X1	216607	M22-DR-G-X1	216630		
			M22-D-S-X0	216609	M22-DR-S-X0	216632		
			M22-D-W-X1	216611	M22-DR-W-X1	216634		
			extended		M22-DH-S	216636	M22-DRH-S	216663
	M22-DH-W			216638	M22-DRH-W	216665		
	M22-DH-R			216641	M22-DRH-R	216667		
	M22-DH-G			216643	M22-DRH-G	216669		
	M22-DH-Y			216646	M22-DRH-Y	216671		
	M22-DH-B			216649	M22-DRH-B	216673		
	M22-DH-R-X0			216655	M22-DRH-R-X0	216675		
	M22-DH-G-X1			216657	M22-DRH-G-X1	216677		
	M22-DH-S-X0			216659	M22-DRH-S-X0	216679		
	M22-DH-W-X1			216661	M22-DRH-W-X1	216681		
	Guard ring			-	M22-DG-X	220921		
<b>Mushroom pushbuttons</b>								
IP67, IP69								
	Mushroom		<b>momentary</b>		<b>maintained<sup>1)</sup></b>			
			M22-DP-S	216712	M22-DRP-S	216743		
			M22-DP-R	216714	M22-DRP-R	216745		
			M22-DP-G	216716	M22-DRP-G	216747		
			M22-DP-Y	216718	M22-DRP-Y	216749		
			M22-DP-R-X0	216720	M22-DRP-R-X0	216751		
			M22-DP-G-X1	216722	M22-DRP-G-X1	216753		
			M22-DP-S-X0	216724	M22-DRP-S-X0	216755		
			M22-DP-W-X1	216726	M22-DRP-W-X1	216757		

**Note**

<sup>1)</sup> Stay-put/spring-return function can be changed on the device








				Mushroom head	Part no.	Article no.	
<b>Stop buttons, switching-off buttons</b>							
38 mm diameter yellow base IP66, IP69							
	Non-illuminated	Pull-to-release		<b>M22S-PV</b>	225528		
	Non-illuminated	Turn-to-release		<b>M22S-PVT</b>	271499		
	Illuminated with LED element	Pull-to-release		<b>M22S-PVL</b>	230962		
	Illuminated with LED element	Turn-to-release		<b>M22S-PVLT</b>	271540		
	Non-illuminated	Turn-to-release		<b>M22Y-PVT</b>	147403		
<b>Selector switches</b>							
IP66 stay-put/spring-return function can be changed by means of the M22-XC-Y configuration adapter							
	with rotary head	2 positions	↳ 40°		<b>M22-W</b>	216853	
		2 positions	↘ 60°		<b>M22-WR</b>	216855	
		2 positions	↘ 60°		<b>M22-WR-X92</b>	216857	
		2 positions	↘ 60°	AUTO HAND	<b>M22-WR-X91</b>	216859	
		3 positions <sup>1)</sup>	40° ↙↘ 40°		<b>M22-W3</b>	216861	
		3 positions <sup>1)</sup>	60° ↙↘ 60°		<b>M22-WR3</b>	216863	
		3 positions <sup>1)</sup>	60° ↙↘ 60°		<b>M22-WR3-X94</b>	226838	
		4 positions <sup>2)</sup>			<b>M22-WR4</b>	279419	
		with thumb grip	2 positions	↳ 40°	-	<b>M22-WK</b>	216865
			2 positions	↘ 60°	-	<b>M22-WRK</b>	216867
		2 positions (V position)	↘ 60°	-	<b>M22-WKV</b>	216874	
		3 positions <sup>1)</sup>	40° ↙↘ 40°	-	<b>M22-WK3</b>	216870	
		3 positions <sup>1)</sup>	60° ↙↘ 60°	-	<b>M22-WRK3</b>	216872	
		4 positions <sup>2)</sup>			<b>M22-WRK4</b>	279431	













**Note** <sup>1)</sup> with plunger bridge for middle contact  
<sup>2)</sup> Not compatible with configuration adapters, use M22-A4 mounting adapter instead → accessories

# RMQ-Titan pilot devices



Key-operated pushbuttons, joystick, pushbuttons

Moeller series

						Key withdrawable at position	Part no.	Article no.
<b>Key-operated pushbuttons</b>								
IP66 not suitable for master key systems with 1 key stay-put/spring-return function can be changed by means of the M22-XC-Y configuration adapter key withdraw configuration can be changed by means M22-XC-...configuration adapter								
	2 positions		40°	-	0	-	<b>M22-WS</b>	216881
	2 positions		60°	-	0	I	<b>M22-WRS</b>	216887
	2 positions		60°	-	0	-	<b>M22-WRS-A1</b>	229092
	3 positions		40° <math>\swarrow</math> <math>\searrow</math> 40°	-	0	-	<b>M22-WS3</b>	216894
	3 positions		60° <math>\swarrow</math> <math>\searrow</math> 60°	I	0	II	<b>M22-WRS3</b>	216900

			Function:	Description	Part no.	Article no.
				= momentary		
				= maintained		
<b>Joystick</b>						
with metal shaft IP66						
	2 positions		with one operating point per operating direction	<b>M22-WJS2H</b>	178570	
			with 2 operating points per operating direction	<b>M22-WJS2H-2P<sup>1)</sup></b>	178565	
			with one operating point per operating direction	<b>M22-WJS2V</b>	178571	
			with 2 operating points per operating direction	<b>M22-WJS2V-2P<sup>1)</sup></b>	178564	
			with one operating point per operating direction	<b>M22-WRJS2H</b>	178574	
			with one operating point per operating direction	<b>M22-WRJS2V</b>	178575	
	4 positions		with one operating point per operating direction	<b>M22-WJS4</b>	178568	
			with 2 operating points per operating direction	<b>M22-WJS4-2P<sup>1)</sup></b>	178563	
			with one operating point per operating direction	<b>M22-WRJS4</b>	178566	

**Note** <sup>1)</sup> These joysticks are combined with the M22-K10 normal NO contacts and the M22-K10P NO early-make contacts.

			Part no.	Article no.
<b>Pushbuttons</b>				
Extended pushbuttons IP66				
	4-way	Opposing pushbuttons, not mechanically interlocked	<b>M22-D4-S</b>	279411
	4-way	Opposing pushbuttons, not mechanically interlocked	<b>M22-D4-S-X7</b>	286336
	4-way	Opposing pushbuttons, mechanically interlocked	<b>M22-D14-S-X7</b>	286338



		Lens	Part no.	Article no.	
<b>Indicator lights</b>					
IP67, IP69					
	flush		<b>M22-L-W</b>	216771	
			<b>M22-L-R</b>	216772	
			<b>M22-L-G</b>	216773	
			<b>M22-L-Y</b>	216774	
			<b>M22-L-B</b>	216775	
			<b>M22-L-A</b>	164374	
		without lens	<b>M22-L-X</b>	216776	
		extended, conical		<b>M22-LH-W</b>	216778
				<b>M22-LH-R</b>	216779
				<b>M22-LH-G</b>	216780
	<b>M22-LH-Y</b>		216781		
	<b>M22-LH-B</b>		216782		
		<b>M22-LH-A</b>	164375		

		Button plate	Part no.	Article no.	Part no.	Article no.
<b>Illuminated pushbuttons</b>						
IP67, IP69						
	flush		<b>momentary</b>		<b>maintained<sup>1)</sup></b>	
			<b>M22-DL-W</b>	216922	<b>M22-DRL-W</b>	216944
			<b>M22-DL-R</b>	216925	<b>M22-DRL-R</b>	216946
			<b>M22-DL-G</b>	216927	<b>M22-DRL-G</b>	216948
			<b>M22-DL-Y</b>	216929	<b>M22-DRL-Y</b>	216950
			<b>M22-DL-B</b>	216931	<b>M22-DRL-B</b>	216952
		without button plate	<b>M22-DL-A</b>	167429	<b>M22-DRL-A</b>	167431
			<b>M22-DL-X</b>	216933	<b>M22-DRL-X</b>	216954
			<b>M22-DL-R-X0</b>	216936	<b>M22-DRL-R-X0</b>	216957
			<b>M22-DL-G-X1</b>	216938	<b>M22-DRL-G-X1</b>	216959
			<b>M22-DL-W-X0</b>	216940	<b>M22-DRL-W-X0</b>	216961
			<b>M22-DL-W-X1</b>	216942	<b>M22-DRL-W-X1</b>	216963
			extended		<b>M22-DLH-W</b>	216965
	<b>M22-DLH-R</b>			216967	<b>M22-DRLH-R</b>	216789
	<b>M22-DLH-G</b>			216969	<b>M22-DRLH-G</b>	216796
	<b>M22-DLH-Y</b>			216971	<b>M22-DRLH-Y</b>	216799
	<b>M22-DLH-B</b>			216973	<b>M22-DRLH-B</b>	216802
	<b>M22-DLH-A</b>			167433	<b>M22-DRLH-A</b>	167435
	<b>M22-DLH-R-X0</b>			216975	<b>M22-DRLH-R-X0</b>	216804
	<b>M22-DLH-G-X1</b>			216977	<b>M22-DRLH-G-X1</b>	216805
	<b>M22-DLH-W-X0</b>			216979	<b>M22-DRLH-W-X0</b>	216806
	<b>M22-DLH-W-X1</b>			216981	<b>M22-DRLH-W-X1</b>	216807
	Guard ring	without button plate	<b>M22-DGL-X</b>	230961		




**Note**


<sup>1)</sup> Stay-put/spring-return function can be changed on the device

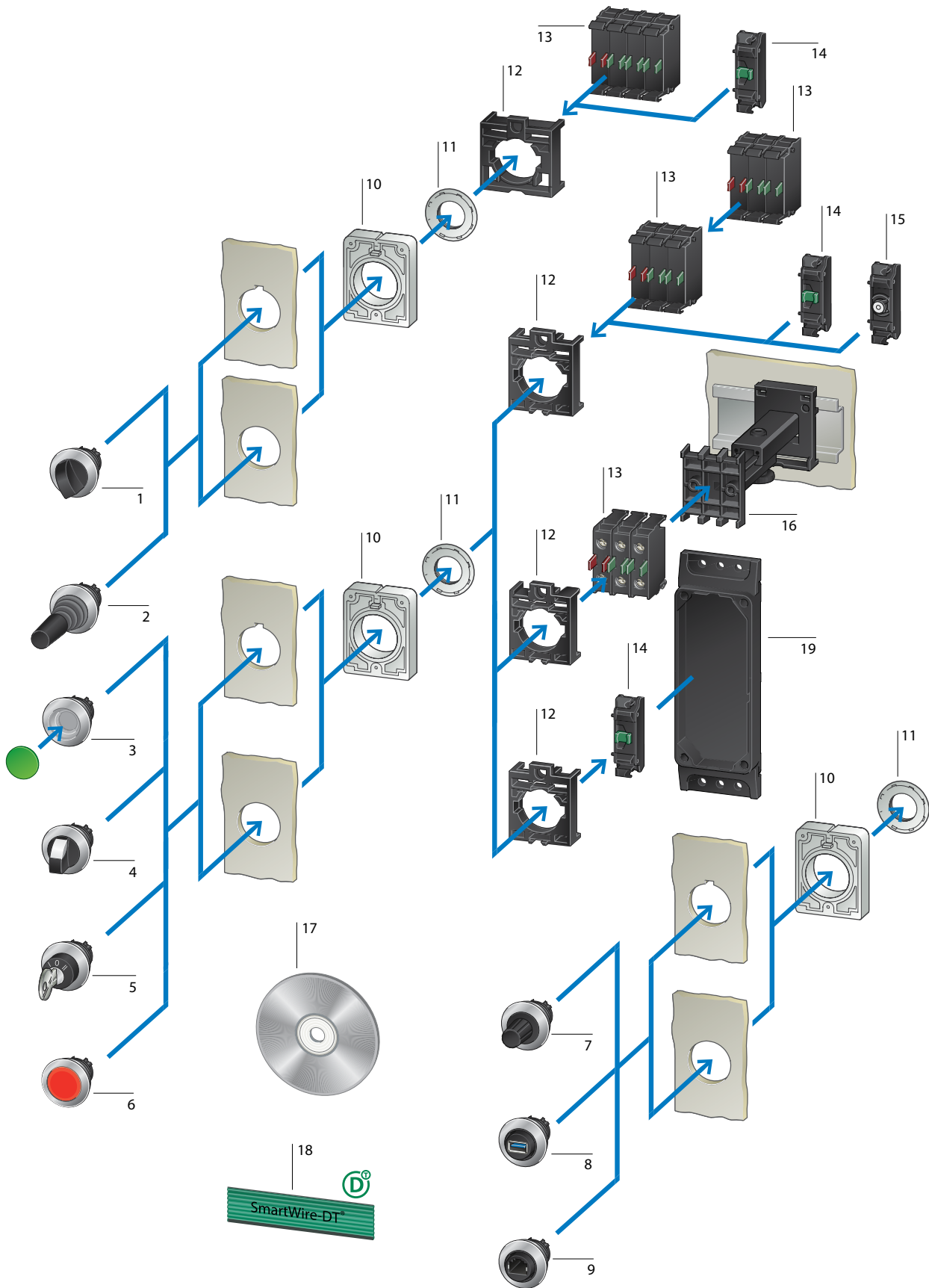
# RMQ-Titan pilot devices

Illuminated selector switches, potentiometers

















Moeller series

			Part no.	Article no.
Function: ▷ = momentary ↓ = maintained				
<b>Illuminated selector switches</b>				
with thumb grip IP66 stay-put/spring-return function can be changed with the M22-XC-Y configuration adapter				
2 positions 	▷ 40°	○	M22-WLK-W	216812
	▷ 40°	●	M22-WLK-R	216814
	▷ 40°	●	M22-WLK-G	216816
	▷ 40°	●	M22-WLK-Y	216818
	▷ 40°	●	M22-WLK-B	216820
	↓ 60°	○	M22-WRLK-W	216823
	↓ 60°	●	M22-WRLK-R	216825
	↓ 60°	●	M22-WRLK-G	216827
	↓ 60°	●	M22-WRLK-Y	216829
	↓ 60°	●	M22-WRLK-B	216831
V positions 	∨ 60°	○	M22-WLKV-W	284393
	∨ 60°	●	M22-WLKV-R	284394
	∨ 60°	●	M22-WLKV-G	284395
	∨ 60°	●	M22-WLKV-Y	284396
	∨ 60°	●	M22-WLKV-B	284397
3 positions 	40° <math>\swarrow \searrow</math> 40°	○	M22-WLK3-W	216833
	40° <math>\swarrow \searrow</math> 40°	●	M22-WLK3-R	216835
	40° <math>\swarrow \searrow</math> 40°	●	M22-WLK3-G	216837
	40° <math>\swarrow \searrow</math> 40°	●	M22-WLK3-Y	216839
	40° <math>\swarrow \searrow</math> 40°	●	M22-WLK3-B	216841
	60° <math>\swarrow \searrow</math> 60°	○	M22-WRLK3-W	216843
	60° <math>\swarrow \searrow</math> 60°	●	M22-WRLK3-R	216845
	60° <math>\swarrow \searrow</math> 60°	●	M22-WRLK3-G	216847
60° <math>\swarrow \searrow</math> 60°	●	M22-WRLK3-Y	216849	
60° <math>\swarrow \searrow</math> 60°	●	M22-WRLK3-B	216851	














		Part no.	Article no.
Resistance			
R			
kΩ			
<b>Potentiometers</b>			
IP66			
	1	M22-R1K	229489
	2.2	M22-R2K2	171157
	4.7	M22-R4K7	229490
	10	M22-R10K	229491
	47	M22-R47K	229492
	100	M22-R100K	229493
	470	M22-R470K	229494



- |                                    |                                    |  |
|------------------------------------|------------------------------------|--|
| 1 M30 4-position selector switches | 8 M30 bulkhead interfaces, USB 3.0 | 15 Flat Rear LED elements  |
| 2 M30 joysticks                    | 9 M30 bulkhead interfaces, RJ45    | 16 Telescopic clip   |
| 3 M30 pushbuttons                  | 10 Anti-rotation tab RMQ-AFX       | 17 Customized inscription  |
| 4 M30 selector switches            | 11 Threaded ring                   | 18 SWD ribbon cable  |
| 5 M30 key-operated pushbuttons     | 12 Mounting adapters               | 19 Enclosures / surface-mounting enclosures IP66, IP67, IP69, up to 4 mounting locations |
| 6 M30 indicator lights             | 13 Contact elements                |  |
| 7 SWD encoders, M30 potentiometers | 14 Flat Rear contact elements      |  |








		Button plate	Part no.	Article no.	Part no.	Article no.
<b>Pushbuttons</b>						
IP67, IP69 metal bezel front dimensions ø 36 mm						
	flush		<b>momentary</b>		<b>maintained<sup>1)</sup></b>	
			<b>M30C-FD-S</b>	182959	<b>M30C-FDR-S</b>	182942
			<b>M30C-FD-W</b>	182960	<b>M30C-FDR-W</b>	182943
			<b>M30C-FD-R</b>	182918	<b>M30C-FDR-R</b>	182944
			<b>M30C-FD-G</b>	182919	<b>M30C-FDR-G</b>	182945
			<b>M30C-FD-Y</b>	182920	<b>M30C-FDR-Y</b>	182946
			<b>M30C-FD-B</b>	182921	<b>M30C-FDR-B</b>	182947
			<b>M30C-FD-GR</b>	182923		
			<b>M30C-FD-S-X0</b>	182961	<b>M30C-FDR-S-X0</b>	182937
			<b>M30C-FD-W-X1</b>	182962	<b>M30C-FDR-W-X1</b>	182938
			<b>M30C-FD-W-X11</b>	182963		
			<b>M30C-FD-R-X0</b>	182939	<b>M30C-FDR-R-X0</b>	182936
			<b>M30C-FD-G-X1</b>	182956	<b>M30C-FDR-G-X1</b>	182931
			<b>M30C-FD-B-X217</b>	182967		
			<b>M30C-FD-GR-X66</b>	182964		
	without button plate	<b>M30C-FD-X</b>	182922	<b>M30C-FDR-X</b>	182948	







**Note** <sup>1)</sup> Stay-put/spring-return function can be changed on the device

		Function:	Button plate	Part no.	Article no.		
		↳ = momentary					
		└ = maintained					
<b>Selector switches</b>							
IP66 stay-put/spring-return function can be changed with the M22-XC-Y configuration adapters							
	with rotary head	2 positions	↳ 40°		<b>M30C-FW</b>	187087	
		2 positions	└ 60°		<b>M30C-FWR</b>	187088	
		2 positions	└ 60°		<b>M30C-FWR-X92</b>	187114	
		2 positions	└ 60°	AUTO HAND 	<b>M30C-FWR-X91</b>	187113	
		3 positions <sup>1)</sup>	40° ↙ 40°		<b>M30C-FW3</b>	187089	
		3 positions <sup>1)</sup>	60° ↓ 60°		<b>M30C-FWR3</b>	187090	
		3 positions <sup>1)</sup>	60° ↓ 60°		<b>M30C-FWR3-X94</b>	187108	
		4 positions <sup>2)3)</sup>			<b>M30C-FWR4</b>	187091	
		with thumb grip	2 positions	↳ 40°	-	<b>M30C-FWK</b>	187103
			2 positions	└ 60°	-	<b>M30C-FWRK</b>	187109
		2 positions (V position)	∨ 60°	-	<b>M30C-FWKV</b>	187102	
		3 positions <sup>1)</sup>	40° ↙ 40°	-	<b>M30C-FWK3</b>	187104	
		3 positions <sup>1)</sup>	60° ↓ 60°	-	<b>M30C-FWRK3</b>	187110	
		4 positions <sup>2)3)</sup>			<b>M30C-FWRK4</b>	187112	

**Note** <sup>1)</sup> with plunger bridge for middle contact  
<sup>2)</sup> Not compatible with configuration adapters, use M22-A4 mounting adapter instead → accessories  
<sup>3)</sup> IP64










		Key withdrawable at position			Part no.	Article no.
<b>Key-operated pushbuttons</b>						
IP66 not suitable for master key systems with 1 key stay-put/spring-return function can be changed with the M22-XC-Y configuration adapters key withdraw configuration can be changed with the M22-XC-...configuration adapter						
	2 positions	 40°	-	0	-	<b>M30C-FWS</b> 187068
	2 positions	 60°	-	0	I	<b>M30C-FWRS</b> 187092
	2 positions	 60°	-	0	-	<b>M30C-FWRS-A1</b> 187047
	3 positions	40°  40°	-	0	-	<b>M30C-FWS3</b> 187069
	3 positions	60°  60°	I	0	II	<b>M30C-FWRS3</b> 187094












		Function:	Description	Part no.	Article no.
			= momentary		
			= maintained		
<b>Joystick</b>					
with one operating point per operating direction with metal shaft IP66					
	2 positions			<b>M30C-FWRJS2H</b>	187078
				<b>M30C-FWRJS-2V</b>	187065
	4 positions			<b>M30C-FWJS4</b>	187077

# RMQ-Titan pilot devices

M30 – Indicator lights, illuminated pushbuttons (Flat Front)




Moeller series


		Lens	Part no.	Article no.
<b>Indicator lights</b>				
IP67, IP69				
	flush		<b>M30C-FL-W</b>	183287
			<b>M30C-FL-R</b>	183282
			<b>M30C-FL-G</b>	183283
			<b>M30C-FL-Y</b>	183285
			<b>M30C-FL-B</b>	183284
			<b>M30C-FL-A</b>	183286





		Button plate	Part no.	Article no.	Part no.	Article no.
<b>Illuminated pushbuttons</b>						
IP67, IP69						
	flush	      without button plate    	<b>momentary</b>		<b>maintained<sup>1)</sup></b>	
			<b>M30C-FDL-W</b>	182925	<b>M30C-FDRL-W</b>	182950
			<b>M30C-FDL-R</b>	182926	<b>M30C-FDRL-R</b>	182951
			<b>M30C-FDL-G</b>	182927	<b>M30C-FDRL-G</b>	182952
			<b>M30C-FDL-Y</b>	182928	<b>M30C-FDRL-Y</b>	182953
			<b>M30C-FDL-B</b>	182940	<b>M30C-FDRL-B</b>	182954
			<b>M30C-FDL-A</b>	182924	<b>M30C-FDRL-A</b>	182949
			<b>M30C-FDL-X</b>	182941	<b>M30C-FDRL-X</b>	182955
			<b>M30C-FDL-R-X0</b>	182958	<b>M30C-FDRL-W-X0</b>	182934
			<b>M30C-FDL-G-X1</b>	182957	<b>M30C-FDRL-W-X1</b>	182935
			<b>M30C-FDL-G-X32</b>	182968	<b>M30C-FDRL-R-X0</b>	182933
			<b>M30C-FDL-Y-X162</b>	182965	<b>M30C-FDRL-G-X1</b>	182932

**Note**

<sup>1)</sup> Stay-put/spring-return function can be changed on the device




		Function:	Part no.	Article no.
		┤ = momentary		
		┘ = maintained		
<b>Illuminated selector switches</b>				
with thumb grip IP66 metal bezel front dimensions Ø 36 mm stay-put/spring-return function can be changed with the M22-XC-Y configuration adapters				
2 positions  	┤ 40°	○	<b>M30C-FWLK-W</b>	187128
	┤ 40°	●	<b>M30C-FWLK-R</b>	187122
	┤ 40°	●	<b>M30C-FWLK-G</b>	187121
	┤ 40°	●	<b>M30C-FWLK-Y</b>	187129
	┤ 40°	●	<b>M30C-FWLK-B</b>	187120
	┘ 60°	○	<b>M30C-FWRLK-W</b>	187026
	┘ 60°	●	<b>M30C-FWRLK-R</b>	187025
	┘ 60°	●	<b>M30C-FWRLK-G</b>	187024
	┘ 60°	●	<b>M30C-FWRLK-Y</b>	187027
	┘ 60°	●	<b>M30C-FWRLK-B</b>	187023
V positions  	∨ 60°	○	<b>M30C-FWLKV-W</b>	187126
	∨ 60°	●	<b>M30C-FWLKV-R</b>	187125
	∨ 60°	●	<b>M30C-FWLKV-G</b>	187124
	∨ 60°	●	<b>M30C-FWLKV-Y</b>	187127
	∨ 60°	●	<b>M30C-FWLKV-B</b>	187123
3 positions  	40° <math>\swarrow \searrow</math> 40°	○	<b>M30C-FWLK3-W</b>	187118
	40° <math>\swarrow \searrow</math> 40°	●	<b>M30C-FWLK3-R</b>	187117
	40° <math>\swarrow \searrow</math> 40°	●	<b>M30C-FWLK3-G</b>	187116
	40° <math>\swarrow \searrow</math> 40°	●	<b>M30C-FWLK3-Y</b>	187119
	40° <math>\swarrow \searrow</math> 40°	●	<b>M30C-FWLK3-B</b>	187115
	60° <math>\swarrow \searrow</math> 60°	○	<b>M30C-FWRLK3-W</b>	187134
	60° <math>\swarrow \searrow</math> 60°	●	<b>M30C-FWRLK3-R</b>	187133
	60° <math>\swarrow \searrow</math> 60°	●	<b>M30C-FWRLK3-G</b>	187132
	60° <math>\swarrow \searrow</math> 60°	●	<b>M30C-FWRLK3-Y</b>	187022
	60° <math>\swarrow \searrow</math> 60°	●	<b>M30C-FWRLK3-B</b>	187131

		Resistance	Scale/inscription	Part no.	Article no.
<b>Potentiometers, IP65</b>					
3 separate screw connections accuracy of resistance value: ± 10% (linear) Metal bezel Rated power P = 0.5 W					
	1	Standard scale/inscription	<b>M30C-FR1K</b>	187029	
	2.2		<b>M30C-FR2K2</b>	187034	
	4.7		<b>M30C-FR4K7</b>	187030	
	10		<b>M30C-FR10K</b>	187035	
	47		<b>M30C-FR47K</b>	187031	
	100		<b>M30C-FR100K</b>	187032	
	470		<b>M30C-FR470K</b>	187033	























				Part no.	Article no.	Part no.	Article no.
				Screw terminals		Cage Clamp <sup>2)</sup>	
<b>Contact elements</b>							
<b>IP20</b>							
<b>Single contact</b>							
	Front mounting	1 N/O	-	<b>M22-K10</b>	216376	<b>M22-CK10</b>	216384
		-	1 N/C ⊕	<b>M22-K01</b>	216378	<b>M22-CK01</b>	216385
		1 NO early-make	-	<b>M22-K10P</b>	110835		
	Base mounting	-	1 NC late-break ⊕	<b>M22-K01D</b>	262165	<b>M22-CK01D</b>	262510
		1 N/O	-	<b>M22-KC10</b>	216380	<b>M22-CKC10</b>	216386
		-	1 N/C ⊕	<b>M22-KC01</b>	216382	<b>M22-CKC01</b>	216387
<b>Double contact</b>							
	Front mounting	2 N/O	-			<b>M22-CK20</b>	107898
		-	2 N/C ⊕			<b>M22-CK02</b>	107899
		1 N/O	1 N/C ⊕			<b>M22-CK11</b>	107940
<b>Self-monitoring contact elements<sup>3)</sup></b>							
	Front mounting	1 N/O	1 N/C ⊕	<b>M22-K01SMC10</b>	121472		
		1 N/O	2 N/C ⊕	<b>M22-K02SMC10</b>	121474		
	Base mounting	1 N/O	1 N/C ⊕	<b>M22-KC01SMC10</b>	121473		
		1 N/O	2 N/C ⊕	<b>M22-KC02SMC10</b>	121720		
		1 N/O	3 N/C ⊕	<b>M22-KC03SMC10</b>	173028		
		2 N/O	2 N/C ⊕	<b>M22-KC12SMC10</b>	173029		
<b>Combination of contact element with screw terminals, M22-A mounting adapter and M22-XSMC signal contact actuator.<sup>3)</sup></b>							
	Front mounting	1 N/O	3 N/C ⊕	<b>M22-AK03SMC10</b>	173026		
		2 N/O	2 N/C ⊕	<b>M22-AK12SMC10</b>	173027		

**Note**

- <sup>1)</sup> ⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1
- <sup>2)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany
- <sup>3)</sup> The N/O contact is actuated when mounted on the pushbutton

			Part no.	Article no.
<b>Mounting adapters</b>				
<b>Mounting adapter (front mounting) for 3 contact/LED elements</b>				
	For the M22-(C)K... contact elements and M22-(C)LED... LED elements Sequence numbers on mounting adapter		<b>M22-A</b>	216374
<b>Mounting adapter (front mounting) for 4 contact elements</b>				
	For use with M22-WR4, M22-D4, M22-WJ..., M22-WRJ... for the M22-(C)K contact elements		<b>M22-A4</b>	279437
<b>Front mounting</b>				
	For two M22-SWD-K22... function elements for use with M22-WR4, -WRJ4, -D4 in conjunction with M22-(SWD)-K		<b>M22-SWD-A4</b>	116016






Rated operational voltage $U_e$ V			Part no.	Article no.	Part no.	Article no.
<b>LED elements</b>						
<b>IP20</b>						
<b>Front mounting</b>  	12-30 V AC/DC, 50/60 Hz		<b>Screw terminals</b> <b>M22-LED-W</b>	216557	<b>Cage Clamp<sup>1)</sup></b> <b>M22-CLED-W</b>	216569
			<b>M22-LED-R</b>	216558	<b>M22-CLED-R</b>	216570
			<b>M22-LED-G</b>	216559	<b>M22-CLED-G</b>	216571
			<b>M22-LED-B</b>	218057	<b>M22-CLED-B</b>	218061
	85-264 V AC, 50/60 Hz		<b>M22-LED230-W</b>	216563	<b>M22-CLED230-W</b>	216575
			<b>M22-LED230-R</b>	216564	<b>M22-CLED230-R</b>	216576
			<b>M22-LED230-G</b>	216565	<b>M22-CLED230-G</b>	216577
			<b>M22-LED230-B</b>	218059	<b>M22-CLED230-B</b>	218063
	85-264 V AC, 50/60 Hz		<b>M22-LED230TA-W<sup>2)</sup></b>	182905		
			<b>M22-LED230TA-R<sup>2)</sup></b>	182906		
			<b>M22-LED230TA-G<sup>2)</sup></b>	182907		
			<b>M22-LED230TA-B<sup>2)</sup></b>	182908		
<b>Base mounting<sup>3)</sup></b>  	12-30 V AC/DC, 50/60 Hz		<b>M22-LEDC-W</b>	216560	<b>M22-CLEDC-W</b>	216572
			<b>M22-LEDC-R</b>	216561	<b>M22-CLEDC-R</b>	216573
			<b>M22-LEDC-G</b>	216562	<b>M22-CLEDC-G</b>	216574
			<b>M22-LEDC-B</b>	218058	<b>M22-CLEDC-B</b>	218062
	85-264 V AC, 50/60 Hz		<b>M22-LEDC230-W</b>	216566	<b>M22-CLEDC230-W</b>	216578
			<b>M22-LEDC230-R</b>	216567	<b>M22-CLEDC230-R</b>	216579
			<b>M22-LEDC230-G</b>	216568	<b>M22-CLEDC230-G</b>	216580
			<b>M22-LEDC230-B</b>	218060	<b>M22-CLEDC230-B</b>	218064

**Note**

<sup>1)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany


<sup>2)</sup> With interference signal protection

<sup>3)</sup> for use with the M22-I... surface mounting enclosures







Terminal type	Contact configuration N/O = normally open    N/C = normally closed <sup>1)</sup>	Part no.	Article no.
<b>Contact elements (Flat Rear with Cage Clamp, push-in)</b>			
Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany			
	Cage Clamp <sup>2)</sup> , push-in	1 N/C ⊖	<b>M22-FK01</b> 180791
		1 N/O	<b>M22-FK10</b> 180792
<b>Self-monitoring contact elements (Flat Rear with Cage Clamp, push-in)</b>			
N/O is actuated when mounted on the pushbutton			
	Cage Clamp, push-in	1 N/C ⊖	<b>M22-FK01SMC10</b> 180793
<b>Complete assembly (Flat Rear with Cage Clamp, push-in)</b>			
Combination of contact element and M22-FK01SMC10 self-monitoring contact element, M22-A mounting adapter, and M22-XSMC signal contact actuator. The N/O in the self-monitoring contact element is actuated when mounted with M22-XSMC.			
	Cage Clamp, push-in	3 N/C ⊖	<b>M22-AFK03SMC10</b> 180794

**Note:**


- <sup>1)</sup> ⊖ = Safety function implemented with positive opening according to IEC/EN 60947-5-1
- <sup>2)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany


Rated operational voltage $U_e$ V	Rated operational current $I_e$ mA	Power consumption P W	Color	Part no.	Article no.
<b>LED elements (Flat Rear with Cage Clamp, push-in)</b>					
	12-30 V AC/DC, 50/60 Hz (standard 24 V AC/DC)	8 - 15	0.26 at 24 V	○	<b>M22-FLED-W</b> 180795
				●	<b>M22-FLED-B</b> 180796
				●	<b>M22-FLED-G</b> 180797
				●	<b>M22-FLED-R</b> 180798
				● ●	<b>M22-FLED-RG</b> 180799
	24 V DC	10 - 15	0.36 at 24 V	● ●	<b>M22-FLED-RG</b> 180799
	8 - 15	0.36 at 24 V	● ● ●	<b>M22-FLED-RGB</b> 180800	


				Part no.	Article no.
<b>Acoustic devices</b>					
	without buzzer with BA 9s lamp socket IP40			<b>M22-AMC</b>	229015
<b>Buzzer for acoustic devices</b>					
	Continuous tone, 18 - 30 V AC/DC Pulsed tone, 24 V DC (+10 %/-15 %)			<b>M22-XAM</b> <b>M22-XAMP</b>	229025 229028
<b>Legend holders without label</b>					
	for use with	Width in mm	Height in mm	Part no.	Article no.
<b>IP66</b>					
	for pushbuttons for double actuator pushbuttons	30 30	50 75	<b>M22S-ST-X</b> <b>M22S-STDD-X</b>	216392 216394
<b>Insert labels</b>					
	-	27	18	<b>M22-XST</b>	216480
<b>M22 bulkhead interface, USB socket and RJ45 socket</b>					
			Cable length in m	Part no.	Article no.
<b>Front mounting</b>					
<b>IP65 (with closed cover), IP20 (with plug connected)</b>					
	USB 3.0 socket, type A		-	<b>M22-USB</b>	147539
	pre-assembled cable with permanently connected USB 3.0 Type A plug		0.6 1.5	<b>M22-USB-SA</b> <b>M22-USB-SA-150</b>	107412 147543
	RJ45 socket, 8/8, Cat 5e		-	<b>M22-RJ45-SA</b>	107413
<b>M30C bulkhead interfaces, USB socket and RJ45 socket (Flat Front)</b>					
<b>Front mounting</b>					
<b>IP65 (with closed cover), IP20 (with plug connected)</b>					
	USB 3.0 socket, type A		-	<b>M30C-FUSB</b>	187082
	pre-assembled cable with permanently connected USB 3.0 Type A plug		0.3 0.6 1.5	<b>M30C-FUSB-30</b> <b>M30C-FUSB-60</b> <b>M30C-FUSB-150</b>	187083 187084 187085
	RJ45 socket, 8/8, Cat 5e		-	<b>M30C-FRJ45</b>	187086


	Number of locations	Contact configuration N/O = normally open N/C = normally closed1)		Key withdrawable at position		Button plate	Part no.	Article no.
<b>Pushbuttons</b>								
	1	1 N/O	1 N/C ⊕	-	-		<b>M22-D-G-X1/KC11/I</b>	216522
	1	1 N/O	1 N/C ⊕	-	-		<b>M22-D-R-X0/KC11/I</b>	216521
	2	2 N/O	2 N/C ⊕	-	-		<b>M22-I2-M1</b>	216529
	3	3 N/O	3 N/C ⊕	-	-		<b>M22-I3-M1</b>	216532
<b>Key-operated buttons</b>								
	1	1 N/O	1 N/C ⊕	0	I	-	<b>M22-WRS/KC11/I</b>	216526
























**Note** 1) ⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1

Mounting locations	Degree of protection	Part no.	Article no.
<b>Surface-mounting enclosure</b>			
with stainless steel screws			
	1	IP67, IP69	<b>M22-I1</b> 216535
	2	IP67, IP69	<b>M22-I2</b> 216537
	3	IP67, IP69	<b>M22-I3</b> 216538
	4	IP67, IP69	<b>M22-I4</b> 216539
	6	IP66	<b>M22-I6</b> 216540

Mounting locations	Cable entries	Degree of protection	Part no.	Article no.
<b>Flat surface-mounting enclosures, M22</b>				
	1 x 22.5	at the side: 1 x M20, at the rear: 1 x M20	IP66, IP67, IP69	<b>M22-F11</b> 197230
	2 x 22.5	at the rear: 1 x M20, at the side: 2 x M20 (1 on each side)		<b>M22-F12</b> 197232
	3 x 22.5			<b>M22-F13</b> 197233
	4 x 22.5			<b>M22-F14</b> 197234

Mounting locations	Cable entries	Degree of protection	Part no.	Article no.
<b>Flat surface-mounting enclosures, M30</b>				
	1 x 30.5	at the side: 1 x M20, at the rear: 1 x M20	IP66, IP67, IP69	<b>M30-F11</b> 197235
	2 x 30.5	at the rear: 1 x M20, at the side: 2 x M20 (1 on each side)		<b>M30-F12</b> 197236
	3 x 30.5			<b>M30-F13</b> 197237
	4 x 30.5			<b>M30-F14</b> 197238

Mounting locations	Cable entries	Degree of protection	Part no.	Article no.
<b>Flat surface-mounting enclosures, M22 and M30</b>				
	1 x 22.5 3 x 30.5	at the rear: 1 x M20, at the side: 2 x M20 (1 on each side)	IP66, IP67, IP69	<b>M30-F14-PV</b> 197239

				Part no.	Article no.	Part no.	Article no.
<b>Emergency-stop/emergency switching-off buttons</b>							
tamper-proof according to ISO 13850/EN 418 IP66, IP69							
				<b>Diameter = 38 mm</b>			
 Mushroom-shaped	Pull-to-release	non-illuminated		<b>M22-PV-ESS</b>	178983		
		non-illuminated		<b>M22-PV</b>	216876		
		illuminated with LED element		<b>M22-PVL</b>	216878		
 Turn-to-release	Turn-to-release	non-illuminated		<b>M22-PVT</b>	263467		
		illuminated with LED element		<b>M22-PVLT</b>	263469		
 Key-release	Key-release	non-illuminated		<b>M22-PVS</b>	216879		
				<b>Diameter = 45 mm</b>		<b>Diameter = 60 mm</b>	
 Palm shape	Pull-to-release	non-illuminated		<b>M22-PV45P</b>	152862	<b>M22-PV60P</b>	152864
		illuminated with LED element		<b>M22-PVL45P</b>	152860	<b>M22-PVL60P</b>	152861
		non-illuminated		<b>M22-PV45P-MPI <sup>1)</sup></b>	152863	<b>M22-PV60P-MPI <sup>1)</sup></b>	152865
	Turn-to-release	non-illuminated		<b>M22-PVT45P</b>	121462	<b>M22-PVT60P</b>	121464
		illuminated with LED element		<b>M22-PVLT45P</b>	121460	<b>M22-PVLT60P</b>	121461
		non-illuminated		<b>M22-PVT45P-MPI <sup>1)</sup></b>	121463	<b>M22-PVT60P-MPI <sup>1)</sup></b>	121465
	Key release	non-illuminated		<b>M22-PVS45P-MS1</b>	121468	<b>M22-PVS60P-MS1</b>	121469
		non-illuminated		<b>M22-PVS45P-RS</b>	121466	<b>M22-PVS60P-RS</b>	121467
	<b>Small E-Stop diameter = 30 mm</b>				<b>22 mm installation</b>		<b>30 mm installation</b>
	Pull-to-release	non-illuminated		<b>M22-PV30</b>	197535	<b>M30-PV30</b>	197543
		illuminated with LED element		<b>M22-PVL30</b>	197537	<b>M30-PVL30</b>	197545
	Turn-to-release	non-illuminated		<b>M22-PVT30</b>	197536	<b>M30-PVT30</b>	197544
		illuminated with LED element		<b>M22-PVLT30</b>	197538	<b>M30-PVLT30</b>	197546

**Note**

Max. number of contacts: 4 x M22-(C)K01, ...10 or 2 x M22-(C)K02, ...20, ...11

<sup>1)</sup> with mechanical position indicator  
switch-position indicator red → button actuated  
switch-position indicator green → button not actuated



# RMQ-Titan pilot devices

Complete units for emergency stop/emergency switching off





Moeller series

for use with	Part no.	Article no.
<b>Surface-mounting enclosure</b>		
with stainless steel screws IP67, IP69		
-	<b>M22-IY1</b>	216536
M22-XPV60... illuminated ring	<b>M22-IY1-XPV60</b>	167798



Mounting locations	Cable entries	Degree of protection	Part no.	Article no.
<b>Flat surface-mounting enclosures, M22</b>				
1 x 22.5	at the side: 1 x M20, at the rear: 1 x M20	IP66, IP67, IP69	<b>M22-FIY1</b>	197231



Lock mechanism	Contact configuration	Part no.	Article no.	Part no.	Article no.
	N/O = normally open N/C = normally closed				
<b>Emergency-stop/emergency switching-off buttons</b>					
tamper-proof according to ISO 13850/EN 418 non-illuminated					
<b>Mushroom-shaped</b>		<b>Diameter = 38 mm</b>			
Pull-to-release	- 1 N/O 1 N/C ⊕	<b>M22-PV/KC11/IY</b>	216525		
					
Key release	- 1 N/O 1 N/C ⊕	<b>M22-PVS/KC11/IY</b>	216523		
					
<b>Palm shape</b>		<b>Diameter = 45 mm</b>		<b>Diameter = 60 mm</b>	
Key release	MS1 - 2 N/C ⊕	<b>C22-PVS45P-MS1-K02</b>	121619	<b>C22-PVS60P-MS1-K02</b>	121621
	MS1 1 N/O 1 N/C ⊕	<b>C22-PVS45P-MS1-K11</b>	121618	<b>C22-PVS60P-MS1-K11</b>	121620
Turn-to-release	- - 2 N/C ⊕	<b>C22-PVT45P-K02</b>	121611	<b>C22-PVT60P-K02</b>	121613
	- 1 N/O 1 N/C ⊕	<b>C22-PVT45P-K11</b>	121610	<b>C22-PVT60P-K11</b>	121612

**Note**

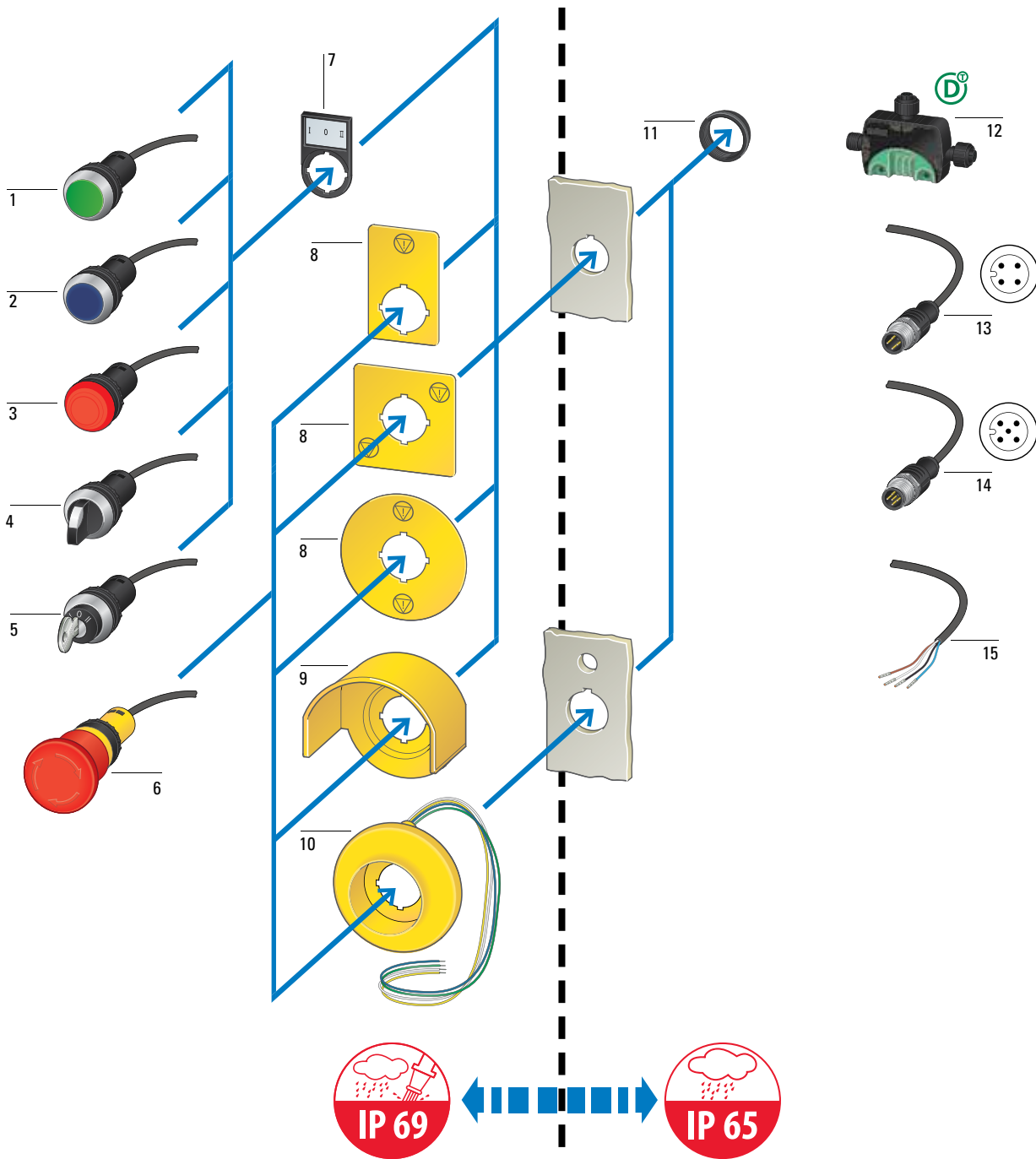
⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1

	Inscription	Form	Language	Part no.	Article no.	
<b>Emergency-stop labels</b>						
	Symbol (5638) for emergency stop	Diameter = 90 mm	-	<b>M22-XAK-ESS</b>	180469	
	Symbol (5638) for emergency stop	Diameter = 60 mm	-	<b>M22-XBK-ESS</b>	180472	
	Symbol (5638) for emergency stop	33 x 50 mm	-	<b>M22-XZK-ESS</b>	180470	
	Symbol (5638) for emergency stop	33 x 50 mm	-	<b>M22-XZK-ESS2</b>	180474	
	Symbol (5638) for emergency stop	50 x 50 mm	-	<b>M22-XYK-ESS</b>	180471	
<b>Emergency switching-off legend plates</b>						
		Diameter = 90 mm	de, en, fr, it	<b>M22-XAK1</b>	216465	
		Diameter = 60 mm	de, en, fr, it	<b>M22-XBK1</b>	216483	
	Emergency switching-off	33 x 50 mm	de	<b>M22-XZK-D99</b>	216471	
		50 x 50 mm	de, en, fr, it	<b>M22-XYK1</b>	216484	
			Rated operating voltage $U_e$ V	Diameter d mm	Part no.	Article no.
<b>LED luminous ring</b>						
	three groups of 4 LEDs each (connected in series), can be actuated separately (e.g. for continuous light)	24 V AC/DC	60 mm	<b>M22-XPV60-Y-24</b>	121477	
	one group of 8 LEDs (connected in series)	120 V AC	60 mm	<b>M22-XPV60-Y-120</b>	121476	
	one group of 8 LEDs (connected in series)	230 V AC	60 mm	<b>M22-XPV60-Y-230</b>	138280	
<b>Guard ring</b>						
	to prevent accidental actuation	-	-	<b>M22-XGPV</b>	231273	
<b>Sealable shroud</b>						
	for devices with a mushroom diameter of 38 mm transparent, with integrated isolator, can be reused after emergency-stop/emergency switching-off operation the adjacent holes in the 30 x 50 grid must be sealed off by means of blind plugs M22(S)-B	-	-	<b>M22-PL-PV</b>	216397	

# RMQ compact solution pilot devices

C22 system overview

Moeller series







- 1 C22 pushbuttons
- 2 C22 illuminated pushbuttons
- 3 C22 indicator lights
- 4 C22 selector switches
- 5 C22 key-operated pushbuttons
- 6 C22 emergency-stop/emergency switching-off buttons






- 7 Label mounts
- 8 Emergency-stop legend plates, IP66
- 9 Guard ring
- 10 Illuminated ring
- 11 Threaded ring










- 12 SWD I/O module
- 13 Cable with M12A plug, 4-pole
- 14 Cable with M12A plug, 5-pole
- 15 Cable end open, 4-pole




Different cable lengths see [Eaton.com/rmq](http://Eaton.com/rmq)

Connection type	Mushroom head	Contact configuration <sup>1)</sup> N/O = normally open N/C = normally closed	Part no.	Article no.
<b>Emergency-stop/emergency switching-off buttons</b>				
non-illuminated tamper-proof according to ISO 13850, EN 418 P66, IP67, IP69 (at the front) IP65 (at the rear) yellow base cable length: 0.2 m <b>Mushroom-shaped, Ø 38 mm</b>				
Pull-to-release 	Cable (black) with M12A plug, 5-pole	 2 N/C ⊕	<b>C22-PV-K02-P10</b>	185184
<b>Palm-tree shape, Ø 45 mm</b>				
Turn-to-release 	Cable (black) with M12A plug, 5-pole	 2 N/C ⊕	<b>C22-PVT45P-K02-P10</b>	185183












Button plate	Contact configuration <sup>1)</sup> N/O = normally open N/C = normally closed	momentary Part no.	Article no.	maintained Part no.	Article no.
<b>Pushbuttons</b>					
Silver bezel IP66, IP67, IP69 (at the front), IP65 (at the rear) flush cable length: 0.2 m					
<b>Cable (black) with M12A plug, 4-pole</b> 	 1 N/C ⊕	<b>C22-D-R-K01-P1</b>	185675	<b>C22-DR-R-K01-P1</b>	185684
		<b>C22-D-S-K01-P1</b>	185676	<b>C22-DR-S-K01-P1</b>	185685
	without button plate	<b>C22-D-X-K01-P1</b>	185678	<b>C22-DR-X-K01-P1</b>	185687
	 1 N/O	<b>C22-D-G-K10-P1</b>	185674	<b>C22-DR-G-K10-P1</b>	185683
		<b>C22-D-W-K10-P1</b>	185677	<b>C22-DR-W-K10-P1</b>	185686
	without button plate	<b>C22-D-X-K10-P1</b>	185680	<b>C22-DR-X-K10-P1</b>	185689

Button plate	LED	Contact configuration <sup>1)</sup> N/O = normally open N/C = normally closed	momentary Part no.	Article no.	maintained Part no.	Article no.
<b>Illuminated pushbuttons</b>						
Silver bezel LED rated operating voltage: 24 V AC/DC IP66, IP67, IP69 (at the front), IP65 (at the rear) flush cable length: 0.2 m						
<b>Cable (black) with M12A plug, 4-pole</b> 	 	1 N/C ⊕	<b>C22-DL-R-K01-24-P1</b>	185555	<b>C22-DRL-R-K01-24-P1</b>	185559
	 	1 N/O	<b>C22-DL-B-K10-24-P1</b>	185553	<b>C22-DRL-B-K10-24-P1</b>	185557
	 		<b>C22-DL-G-K10-24-P1</b>	185554	<b>C22-DRL-G-K10-24-P1</b>	185558
	 		<b>C22-DL-W-K10-24-P1</b>	185556	<b>C22-DRL-W-K10-24-P1</b>	185560



	Part no.	Article no.
<b>Mounting ring tool</b>		
	for threaded ring; can be used with cordless screwdriver	<b>C22-MS</b> 179955

Notes



<sup>1)</sup> ⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1 for different cable lengths see online catalog

Connection type	Lens	LED	Part no.	Article no.	
<b>Indicator lights</b>					
flush LED rated operating voltage: 24 V AC/DC IP66, IP67, IP69 (at the front), IP65 (at the rear) cable length: 0.2 m					
	Cable (black) with M12A plug, 4-pole			<b>C22-L-B-24-P1</b>	185119
				<b>C22-L-G-24-P1</b>	185120
				<b>C22-L-R-24-P1</b>	185121
				<b>C22-L-W-24-P1</b>	185122
				<b>C22-L-Y-24-P1</b>	185123

Function:	Contact configuration <sup>1)</sup>	Part no.	Article no.
▷ = momentary ▽ = maintained	N/O = normally open N/C = normally closed		
<b>Selector switches</b>			
Silver bezel with thumb grip IP66 (at the front), IP65 (at the rear) cable length: 0.2 m			

2 positions Cable (black) with M12A plug, 4-pole 	▷ 40°	1 N/O	<b>C22-WK-K10-P1</b>	186098
	▽ 60°		<b>C22-WRK-K10-P1</b>	186103
3 positions Cable (black) with M12A plug, 4-pole 	40° ◁ ▷ 40°	2 N/O	<b>C22-WK3-K20-P1</b>	186106
	60° ▽ ▽ 60°		<b>C22-WRK3-K20-P1</b>	186109

Function:	Key withdrawable at position	Contact configuration <sup>1)</sup>	Part no.	Article no.
▷ = momentary ▽ = maintained		N/O = normally open N/C = normally closed		
<b>Key-operated pushbuttons</b>				
Silver bezel MS1 lock mechanism not suitable for master key systems with 1 key IP66 (at the front), IP65 (at the rear) cable length: 0.2 m				

2 positions Cable (black) with M12A plug, 4-pole 	▷ 40°	0	1 N/O	<b>C22-WS-MS1-K10-P1</b>	186194
	▽ 60°	I 0		<b>C22-WRS-MS1-K10-P1</b>	186199
3 positions Cable (black) with M12A plug, 4-pole 	40° ◁ ▷ 40°	0	2 N/O	<b>C22-WS3-MS1-K20-P1</b>	186202
	60° ▽ ▽ 60°	I 0 II		<b>C22-WRS3-MS1-K20-P1</b>	186205

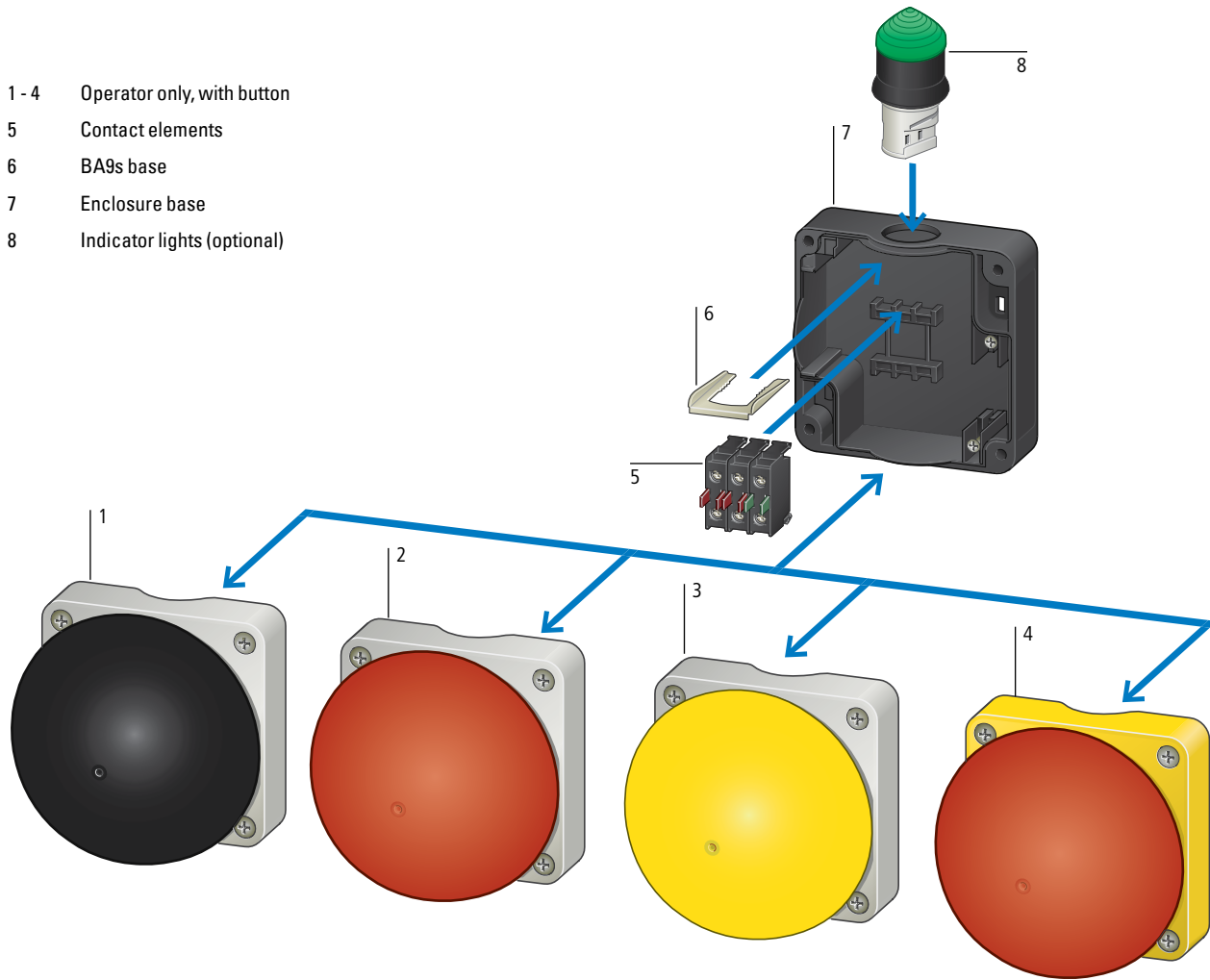
Notes

<sup>1)</sup> ⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1  
for different cable lengths see online catalog






Moeller series

- 1 - 4 Operator only, with button
- 5 Contact elements
- 6 BA9s base
- 7 Enclosure base
- 8 Indicator lights (optional)



Operation & visualization

	Function	Color			Contact configuration		Part no. Article no.
		Button	Enclosure top	Enclosure base	N/O = normally open	N/C = normally closed	
<b>Foot and palm switches, IP67, IP69</b>							
	momentary	●	●	●	1 N/O	1 N/C ⊕	<b>FAK-S/KC11/I</b> 229749
	momentary	●	●	●	1 N/O	1 N/C ⊕	
	maintained	●	●	●	-	1 N/C ⊕	<b>FAK-R/V/KC01/IY</b> 229747
		●	●	●	1 N/O	1 N/C ⊕	<b>FAK-R/V/KC11/IY</b> 229748
		●	●	●	-	2 N/C ⊕	<b>FAK-R/V/KC02/IY</b> 256790



### easyE4 control relay

- 12 I/Os per base device
- Can be expanded to 188 I/Os
- DC, UC and AC versions are available
- Ethernet interface
- Up to 8 base devices in one network cluster
- Available with and without display
- Connection via screw or Push-in terminals



### easyE4 expansion modules

- With 6, 8 or 16 I/Os
- DC, UC and AC versions are available
- A temperature module is available
- Up to 11 modules per base device
- Unlimited combination options
- Connection via plug connector
- Connection via screw or Push-in terminals



### easyE4 communication connections

- Modbus TCP client and server function on board at the base device
- SmartWire-DT master as additional module

[see page 1/6 ff](#)



### easySoft programming software

- 4 programming languages
- Interrupt function blocks
- Web server function



### easy Remote Touch Display (RTD)

- Remote visualization device for the easyE4 range
- Display size 4.3"
- Resistive touch
- No programming necessary
- Mirrors the screen of the base device



### XV-102...1E4 touch display for the easyE4 range

- Remote visualization device for the easyE4 range
- Display size 3.5" and 5.7"
- Resistive touch
- Visualization via the GALILEO software



### 24 V DC power supplies

- 1- or 3-phase devices up to 40 A



### EC4P compact PLC

- Can be expanded locally and remotely
- Ethernet interface
- Plug-in memory module



### XC-152 compact PLC

- 'Blind node' substitute for XV150
- SmartWire-DT interface (depends on the device type)
- PLC (CODESYS 2/3) and Eaton visualization (GALILEO) in one device



### XC100/200 modular PLCs

- Expandable via XI/OC modules
- CAN interface with fiber-optic technology
- CODESYS programming and visualization



### XC300 modular PLC

- Communication node with multiple interfaces
- Expandable I/O level for maximum flexibility (XN300)
- Low cycle times for enhanced productivity
- Can be programmed with CODESYS 3
- High cybersecurity standards

**CODESYS programming software**

- HMI
- HMI/PLC
- PLC
- Industrial PC

**XN300 modular I/O system**

- Universal I/O system, can be used as a local I/O system directly on the controller, or as a remote I/O system via a gateway
- Versatile functions ensure maximum flexibility
- Push-in and plug technology for simple, tool-free and efficient handling
- Compact and space-saving with up to 20 channels per slice

**XI/ON ECO, modular I/O system**

- Space-saving
- For universal use

**XI/ON Standard, modular I/O system**

- Fine granularity
- Integrated communications

**XV-303****HMI and HMI/PLC**

- Display sizes 7", 10.1", 15.6"
- Devices for front mounting, plastic
- Capacitive multi-touch

**XV-313**

- Display sizes 7", 10.1"
- Devices for rear mounting, plastic
- Capacitive multi-touch

**XV-363****HMI and HMI/PLC**

- Display sizes 5.7", 10", 12"
- Devices for front mounting, metal
- Infrared touch

**XV-102****HMI and HMI/PLC**

- Display sizes 3.5", 5.7", 7"
- Devices for front mounting, plastic
- Resistive touch

**XV-152**

- Display sizes 5.7", 8.4", 10.4"
- Devices for front mounting, metal
- Resistive touch

**XP-503****industrial PC**

- Display sizes 10.1"; 15.6"; 21.5"
- Devices for front mounting, metal
- Capacitive multi-touch

**GALILEO and CODESYS programming and visualization software**

- HMI
- HMI/PLC
- PLC
- Industrial PC



## easyE4 control relay



[Download the easyE4 brochure](#)



[Download the easyE4 flyer](#)

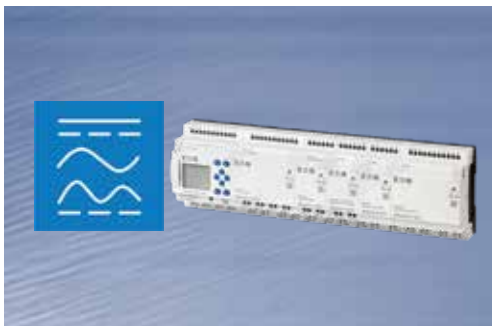
The new easyE4 generation of control relays is ideal for users looking to implement control tasks with as little effort as possible. Thanks to its ease of use, the easyE4 can be used to implement both simple control tasks and more complex configurations with high process efficiency. The devices are available with different voltages, which makes them suitable for use in many different applications.

The base devices come with powerful hardware, flexible expansions and extensive communication and visualization options, while the Ethernet interface gives users access to the Internet of Things (IoT).

In conjunction with the intuitive programming software easySoft version 7, which, among others, supports four different programming languages, the easyE4 offers a smart package for quick and easy programming.

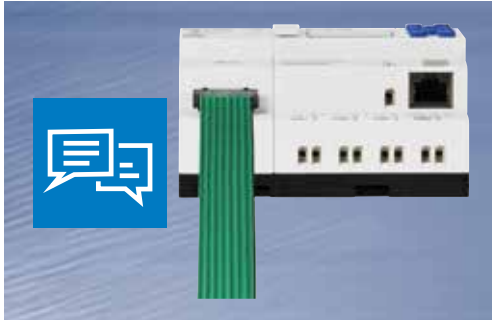


Get more information



### Flexible expansions and installation

Available as DC, UC and AC versions, the easyE4 base devices and expansion modules are ideal for use in various industrial and building applications. The base devices can be expanded by up to 11 modules to a maximum of 188 inputs/outputs. The different voltage types can be combined without any limitations. Thanks to the intelligent plug connector, connecting or replacing individual expansion modules is easy.



### State-of-the art communication

Via the integrated Ethernet interface, the easyE4 can be easily integrated into modern automation structures. Bidirectional communication with devices in the field is also possible via the integrated Modbus TCP communication and the SmartWire-DT module. Client and server operation can be selected for Modbus TCP communication.



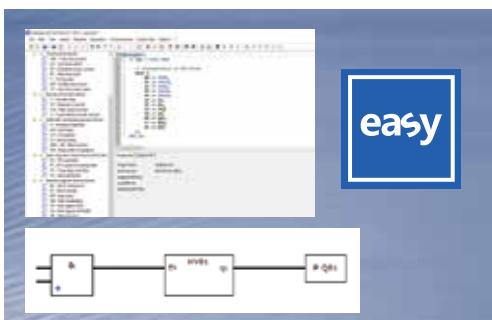
### Flexible visualization and remote access

With the integrated web server, the contents of the easyE4 can be easily accessed on all mobile devices, such as smartphones or tablets. In addition, the integrated web server enables automated notification by e-mail in the event of a malfunction and it can also be used to control your system. Furthermore, it is also possible to exchange data via JSON API.



### Precise time and date indication

The easyE4 also comes with a DCF77 radio clock, which is particularly important for time-sensitive applications. This ensures highly accurate time and date indication for any application. The time and date are also updated automatically, for example during the switch from winter time to daylight saving time. Time synchronization via Ethernet is also possible.



### easySoft version 7

easySoft version 7 offers four programming languages—LD, EDP, FBD and ST—alongside helpful new function blocks such as interrupts or alarm modules, which together ensure the smooth operation of any application. The programming software contains many new functions that have been designed with users' needs in mind in order to save valuable time during the programming process.



# Tailored to your requirements



## The devices are multi-functional, which simplifies planning

The easyE4 combines multiple functions, such as logic and counting functions, in one device. This significantly reduces the time required for planning new projects. In addition, the control relay closes the gap between the various relay types and a small controller. The compact easyE4 range also simplifies ordering, warehousing and maintenance.



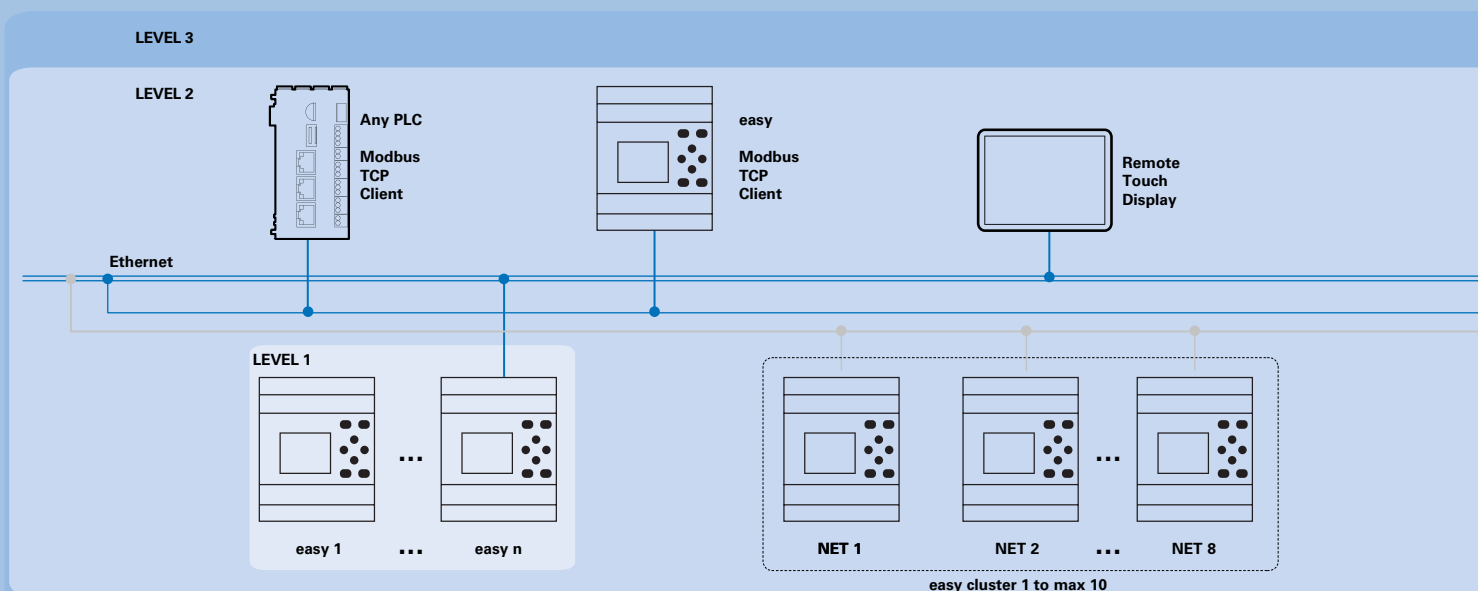
## Programming and commissioning made easy

The easyE4 offers flexible programming options, either directly on the device or via the easySoft software from any PC. Users have a choice of four different programming languages. A micro SD card can be used to transfer the programming to new devices, which simplifies the commissioning of standardized machinery, for example.



## Quick and easy implementation during operation

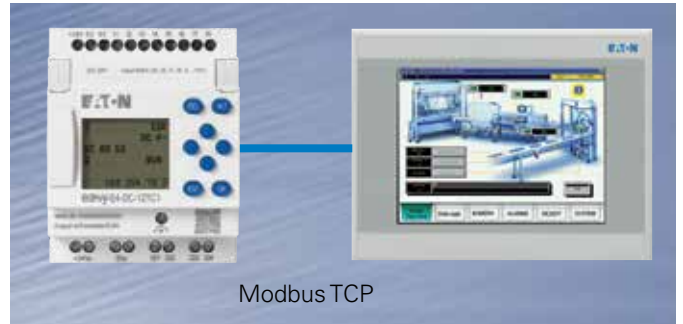
Many advantages of this powerful control relay become apparent during operation: Thanks to the interrupt functions, the easyE4 achieves fast response times of less than 2 milliseconds. The DCF77 synchronization ensures high accuracy in time-sensitive applications. Using the device display for visualization allows for rapid detection of the operating states of both the base devices and the expansion modules. The operating parameters can be directly adjusted via the keys on the base device.



**Visualization via HMI and web server**

The easyE4 also offers multiple visualization options. Via the integrated web server, content can be retrieved from any internet-enabled device, such as a smartphone or tablet. Thanks to the Ethernet interface, projects can also be displayed, via Modbus TCP, on any HMI, for example on the XV100. Access rights can be individually assigned.

The easy Remote Touch Display (RTD) offers a further visualization option as a plug & play solution. The contents of the easy base device are mirrored in color on the RTD. Controlling your application remotely is just as easy - and all this without programming of the RTD!



**easyE4 solutions**

**LEVEL 1: easyE4 as a stand-alone solution**

The base device handles the control of simple tasks via its integrated inputs and outputs. The available expansions can be used to adapt the system to the specific task requirements.

**LEVEL 2: easyE4 as part of an Eaton system solution**

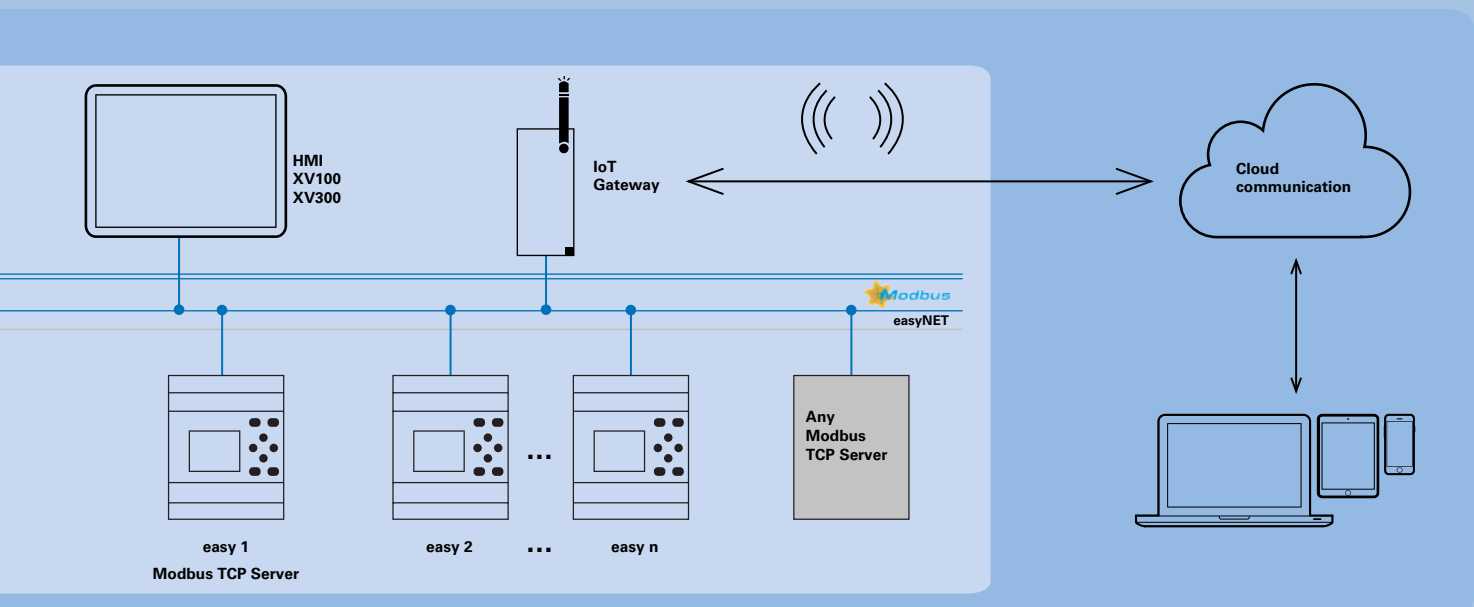
Via the Ethernet and easyNET interfaces, up to eight easyE4 devices can communicate with each other within the same network cluster. By supporting Modbus TCP as client and server functionality, visualization devices, such as the touch display XV-102, can be easily connected.

**LEVEL 3: An Eaton system solution with cloud connection**

The easyE4 enables integration into IIoT architectures via the built-in Ethernet interface. A router is used to transfer the data from all connected devices to the cloud, allowing them to be accessed wherever and whenever they are needed.

**Smart control relays offer an alternative to PLCs**

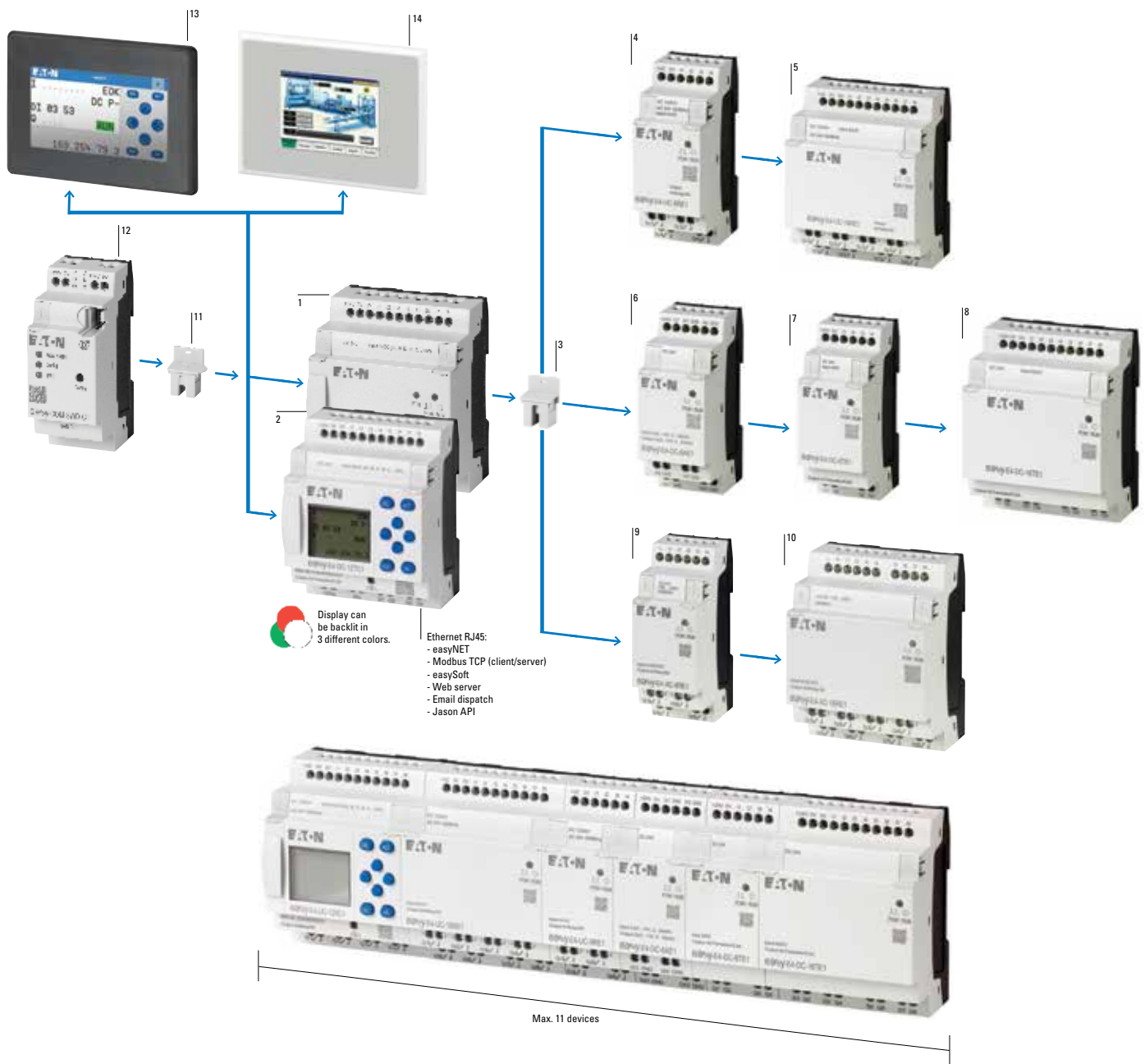
Our white paper examines the question whether the latest generation of smart control relays can provide a future-proof and cost-effective alternative to PLCs when it comes to controlling machines of low to medium complexity.










# Control relays

## System overview

Moeller series



- |   |  |    |   |
|---|--|----|---|
| 1 | easyE4 control relay without display         | 8  | DC expansion module, 16 inputs/outputs                                  |
| 2 | easyE4 control relay with display            | 9  | AC expansion module, 8 inputs/outputs                                   |
| 3 | Plug connector for expansion modules         | 10 | AC expansion module, 16 inputs/outputs                                  |
| 4 | UC expansion module, 8 inputs/outputs        | 11 | Plug connector for communication module                                 |
| 5 | UC expansion module, 16 inputs/outputs       | 12 | SmartWire-DT communication module for easyE4 range                      |
| 6 | DC expansion module, 6 analog inputs/outputs | 13 | easy Remote Touch Display, resistive touch, 4.3"                        |
| 7 | DC expansion module, 8 inputs/outputs        | 14 | XV-102 touch display for easyE4 devices, resistive touch, 3.5" and 5.7" |

	Inputs		Outputs		Other features				Supply voltage	Screw terminal	Push-in terminal
	Digital	Available as analog inputs	Relay	Transistor	Analog	Display + keypad	Real-time clock	Ethernet		Part no. Article no.	Part no. Article no.
<b>easyE4</b>											
<b>Base devices with 8 A outputs</b>											
	4	4	4	-	-	✓	✓	✓	12/ 24 V DC 24 V AC	<b>EASY-E4-UC-12RC1</b> 197211	<b>EASY-E4-UC-12RC1P</b> 197504
	4	4	4	-	-	-	✓	✓	12/ 24 V DC 24 V AC	<b>EASY-E4-UC-12RCX1</b> 197212	<b>EASY-E4-UC-12RCX1P</b> 197505
	4	4	-	4	-	✓	✓	✓	24 V DC	<b>EASY-E4-DC-12TC1</b> 197213	<b>EASY-E4-DC-12TC1P</b> 197506
	4	4	-	4	-	-	✓	✓	24 V DC	<b>EASY-E4-DC-12TCX1</b> 197214	<b>EASY-E4-DC-12TCX1P</b> 197507
	8	-	4	-	-	✓	✓	✓	100 - 240 V AC/DC	<b>EASY-E4-AC-12RC1</b> 197215	<b>EASY-E4-AC-12RC1P</b> 197508
	8	-	4	-	-	-	✓	✓	100 - 240 V AC/DC	<b>EASY-E4-AC-12RCX1</b> 197216	<b>EASY-E4-AC-12RCX1P</b> 197509
<b>Expansion devices with 5 A outputs</b>											
	4	-	4	-	-				12/ 24 V DC 24 V AC	<b>EASY-E4-UC-8RE1</b> 197217	<b>EASY-E4-UC-8RE1P</b> 197510
	8	-	8	-	-				12/ 24 V DC 24 V AC	<b>EASY-E4-UC-16RE1</b> 197218	<b>EASY-E4-UC-16RE1P</b> 197511
	4	-	-	4	-				24 V DC	<b>EASY-E4-DC-8TE1</b> 197219	<b>EASY-E4-DC-8TE1P</b> 197512
	8	-	-	8	-				24 V DC	<b>EASY-E4-DC-16TE1</b> 197220	<b>EASY-E4-DC-16TE1P</b> 197513
	4	-	4	-	-				100 - 240 V AC/DC	<b>EASY-E4-AC-8RE1</b> 197221	<b>EASY-E4-AC-8RE1P</b> 197514
	8	-	8	-	-				100 - 240 V AC/DC	<b>EASY-E4-AC-16RE1</b> 197222	<b>EASY-E4-AC-16RE1P</b> 197515
	-	4	-	-	2				24 V DC	<b>EASY-E4-DC-6AE1</b> 197223	<b>EASY-E4-DC-6AE1P</b> 197516
	-	4	-	-	-				24 V DC	<b>EASY-E4-DC-4PE1</b> 197224	<b>EASY-E4-DC-4PE1P</b> 197517
<b>Description</b>										<b>Part no.</b>	<b>Article no.</b>
<b>Communication module</b>											
	Communication module for connecting the easy control relay as an SWD coordinator in the SmartWire-DT network, screw terminal									<b>EASY-COM-SWD-C1</b>	199452
<b>Software</b>											
	easySoft programming software									<b>EASYSOFT-SWLIC</b>	197226
<b>Optional accessories</b>											
	Micro SD memory card, 2 GB									<b>MEMORY-SDU-A1</b>	191087
	easyConnect replacement parts pack, consisting of 3 plug connectors and 3 cable shrouds									<b>EASY-E4-CONNECT1</b>	199513
	easyConnect spare parts package for expansion modules 3 x plug connectors, 3 x cover caps									<b>EASY-E4-CONNECT-COM1</b>	197225
	Hinged inspection window for 4HP									<b>SKF-FF4</b>	233780
	Hinged inspection window for 6HP									<b>SKF-FF6</b>	233781
	Mounting bracket for hinged inspection window									<b>SKF-HA</b>	233782
	DIN rail - suitable for 4HP									<b>TS-CI-K3</b>	206903
	DIN rail - suitable for 6HP									<b>TS-CI-K4</b>	206904
<b>easyE4 starter sets</b>											
	UC base device, patch cable, easySoft license code, easyE4 flyer									<b>EASY-BOX-E4-UC1</b>	197227
	DC base device, patch cable, easySoft license code, easyE4 flyer									<b>EASY-BOX-E4-DC1</b>	197228
	AC base device, patch cable, easySoft license code, easyE4 flyer									<b>EASY-BOX-E4-AC1</b>	197229





## Visualization for the easyE4 made easy

The easyE4 also offers a wide range of options for visualization, to optimally adapt the solution to your individual requirements and circumstances. With the integrated display, texts and values can be displayed and changed directly at the base device. Due to the integrated web server, content can also be called up on all mobile devices such as smartphones or tablets.

For visualization and display outside of the control cabinet, the 'easy' Remote Touch Display as well as the touch display XV-102 ideally complement the easyE4 product range.

The Remote Touch Display (RTD), which is available in 4.3", offers a cost-effective way to operate your application remotely. The contents of the integrated display of the easyE4 base device are mirrored in color on the Remote Touch Display. A programming is not required - the display is ready for immediate use.

With the XV-102 'easy' touch display, projects created for the control relay series can be visualized conveniently and clearly. The compact touch display offers you all the design options you need from diagrams to icons and images to create an individual user interface. The visualization on the 3.5" and 5.7" display is implemented using Eaton's own GALILEO software.

[Further information on our starter sets](#)







With the easyE4 control relay, simple control tasks, such as temperature control in the food industry, can be solved quickly and easily – without any in-depth programming knowledge. Screw and Push-in terminals are available for quick and easy commissioning.

Visualization outside the control cabinet is handled by the 'easy' Remote Touch Display or the XV-102 touch display depending on requirements. The functions of the XV-102 as an HMI solution can be adapted specifically to the needs of the easyE4 user. In combination with the GALILEO visualization software, a cost-effective automation solution is created that can be expanded to include additional devices as required.



### Moeller series

### easyE4 visualization




	Display size Inches	PLC license	Built-in interfaces	Part no.	Article no.
<b>easy Remote Touch Display for easyE4 control relay</b>					
Resistive touch Approvals: cUL (UL508)					
	4.3	Without PLC functionality	1 x RS232 / 485 1 x USB host 2.0 1 x Modbus TCP/IP	<b>EASY-RTD-DC-43-03B1-00</b>	199740
<b>XV-102 without PLC for use with easyE4 control relays</b>					
Resistive touch approvals: cUL (UL508) SD card slots: 1 1 x Ethernet 10/100 Mbps 1 x USB device Number of colors: 64 k					
	3.5	Without PLC functionality	- ✓ ✓	<b>XV-102-A0-35TQRB-1E4</b>	198513
	5.7			<b>XV-102-A3-57TVRB-1E4</b>	199734
Description				Part no.	Article no.
<b>easyE4 XV100 starter sets</b>					
	DC base device with display, 3.5" touch panel, Ethernet switch, patch cable, easySoft license code, easyE4 flyer			<b>XV100-BOX-E4-DC1</b>	198514
	UC base device with display, 3.5" touch panel, Ethernet switch, patch cable, easySoft license code, easyE4 flyer			<b>XV100-BOX-E4-UC1</b>	198515
<b>easyE4 Remote Touch Display starter sets</b>					
	DC base device with display, 4.3" Remote Touch Display, patch cable, easySoft license code, easyE4 flyer			<b>RTD-BOX-E4-DC1</b>	199786
	UC base device with display, 4.3" Remote Touch Display, patch cable, easySoft license code, easyE4 flyer			<b>RTD-BOX-E4-UC1</b>	199785



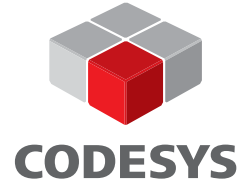
## easyPower and PSG power supplies

Whether they're used as part of a machine or system, inside the control panel or in the distribution board – the easyPower and PSG 24 V DC power supplies offer the right solution and design for every type of requirement. The DIN rail power supplies ensure efficient 1-phase and 3-phase operation. In addition to the wide-range inputs and approvals for global use, the devices stand out for their efficiency and wide temperature range. The devices come with short-circuit and overload protection, which ensures reliable power supply. The compact enclosures save space and costs. The adjustable output voltage range of the PSG power supplies offers maximum flexibility. With output currents from 1 A to 40 A, the power supply units cover machines and systems with both low and high power requirements.

Moeller series

	Input voltage range	Rated output voltage	Rated output power W	Rated output current A	Part no. Article no.
<b>Single-phase power supplies</b>					
Nominal input voltage: 100 - 240 V AC					
	85 - 264 V AC	24 V DC (± 3%)	-	0.35	<b>EASY200-POW</b> 229424
		12 V DC (± 4%)	-	0.02	
		24 V DC (± 3%)	-	1.25	<b>EASY400-POW</b> 212319
Setting range of the output voltage: 22 - 28 V DC					
	85 - 264 V AC (120 - 375 V DC)	24 V DC (± 2%)	60	2.5	<b>PSG60N24RP</b> 172890
			60	2.5	<b>PSG60E24RM</b> 172891
			120	5	<b>PSG120E24RM</b> 172892
			240	10	<b>PSG240E24RM</b> 172893
			480	20	<b>PSG480E24RM</b> 172894
<b>3-phase power supplies</b>					
Nominal input voltage: 3 x 400 - 500 V AC					
Setting range of the output voltage: 24 - 28 V DC					
	320 - 600 V AC (450 - 800 V DC)	24 V DC (± 2%)	60	2.5	<b>PSG60F24RM</b> 172882
			120	5	<b>PSG120F24RM</b> 172883
			240	10	<b>PSG240F24RM</b> 172884
			480	20	<b>PSG480F24RM</b> 172885
			960	40	<b>PSG960F24RM</b> 172886





## Compact and modular PLCs

The XC300 modular PLCs enable machine and system builders to implement modern communication concepts. This powerful PLC boasts extensive functions and interfaces, and can be expanded locally with modules from the XN300 I/O system to create flexible automation solutions while keeping the footprint to a minimum.

The XC-152 compact PLC combines powerful processing and a CAN or PB interface with connection to the SmartWire-DT communication system.

Both models – the XC300 and the XC-152 – enable data exchange with OPC clients via an integrated Ethernet interface. The PLCs are also equipped with an integrated web server for visualization, which allows users to implement innovative solutions.

The XC100/XC200 modular PLCs are scalable across a wide range. Different CPU performance classes and multiple expansion modules are also available.

The compact EC4P class of controllers offers the performance of a PLC within the same size of enclosure as the well-known easy control relays. This makes them ideal for small to medium-sized tasks.

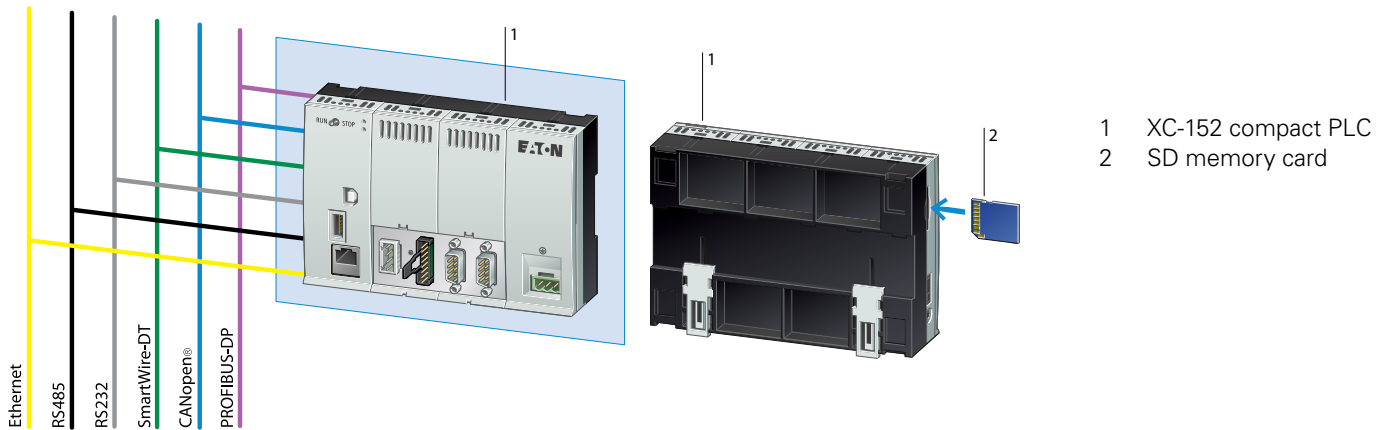








### XC-152 – compact PLC

Compact PLCs combine high processing power with a wide range of communication interfaces.

- OS: Windows CE 5
- Processor: RISC CPU, 32 bit, 400 MHz
- USB Device 2.0/USB host 2.0
- Ethernet interface
- Different communication interfaces are available (depending on the model): RS232, RS485, PROFIBUS/MPI and CAN
- SmartWire-DT interface (depends on the model)
- Program, data and retain variable memory: 64 MB
- External memory: 1 x SD card
- Programming: CODESYS
- Web server: CODESYS
- Target visualization: GALILEO/CODESYS (remote visualization possible)



- 1 XC-152 compact PLC
- 2 SD memory card

	Built-in interfaces							Application / marker / retained data kB	Part no. Article no.
	1 x CANopen® / easyNet	1 x Ethernet 10/100 Mbps	1 x USB host	1 x SmartWire-DT	1 x RS232	1 x RS485	1 x PROFIBUS-DP/MPI		
<b>XC compact PLC</b>									
24 V DC power supply Memory card slot RUN/STOP switch and LED display OPC server Web server Remote server Approvals: CE, cULus, DNV GL									
<b>XC152 Compact PLC</b>									
	-	✓	✓	-	✓	✓	✓	64 MB / 4 KB / 32 KB	<b>XC-152-D8-11</b> 167849
	-	✓	✓	✓	✓	-	-	64 MB / 4 KB / 32 KB	<b>XC-152-E3-11</b> 167850 
	✓	✓	✓	✓	-	✓	-	64 MB / 4 KB / 32 KB	<b>XC-152-E6-11</b> 167851 
	-	✓	✓	✓	-	✓	✓	64 MB / 4 KB / 32 KB	<b>XC-152-E8-11</b> 167852 
	✓	✓	✓	-	✓	✓	-	64 MB / 4 KB / 32 KB	<b>XC-152-D6-11</b> 167855



## XC300 modular PLC

With the XC300, Eaton offers machine builders a powerful and flexible PLC for implementing lean and modern automation concepts—especially if used in combination with our compact XN300 I/O system and the innovative XV300 touch panel.

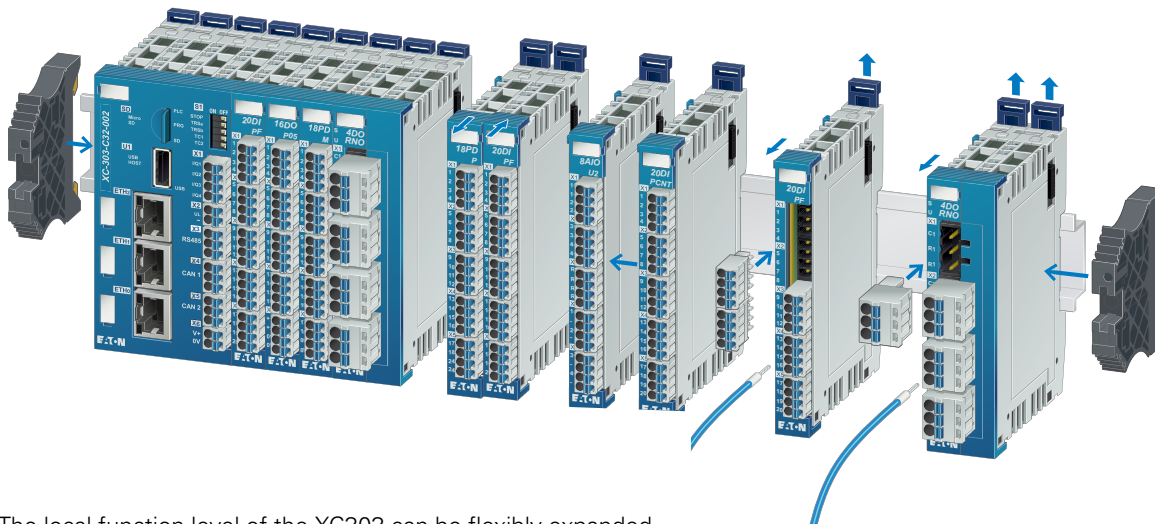
Thanks to the large number of possible interfaces, the control system can be used as a universal and flexible data node for a wide range of applications. The integrated OPC server ensures the standardized transfer of data in M2M communications, while the web server enables HTML5-based visualization.

Up to three Ethernet interfaces with individual IP addresses facilitate network segmentation, with protection against unauthorized access in line with the latest communication standards. The XC300 can thus be seamlessly integrated into cutting-edge automation architectures in accordance with the demands of Industry 4.0.

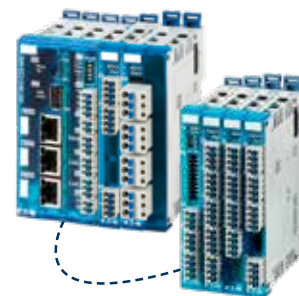


### Versatile application

Three adapters for connection to various Ethernet networks are available and ensure secure, segmented communications.



The local function level of the XC300 can be flexibly expanded using any component from the XN300 I/O system. The result: compact control systems with high channel density.



### Flexible expansions

The components of the XN300 I/O system provide for a wide array of different functions. It is possible to connect the XC300 PLC to the XN300 system either locally or remotely.



### Enhanced productivity

Thanks to its Dual Core ARM 7 CPU @960MHz, the XC300 processor achieves low task cycle times. This allows for fast machine cycles and thus for improved productivity.

The integrated interfaces of the XC300 support the following protocols:



Protocol		Interface
CANopen	Master / device	CAN1, CAN2
easyNet	Master / device	CAN1, CAN2
Modbus RTU	Master / device	RS485
EtherCAT	Master (1x)	ETH0, ETH1, ETH2
Modbus TCP	Master / device	ETH0, ETH1, ETH2
Ethernet / IP	Master	ETH0, ETH1, ETH2
OPC-UA/SCADA	Server	ETH0, ETH1, ETH2
WEB - VISU	HTML5 - server	ETH0, ETH1, ETH2
Ethernet	HTTP, HTTPS, DHCP (client), DNS, SFTP, SSL, TLS, SSH	ETH0, ETH1, ETH2

# Upgrade to Industry 4.0 with the XC300

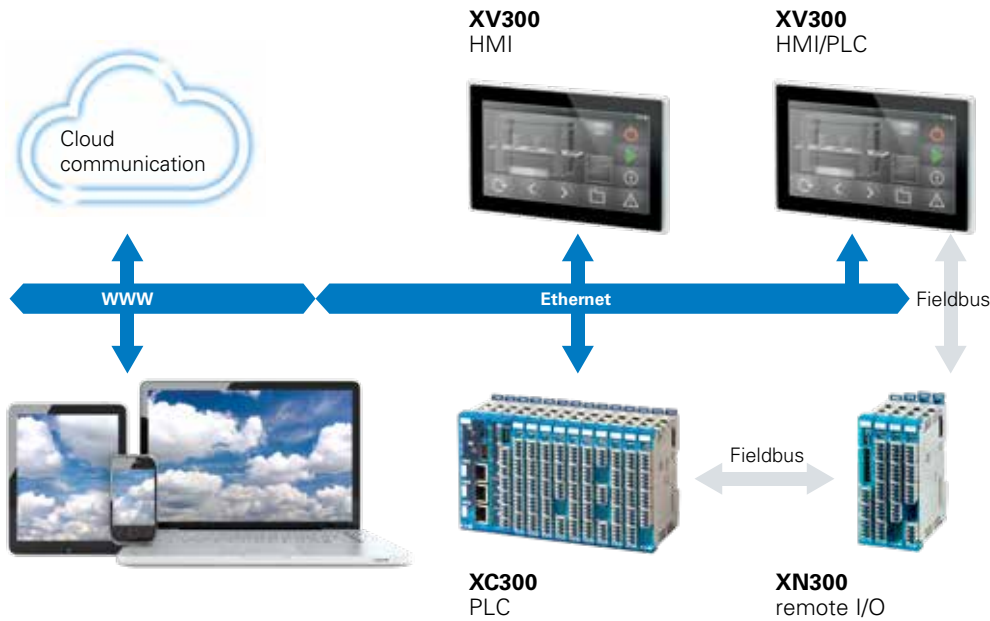
Automation applications are often highly complex. Eaton's control and visualization products give you the flexibility to implement a wide range of system concepts.

For many users, the integration of Industry 4.0 into their systems is becoming increasingly important. Eaton will support you in this process to help you take a leap into the future. We offer you a comprehensive portfolio of automation components, the necessary software packages as well as expert support before, during and after commissioning.



## HTML5-based visualization

The integrated web server enables visualization on mobile devices such as laptops, tablets and smartphones.



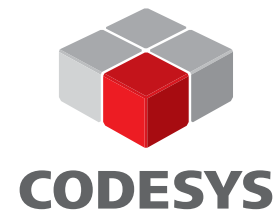
## Cyber security

In order to protect machines and systems against unauthorized access, Eaton complies with the latest standards in communications technology.



## Standardized data exchange

The use of data exchange standards ensure that the devices are suitable for universal use. The OPC-UA server guarantees interoperability in M2M communications.








## Seamless integration

The PLC can be programmed and visualized with CODESYS 3 via any Ethernet interface. Existing programs and libraries can be used across all XC devices.

Control

# Modular PLCs

XC300

		Built-in interfaces							Part no.	Article no.
		1 x Ethernet (ETH2) 10/100/1000 Mbit/s	1 x Ethernet (ETH1) 10/100 Mbit/s	1 x Ethernet (ETH0) 10/100 Mbit/s	1 x RS485 (iso)	1 x USB host 2.0	1 x CANopen (M/S) (iso)	1 x CANopen (M/S)		
<b>Modular PLC</b> 24 V DC power supply Can be locally expanded by up to 32 XN300 I/O modules Can be remotely expanded via the XN300 remote I/O system LINUX operating system ARM CORTEX A7 Dual Core @960 MHz processor Internal memory: 512 MB RAM / 128 MB FLASH / 128 kB NV-RAM External memory: Micro SD card RUN/STOP switch OPC server Web server CODESYS V3 programming (PLC and web visualization) Approvals: CE, cULus										
<b>XC-303 modular PLC</b>										
	Digital: four input/output channels, which can be configured with separate power supplies; number of channels that can be used as interrupts: 4	✓	✓	✓	✓	✓	✓	✓	<b>XC-303-C32-002</b>	191080
		✓	✓	-	✓	✓	✓	-	<b>XC-303-C21-001</b>	191081
		-	✓	-	-	-	-	✓	<b>XC-303-C11-000</b>	191082
<b>Memory card</b>										
	Mico SD card with adapter, min. 2 GB								<b>MEMORY-SDU-A1</b>	191087
<b>XC303 starter set</b>										
	XC-303-C32-002, patch cable, XN-322-8DIO-PD05, XC303 flyer, CODESYS 3 license code								<b>XC303 starter set</b>	197871

## EC4P compact PLC: powerful performance even where space is limited

The EC4P compact PLC offers the performance of a standard PLC. This compact PLC is equipped with a powerful processor and large memory, making it ideal for small to medium-sized automation tasks. The versatile communication interfaces - easyNet, CANopen and optionally Ethernet - open up a wide range of application options. The devices can also be connected to higher-level controllers via standard fieldbus systems. The display can be used to display diagnostic messages or to configure the application parameters. The EC4P devices are programmed with XSOFTCODESYS-2, in accordance with IEC 61131-3.






- Variable I/O configurations with digital and analog inputs, with the option to choose between transistor and relay outputs
- The plug-in memory module (RS-MMC) can be used to update programs or the operating system
- The EC4P devices can be easily programmed via the integrated Ethernet interface
- Two serial interfaces can either be used for programming or as user-configurable interfaces for communication with other serial devices.

## Compact PLCs

EC4P

### Moeller series

	Inputs		Outputs		Analog	Display + keypad	Part no.	Article no.
	Digital	Available as analog inputs	Relay 10 A (UL)	Transistor				
<b>EC4P compact PLC</b>								
Expandable: inputs/outputs and bus systems Custom laser inscriptions are available for the EC4-COMBINATION-* devices Supply voltage 24 V DC Approvals: UL/CSA Marine approvals: DNV, GL, ABS, BV, LR								
easyNet/CANopen® on board								
	12	4	-	8	-	✓	EC4P-221-MTXD1	106391
	12	4	-	8	-	-	EC4P-221-MTXX1	106392
	12	4	6	-	-	✓	EC4P-221-MRXd1	106393
	12	4	6	-	-	-	EC4P-221-MRXX1	106394
	12	4	-	8	1	✓	EC4P-221-MTAD1	106395
	12	4	-	8	1	-	EC4P-221-MTAX1	106396
	12	4	6	-	1	✓	EC4P-221-MRAD1	106397
	12	4	6	-	1	-	EC4P-221-MRAX1	106398
easyNet/CANopen® and Ethernet on board								
	12	4	-	8	-	✓	EC4P-222-MTXD1	106399
	12	4	-	8	-	-	EC4P-222-MTXX1	106400
	12	4	6	-	-	✓	EC4P-222-MRXd1	106401
	12	4	6	-	-	-	EC4P-222-MRXX1	106402
	12	4	-	8	1	✓	EC4P-222-MTAD1	106403
	12	4	-	8	1	-	EC4P-222-MTAX1	106404
	12	4	6	-	1	✓	EC4P-222-MRAD1	106405
	12	4	6	-	1	-	EC4P-222-MRAX1	106406
<b>Memory card</b>								
Adapter with memory card (at last 128 MB)							EU4A-MEM-CARD1	106409

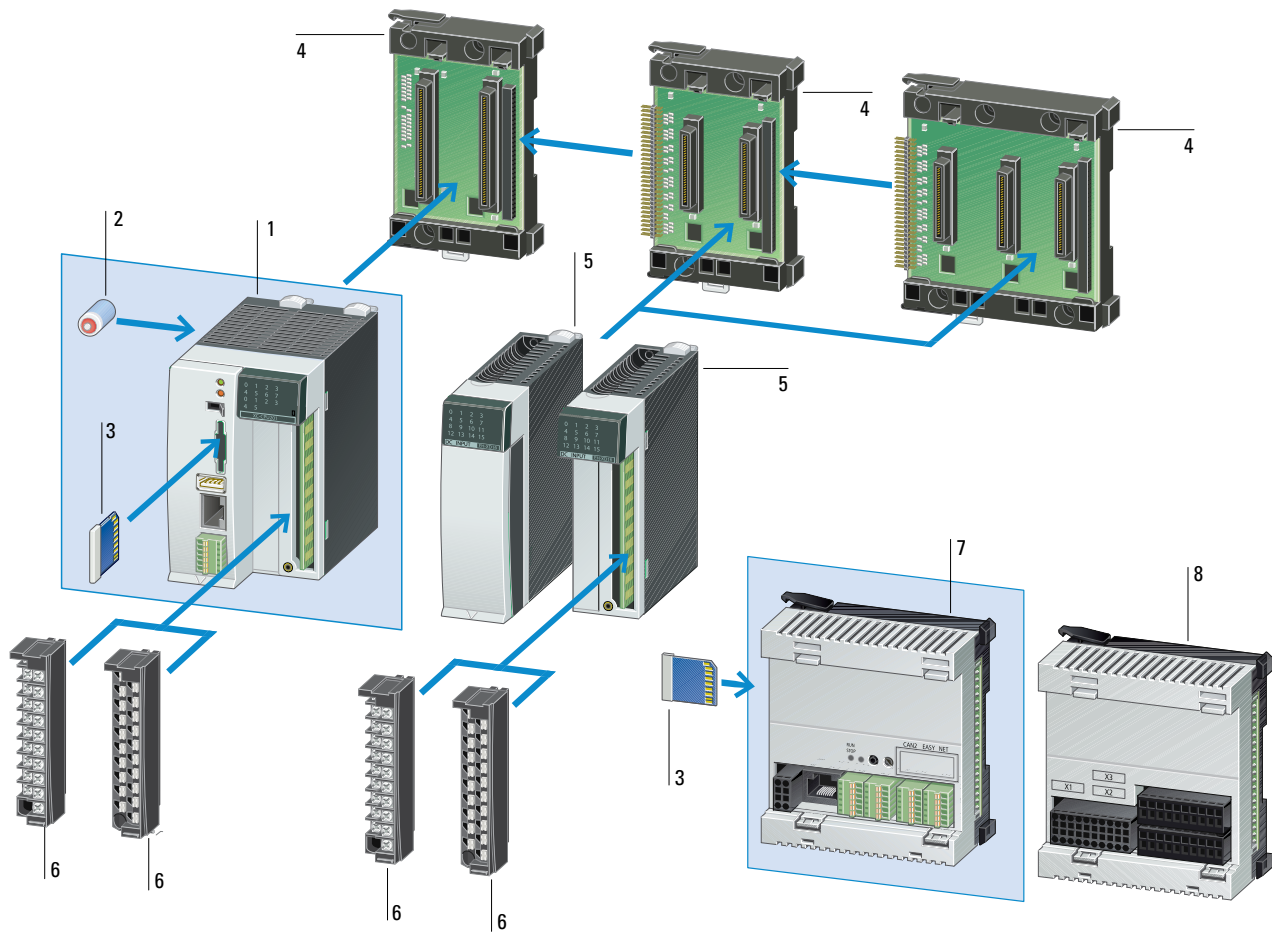
	Inputs		Outputs		Supply voltage	Part no.	Article no.
	Digital	Available as analog inputs	Relay 10 A (UL)	Transistor			
<b>Expansions</b>							
Can be used via CANopen							
	6		4	-	24 V DC	EC4E-221-6D4R1	114296
	6		-	4	24 V DC	EC4E-221-6D4T1	114297

For additional digital and analog expansions → see the online catalog

Control





# Modular PLCs

## System overview






- 1 XC100/XC200 modular PLCs
- 2 Battery
- 3 Memory card
- 4 Rack
- 5 XI/OC I/O and communication modules
- 6 XI/OC terminal block (screw or spring-cage terminal)
- 7 XC121 expandable compact PLC
- 8 I/O expansion for XC121



Number of digital inputs	Number of outputs	Built-in interfaces	Cycle time for 1 k of instructions (bit, byte)	Application/marker/retained data	Integrated web server	Part no. Article no.	
		CANopen®/easyNet CANopen® (FO cable) Ethernet 100Base-TX/10Base-T USB host RS232 RS485/RS232 2 x CANopen®	ms	kB			
<b>XC modular PLCs</b>							
24 V DC power supply Can be expanded locally (via 15 XI/OC modules) and remotely Memory card slot RUN/STOP switch and LED displays Approvals: UL/CSA The following accessories are required: terminals, rack, battery							
<b>XC-CPU101 modular PLC</b>							
	Digital: 8; available as interrupt inputs: 4	Transistor: 6	✓ - - - ✓ - -	<0.5	64 KB/4 KB/4 KB	No	<b>XC-CPU101-C64K-8DI-6DO</b> 262152
			✓ - - - ✓ - -	<0.5	128 KB/8 KB/8 KB	No	<b>XC-CPU101-C128K-8DI-6DO</b> 262146
			- ✓ - - ✓ - -	<0.5	128 KB/8 KB/8 KB	No	<b>XC-CPU101-FC128K-8DI-6DO</b> 289169
			✓ - - - ✓ - -	<0.5	256 KB/8 KB/8 KB	No	<b>XC-CPU101-C256K-8DI-6DO</b> 274399
<b>XC-CPU202 modular PLC</b>							
	Digital: 8; available as interrupt inputs: 6	Transistor: 6	✓ - ✓ ✓ ✓ - -	<0.03	4 MB/16 KB/32 KB	Yes	<b>XC-CPU202-EC4M-8DI-6DO-XV</b> 134238
<b>Modular PLC XC-CPU121</b>							
	Can be locally expanded with the I/O module XIO-EXT-121-1 244 kB data memory Marine approvals: DNV, LR, BV, GL, ABS	- - - - ✓ ✓ ✓	<0.3	256 KB/16 KB/8 KB	No	<b>XC-CPU121-2C256K</b> 290446	
<b>I/O expansion for XC-CPU121</b>							
	Inputs expansion (number) Digital: 10; available as interrupt inputs: 6; analog: 6 (0-10 V: 2 or 0-20 mA: 2 or Pt100: 2) Digital: an additional 8 (can also be used as outputs)  Outputs expansion (number) Digital: 8 (can also be used as inputs) Analog: 2 (0-10 V)	-	-	-	-	<b>XIO-EXT121-1</b> 290450	

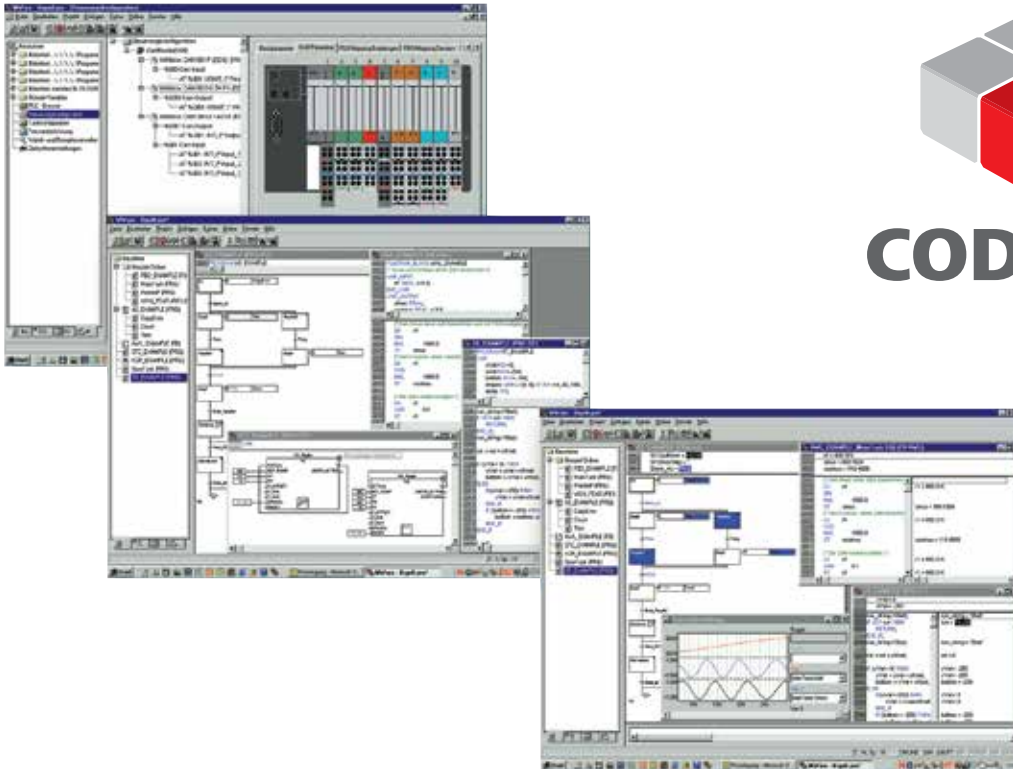
Control

Description		Part no.	Article no.	
<b>XI/OC I/O expansions</b>				
Compact I/O system for connection to the XC100/200 modular PLCs XC100/200 can be expanded with max. 15 XI/OC modules The digital/analog modules are optionally available with screw terminals or spring-cage terminals Approvals: UL/CSA				
<b>Analog modules</b> 	Inputs 8 Inputs 4 - 20 mA	<b>XIOC-8AI-I2</b>	262549	
	Inputs 8 voltage inputs, 0 - 10 V	<b>XIOC-8AI-U1</b>	257899	
	Inputs 8 voltage inputs, ±10 V	<b>XIOC-8AI-U2</b>	257900	
	Inputs 4 inputs for temperature monitoring, Pt100/1000	<b>XIOC-4T-PT</b>	257901	
	Inputs 4 inputs for thermocouples Type K, J, B, N, E, R, S, T	<b>XIOC-4AI-T</b>	289933	
	Outputs 2 outputs, ±10 V	<b>XIOC-2AO-U2</b>	257904	
	Outputs 2 outputs, 0 - 10 V 2 outputs, 4 - 20 mA	<b>XIOC-2AO-U1-2AO-I2</b>	257902	
	Outputs 4 outputs, 0 - 10 V	<b>XIOC-4AO-U1</b>	257903	
	Combination modules 2 inputs and 1 output 0 - 10 V Conversion time: 1 ms	<b>XIOC-2AI-1AO-U1</b>	262409	
	Combination modules 2 inputs and 1 output 0 - 10 V, 0 - 20 mA Conversion time: 1 ms Individual changeover	<b>XIOC-2AI-1AO-U1-I1</b>	281545	
	Combination modules 4 inputs and 2 outputs 0 - 10 V Conversion time: 1 ms	<b>XIOC-4AI-2AO-U1</b>	262405	
	Combination modules 4 inputs and 2 outputs 0 - 10 V, 0 - 20 mA Conversion time: 1 ms Individual changeover	<b>XIOC-4AI-2AO-U1-I1</b>	281544	
	<b>Digital modules</b> 	8 inputs, 24 V DC	<b>XIOC-8DI</b>	257891
		16 inputs, 24 V DC	<b>XIOC-16DI</b>	257892
32 inputs, 24 V DC		<b>XIOC-32DI</b>	267411	
8 outputs, 24 V DC, 0.3 A		<b>XIOC-8DO</b>	257894	
12 relay outputs		<b>XIOC-12DO-R</b>	257897	
16 outputs, 24 V DC, 0.3 A		<b>XIOC-16DO</b>	257896	
16 outputs, 24 V DC, 0.8 A short-circuit proof		<b>XIOC-16DO-S</b>	257895	
16 connections, 4 inputs, 12 user-configurable inputs/outputs, 24 V DC outputs 0.5 A		<b>XIOC-16DX</b>	262322	
32 outputs, 24 V DC, 0.2 A		<b>XIOC-32DO</b>	267413	
<b>Counter modules</b> 		1 input up to 100 kHz, (24 V DC, 5 V DC) 2 digital transistor outputs Opto-decoupled, 24 V DC 30-pole plug required for counter module	<b>XIOC-1CNT-100KHZ</b>	257906
	2 inputs up to 100 kHz, (24 V DC or 5 V diff), 2 inputs up to 100 kHz, (24 V DC or 5 V diff), 4 digital transistor outputs, opto-decoupled, 24 V DC, 30-pole plug required for counter module	<b>XIOC-2CNT-100KHZ</b>	257907	
	2 incremental encoders up to 400 kHz, 5 V DC, 2 analog outputs, ±10 V	<b>XIOC-2CNT-2AO-INC</b>	262417	
<b>Communication modules</b> 	PROFIBUS-DP master module	<b>XIOC-NET-DP-M</b>	257908	
	PROFIBUS DP slave module	<b>XIOC-NET-DP-S</b>	286419	
	Suconet K master module	<b>XIOC-NET-SK-M</b>	289982	
	Serial interface RS232C, RS485, RS422 Modes of operation: Transparent mode MODBUS master/slave SUCOM-A Suconet-K slave	<b>XIOC-SER</b>	267191	
	Serial interface RS232C, RS485, RS422 Modes of operation: Transparent mode MODBUS master/slave SUCOM-A DNP3 protocol	<b>XIOC-TC1</b>	135265	

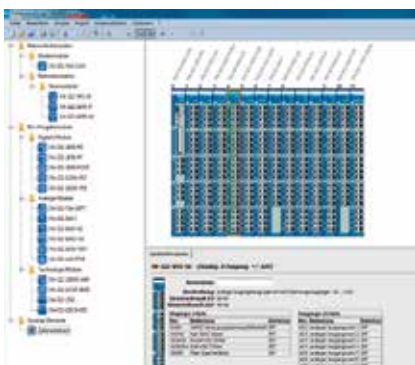
	Description	For use with	Part no.	Article no.
<b>Terminals</b>				
One 18-pole terminal plug is required for each digital and analog module as well as for the XC modular PLCs.				
	18-pole terminal connector with spring-cage terminals for digital or analog I/Os	-	<b>XIOC-TERM-18T</b>	258104
	18-pole terminal connector with screw terminals for digital or analog I/Os	-	<b>XIOC-TERM-18S</b>	258102
	30-pole connector for counter module, with 4 m cable	XIOC-1CNT-100KHZ XIOC-2CNT-100KHZ	<b>XIOC-TERM30-CNT4</b>	262248
	40-pole connector for digital module, with 4 m cable	XIOC-32DI XIOC-32DO	<b>XIOC-TERM32</b>	267414
<b>Racks</b>				
	Basic rack for mounting the XC100/200 on a top-hat rail, expandable Width: 2 slots for controller	-	<b>XIOC-BP-XC</b>	260792
	Expander rack for mounting the XI/OC modules on a top-hat rail, expandable Width: 2 slots for controller	-	<b>XIOC-BP-2</b>	260794
	Basic rack for mounting the XC100/200 on a top-hat rail, expandable Width: 3 slots for controller and one XI/OC module	-	<b>XIOC-BP-XC1</b>	260793
	Expander rack for mounting the XI/OC modules on a top-hat rail, expandable Width: 3 slots for XI/OC modules	-	<b>XIOC-BP-3</b>	260795
	Expander rack for mounting the XI/OC modules on a top-hat rail, expandable Width: 3 slots for XI/OC modules Note: Rack for expansion to max. 15 modules, must be plugged into the 6th slot	-	<b>XIOC-BP-EXT</b>	274291
<b>Add-on functions</b>				
	For storage of programs, data, formulas 512 MB		<b>XT-MEM-MM512M</b>	138257
	For storage of programs, data, formulas 256 MB		<b>XT-MEM-MM32M</b>	262731
	For back-up of real-time clock and retentive data		<b>XT-CPU-BAT1</b>	256209
	Blank module to cover free XI/OC slots		<b>XIOC-NOP</b>	288894



**CODESYS**



## XSOFT-CODESYS-2 – PLC programming to international standards



Our software tools simplify both the engineering and the commissioning process:

- XN300 Assist
- I/O-Assist
- SWD-Assist

Free download at  
[Eaton.com/codesys](http://Eaton.com/codesys)

CODESYS is a programming system based on the established CODESYS standard developed by 3S. Thanks to its sophisticated technical features, ease of handling and compatibility with automation components from a wide variety of manufacturers, it has become the programming system of choice for controllers. Eaton offers both **CODESYS version 2** and **version 3**, and most XV/XC PLCs can be programmed with either version.

The software is the perfect programming tool for all applications in which a powerful PLC or HMI/PLC with various fieldbus connections are required. With the integrated fieldbus configurators PROFIBUS, CAN, SmartWire-DT and Modbus-TCP/RTU (version 3) as well as Ethernet/IP (version 3) and EtherCAT (version 3), the devices can be quickly and intuitively connected to the fieldbus of your choice. The CODESYS software is the ideal programming tool for machine and process applications in machine building and system integration.



	SMD-Assist	I/O-Assist	XN300 Assist	CODESYS-3 Webvisu	CODESYS-3	CODESYS-2 Webvisu	CODESYS-2	
● <sup>2</sup>				●	●	●	●	XV-102-B/-D/-E-...
● <sup>2</sup>				●	●	●	●	XV-112...
● <sup>2</sup>				●	●	●	●	XV-152...
● <sup>2</sup>				●	●	●	●	XV-3x3-...
				●	●	●	●	XC-152-...
				●	●	●	●	XC-303
				●	●	●	●	XC-CPU202-...
				●	●	●	●	XC-CPU201-...-XV
				●	●	●	●	XC-CPU201-/101-...
				●	●	●	●	XC-CPU121
				●	●	●	●	EC4P-...
				●	●	●	●	XN-PLC-CANOPEN
		●		●	●	●	●	XN-312-GW-CAN
		●		●	●	●	●	XNE-GWBR-...
		●		●	●	●	●	XN-GWBR-...

1) OPC-UA

2) for devices with SmartWire-DT interface

### Maximum flexibility

CODESYS is the programming tool for all Eaton XV/XC controllers. It enables programming according to IEC-1131-3, based on the following programming languages: structured text (ST), instruction list (IL), ladder diagram (LD), function block diagram (FBD), sequential function chart (SFC), and continuous function chart (CFC).

For the automation systems XV100, XV300, XC-152 and XC-CPU202, Eaton offers targets for both CODESYS V3 and CODESYS V2; this means that the same hardware can be used with new (configured with CODESYS-3) and existing (programmed with CODESYS-2) machine generations!

### Multitasking

The division into several runtime programs (multitasking) optimizes your PLC's resources and facilitates the implementation of time-critical applications. Prioritize fast processes, and assign slower processes only as much processing time as necessary.

### Web visualization

XSOFT-CODESYS can optionally generate an XML description from the visualization information. In CODESYS V2, this description will be stored on the controller together with a Java applet. In CODESYS V3, HTML5-based pages will be generated instead. These pages can then be displayed on a browser via TCP/IP.

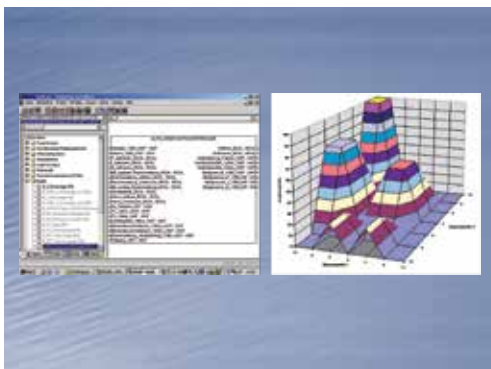
### Application libraries



To facilitate the programming of controllers with CODESYS, Eaton provides ready-made libraries for many applications:

- Closed-loop control toolbox
- Motion-control toolbox
- FTP server
- FTP client
- UDP and TCP/IP
- Modbus RTU/TCP master/slave
- OS functions
- File handling

### XSOFT CODESYS version 3 offers the following:

- A programming tool that can be expanded by means of plug-ins to handle custom applications
- Expanded language options (object-oriented programming)
- Know-how protection for targets and the programming tool
- Multiple PLC programs in the same project
- New and improved TargetVisu functions
- Improved IT safety functions
- HTML5-based websites
- Fieldbus configurators: Modbus-TCP/RTU, EthernetIP, EtherCAT
- SAE J1939 protocol

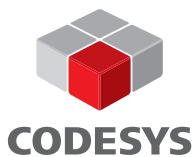


Description		Part no. Article no.
<b>XSOFT-CODESYS-2</b>		
Programming according to IEC 61131-1, supports XV100, XV(S)400, XC100, XC200, EC4P, XN-PLC		
	Single-user license	<b>SW-XSOFT-CODESYS-2-S</b> 142582
	Multi-user license	<b>SW-XSOFT-CODESYS-2-M</b> 142583
<b>XSOFT-CODESYS-3</b>		
Programming as per IEC 61131-3, supports XV100, XV300, XV(S)400, XC-152, XC-202, XC-303		
	Single-user license	<b>SW-XSOFT-CODESYS-3-S</b> 171886
	Multi-user license	<b>SW-XSOFT-CODESYS-3-M</b> 171887





# XN300 – Eaton’s slice card modular I/O system for the machine building industry



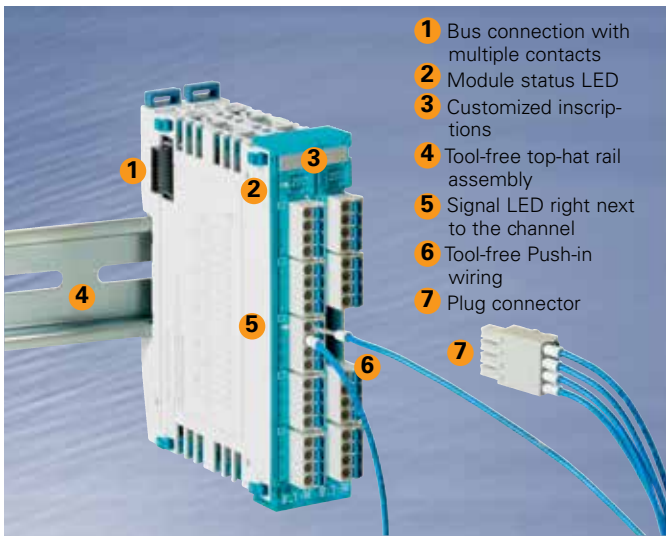
CANopen

EtherCAT

The ultra-compact, modular slice-card-based XN300 I/O system with high-density plug-in connections can be combined with Eaton’s HMI/PLC products to create tailor-made system solutions. Application-oriented functions reduce the equipment cost and enable tailor-made system solutions while keeping the footprint to a minimum.

The modern, easy-to-install design simplifies handling and enables the I/O station and the connected components to be pre-assembled. The plug-in connections and the clear signal assignment simplify commissioning and extend the functionality of the system, enabling it to meet the specific requirements of the machine building sector.

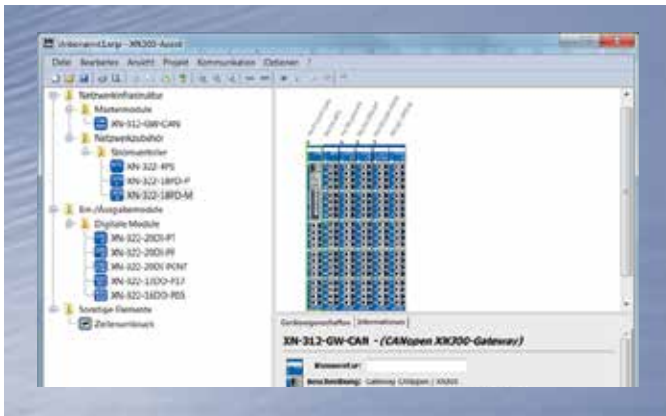




### Simple, quick and intuitive

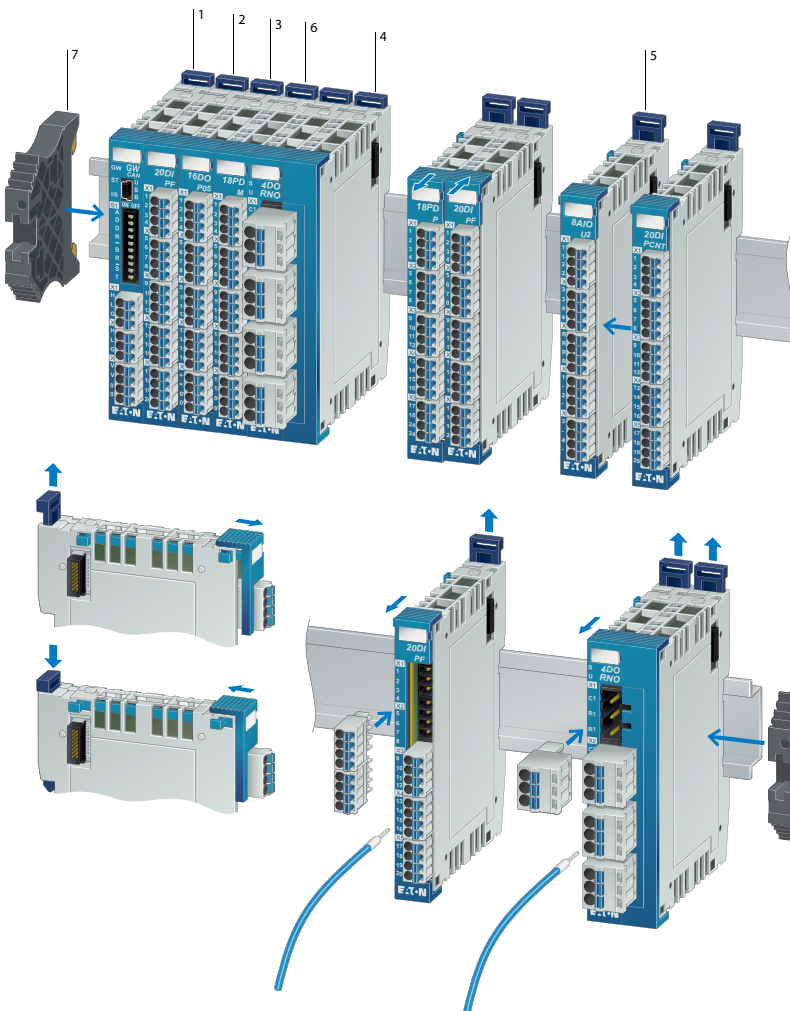
The XN300 system offers unrivaled time savings, thanks to the plug-in connections and the division of the installation into two process steps (block assembly and busbar assembly): As such, the installation can be efficiently broken down into individual steps, which makes it possible to pre-assemble the system without any tools!

The clear functional layout of the modules also ensures that you to have everything under control, even in the event of high channel density. LEDs are used to indicate the signal states directly at the connection point.



### Optimally supported: XN300 Assist

The XN300 Assist ensures the smooth planning of your system. To avoid configuration errors, the XN300 Assist carries out a plausibility check already during the configuration of the system. In addition, you can set the slice module parameters directly in the XN300 Assist and then export them into CODESYS 2 and CODESYS 3 for SDO configuration. Configuration made easy. The online function of the XN300 Assist will support you during commissioning. Various functions - such as the configuration check, the setting of parameters and the reading and setting of signal states - allow you to check the system, including any connected controller, even without a connection to the controller.












- 1 Gateway
- 2 Digital input modules
- 3 Digital output modules
- 4 Relay modules
- 5 Analog input/output modules
- 6 Field-potential distributor
- 7 End bracket








### Other module types

- Digital input/output modules
- Analog input modules
- Analog output modules
- Technology modules
- Power supply modules

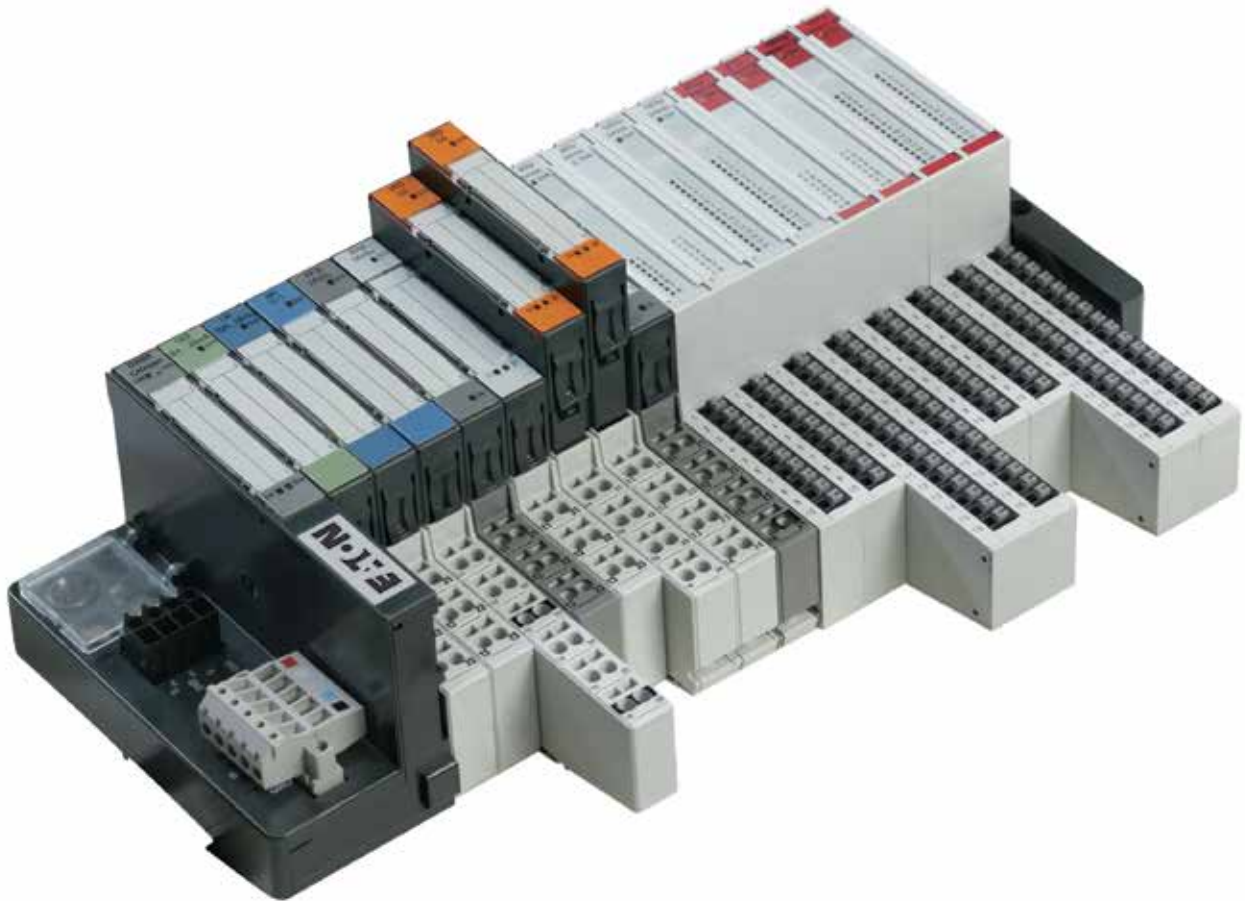


Description	Part no. Article no.
<b>XN300 gateways</b>	
Maximum expansion: 32 x XN-322... slice modules Power supply: 24 V DC Terminals: plug connector in Push-in technology	
 <p>Gateway to link XN300 I/O slice modules to an EtherCAT® network            Data transmission rate: 100 MBit/s (RJ45, IN and OUT)            Approvals: CE, cULus</p>	<b>XN-312-GW-EC</b> 178785
 <p>Gateway to link XN300 I/O slice modules to a CANopen® network            Settings via DIP switch:            - CAN network address: 1-32            - Save configuration: SET switch            - Data transmission rate: 10, 20, 50, 125, 250, 500, 800, 1000 Kbit/s, auto detect            Approvals: CE, cULus, DNV GL</p>	<b>XN-312-GW-CAN</b> 178782
<b>XN300 power supply modules</b>	
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL	
<b>Field-potential distributor module</b>	
 <p>Power distribution with XN-322 slice module in the XN300 I/O system, 18 channels, GND.</p>	<b>XN-322-18PD-M</b> 178769
 <p>Power distribution with XN-322 slice module in the XN300 I/O system, 18 channels, VCC.</p>	<b>XN-322-18PD-P</b> 178770
<b>Power supply module</b>	
 <p>The power supply module distributes power to the XN300 system components.            The module features nine short-circuit proof outputs (24 VDC/GND), arranged into four power supply groups, each with a max. load of 2 A.</p>	<b>XN-322-4PS-20</b> 178796
<b>XN300 technology modules</b>	
Push-in spring-cage terminal Approvals: CE, cULus	
<b>Counter module</b>	
 <p>Counter module with RS422/TTL inputs up to 125 kHz, 4 digital inputs and 4 digital outputs with 2 A each.            This module is particularly useful for reading counter values in positioning applications. Additional approvals: DNV GL</p>	<b>XN-322-1CNT-8DIO</b> 178795
<b>Interface module</b>	
 <p>Interface module for evaluating the data of two absolute encoders via the RS422 interface, specially designed for SSI encoders (e.g. absolute linear encoders). Supports natural binary and gray-code encoders (gray code is internally converted to natural binary).            32 bit / 125 kHz, 250 kHz, 500 kHz, 1 MHz. Additional approvals: DNV GL</p>	<b>XN-322-2SSI</b> 178773
<b>Weigh module</b>	
 <p>Weigh slice module for connecting two Wheatstone bridges (strain gauge load cells).            At 24-bit resolution, measurements with an accuracy of ±0.035 % are possible.            Additional approvals: DNV GL</p>	<b>XN-322-2DMS-WM</b> 178793
<b>Motor driver module</b>	
 <p>Current regulator module for operating a DC motor (brushed motor) with a supply voltage of 12-30 V and a max. motor current of 3.5 A. In addition, this module includes two LED drivers with maximum currents of 20 mA / 350 mA.</p>	<b>XN-322-1DCD-B35</b> 178794



Description	Part no.	Article no.
<b>Digital input modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL		
 8 digital inputs with 24 V DC each, pulse-switching, 5.0 ms	<b>XN-322-8DI-PD</b>	183172
16 digital inputs with 24 V DC each, pulse-switching, 5.0 ms	<b>XN-322-16DI-PD</b>	183173
20 digital inputs with 24 V DC each, pulse-switching, 5.0 ms	<b>XN-322-20DI-PD</b>	178786
20 digital inputs with 24 V DC each, pulse-switching, 0.5 ms	<b>XN-322-20DI-PF</b>	178768
20 digital inputs with 24 V DC each, pulse-switching, 2/4 CNT, 25 kHz	<b>XN-322-20DI-PCNT</b>	178767
20 digital inputs with 24 V DC each, negative switching, 5.0 ms	<b>XN-322-20DI-ND</b>	183174
<b>Digital output modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL		
 8 digital outputs, short-circuit proof, with 24 V DC/0.5 A each, pulse-switching	<b>XN-322-8DO-P05</b>	183175
16 digital outputs, short-circuit proof, with 24 V DC/0.5 A each, pulse-switching	<b>XN-322-16DO-P05</b>	178787
12 digital outputs, short-circuit proof, with 24 V DC/1.7 A each, pulse-switching	<b>XN-322-12DO-P17</b>	178788
<b>Digital input/output modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL		
 4 digital inputs and 4 digital outputs with 24 V DC each, pulse-switching	<b>XN-322-8DIO-PD05</b>	183178
8 digital inputs and 8 digital outputs with 24 V DC each, pulse-switching	<b>XN-322-16DIO-PD05</b>	183179
8 digital inputs and 8 digital outputs with 24 V DC each, pulse-switching, CNT, 25 kHz	<b>XN-322-16DIO-PC05</b>	183180
<b>Relay modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL		
 4 digital relay outputs, N/O	<b>XN-322-4DO-RNO</b>	178779
<b>Analog input modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus		
 4 analog resistance inputs, Pt/Ni/KTY/R, with 2-wire or 3-wire connection*	<b>XN-322-4AI-PTNI</b>	178772
6 analog inputs, +/-10V, 1 PT/KTY, Uref*	<b>XN-322-7AI-U2PT</b>	178789
8 analog current inputs, 0/4 up to 20 mA*	<b>XN-322-8AI-I</b>	179288
8 analog thermocouple inputs and two KTY inputs	<b>XN-322-10AI-TEKT</b>	178792
*additional approvals: DNV GL		
<b>Analog output modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL		
 8 analog outputs, +/-10 V	<b>XN-322-8AO-U2</b>	178790
<b>Analog input/output modules</b>		
Push-in spring-cage terminal Approvals: CE, cULus, DNV GL		
 2 analog inputs and 2 analog outputs, +/-10 V, Uref	<b>XN-322-4AI0-U2</b>	183181
4 analog inputs and 4 analog outputs, +/-10 V, Uref	<b>XN-322-8AI0-U2</b>	178791
2 analog inputs and 2 analog outputs, 0/4 to 20 mA	<b>XN-322-4AI0-I</b>	183182
4 analog inputs and 4 analog outputs, 0/4 to 20 mA	<b>XN-322-8AI0-I</b>	178771





## XI/ON – Eaton’s modular I/O system



**CODESYS**

**CANopen**

**DeviceNet™**

**Ethernet**



Whether it's about motion control, temperature or speed measurement, or the detection of currents and voltages – remote I/Os offer comprehensive possibilities across a wide range of applications. They are the ideal solution for automation concepts where decentralized signal processing is key.

Thanks to the high degree of modularity of the XI/ON system and the wide range of available functions, Eaton offers the right I/O solution for every application. XI/ON: Eaton's intelligent modular concept that's easy to handle, adapts to any application and is future-proof.



Get more information

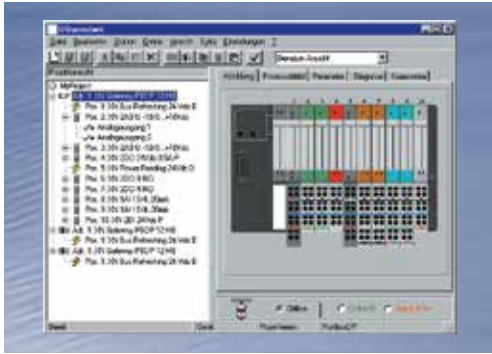




### XI/ON ECO gateways and ECO modules

The cost-effective and space-saving XI/ON ECO I/O modules and gateways are the ideal addition to the XI/ON I/O system. The ECO gateways cover the CANopen, PROFIBUS DP and Ethernet bus systems.

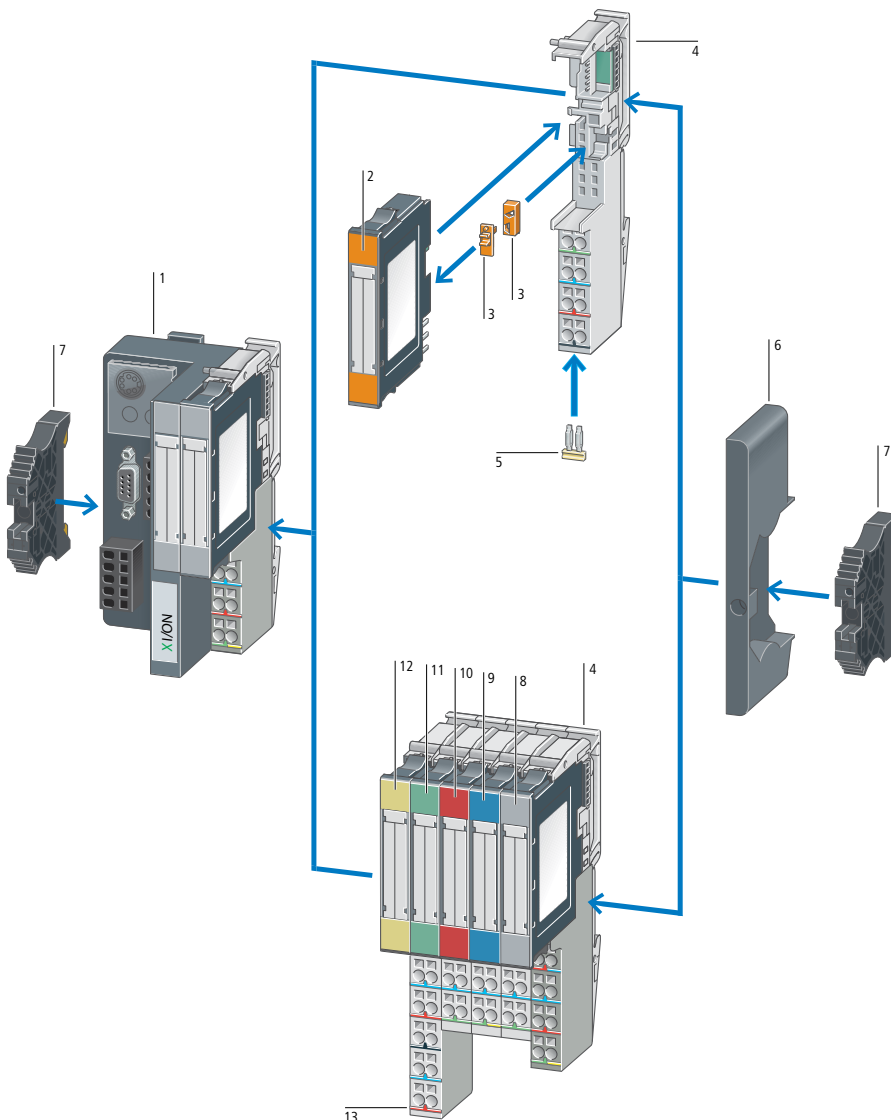
- ECO gateways with integrated bus termination resistors
- Full compatibility with the Standard XI/ON system
- No base modules required
- High channel density (up to 16 DI/DO despite being only 13 mm wide)
- “Push-In” spring-cage terminals
- Multi-functional slices
- Diagnostics interface




### I/Oassistant – Eaton’s universal configuration and diagnostics tool


The I/Oassistant is a universal, interactive tool that supports you during the entire planning and implementation process of your XI/ON system. The I/Oassistant is integrated into XSOFT-CODESYS. After you have created and structured a project on screen, you need to choose the gateways, electronic and base modules as well as the appropriate accessories. You then have the option to configure the individual stations either offline or online, and once you have adjusted the system to your specifications, all you need to do is to put it into operation. The I/Oassistant also automatically generates a parts list for your order.


The I/Oassistant checks the station, reads the process data, outputs the relevant values and visualizes the diagnostics data of the channels. You can thus put your station into operation without a higher-level PLC while ensuring that the system part in question functions properly.




- 1 Gateways
- 2 Relay modules
- 3 Coding element
- 4 Base modules
- 5 Relay jumpers
- 6 Cover plate
- 7 End bracket
- 8 Power supply modules
- 9 Analog input modules
- 10 Digital output modules
- 11 Analog output modules
- 12 Technology modules
- 13 Markers


Fieldbus connection	Data transfer rate	Connection type Fieldbus	Addressing	Part no. Article no.	
<b>XI/ON ECO gateways</b>					
Push-in spring-cage terminals Power supply: 24/5 V DC Approvals: CE, cULus					
	PROFIBUS-DP (DPV0/DPV1 protocol)	9.6 Kbit/s to 12 Mbit/s	Push-in spring-cage terminals	DIP switch	<b>XNE-GWBR-PBDP</b> 140045
	CANopen®	1000 Kbit/s, 800 Kbit/s, 500 Kbit/s, 250 Kbit/s, 125 Kbit/s, 50 Kbit/s, 20 Kbit/s	Push-in spring-cage terminals	DIP switch	<b>XNE-GWBR-CANOPEN</b> 140044
	Ethernet (Ethernet-IP protocol)	10/100 Mbit/s	2 x RJ45 (Ethernet switch)	DIP switch, BootP, DHCP or PGM	<b>XNE-GWBR-2ETH-IP</b> 140047
	Ethernet (Modbus-TCP protocol)	10/100 Mbit/s	2 x RJ45 (Ethernet switch)	DIP switch, BootP, DHCP or PGM	<b>XNE-GWBR-2ETH-MB</b> 152279




Channels	Rated voltage at supply terminal $U_L$	Input delay $t_{\text{rising edge}}$ $\mu\text{s}$	$t_{\text{falling edge}}$ $\mu\text{s}$	Input voltage High level $U_H$ V	Part no. Article no.	
<b>XI/ON ECO digital input modules</b>						
Integrated base module Approvals: CE, cULus						
	8	24 V DC	< 100	< 200	11 - 30 V	<b>XNE-8DI-24VDC-P</b> 140035
	16	24 V DC	< 150	< 300	11 - 30 V	<b>XNE-16DI-24VDC-P</b> 140040



Channels	Rated voltage at supply terminal $U_L$	Switching frequency with resistive load f Hz	Utilization factor % g	Part no. Article no.	
<b>XI/ON ECO digital output modules</b>					
Integrated base module Resistive loads, inductive loads and lamp loads can be connected Approvals: CE, cULus					
	8	24 V DC	100	100	<b>XNE-8DO-24VDC-0.5A-P</b> 140036
	16	24 V DC	100	50 %, max. 4 A	<b>XNE-16DO-24VDC-0.5A-P</b> 140039


Channels	Rated voltage at supply terminal $U_L$	Measured variables <sup>1)</sup>	Measurement ranges	Measured value representation	Limit frequency (-3 db) Hz	Part no. Article no.	
<b>XI/ON ECO analog input modules</b>							
Integrated base module Approvals: CE, cULus							
	8 (U/I), 4 (PT/NI/R)	24 V DC	Voltage, current, temperature (PT, NI), resistance R	From -10/0 to +10 V DC 0/4 - 20 mA PT: -200 - +850 (-328 - +1562)/ -200 - +150 (-328 - +302) °C, (°F) Ni: -60 - +250 (-76 - +482)/ -60 - +150 (-76 - +302) °C, (°F)	16-bit signed integer 12-bit full range, flush left Standard/extended range/PA (NE43)	1.5	<b>XNE-8AI-U/I-4PT/NI</b> 140037


**Notes** <sup>1)</sup> : Platinum sensors: PT100, PT500, PT1000 (to DIN IEC 751); nickel sensors: Ni100, Ni1000 (to DIN 43760)

	Channels	Nominal voltage at supply terminal $U_L$	Measured variables	Measurement ranges	Measured value representation	Part no. Article no.
<b>XI/ON ECO analog output modules</b>						
Integrated base module Approvals: CE, cULus						
	4	24 V DC	Voltage, current	-10/0...+10V DC 0/4 - 20 mA	16-bit signed integer 12-bit full range, flush left Standard/extended range/PA (NE43)	<b>XNE-4A0-U/I</b> 140034

	Field voltage	System power supply	Nominal current drawn from module bus	Maximum system supply current	Part no. Article no.	
	$U_L$	$U_{sys}$ V DC	$I_{MB}$ mA	$I_{MB}$ A		
<b>XI/ON Standard power supply module</b>						
Base module required Number of diagnostics bytes: 4 Approvals: CE, cULus						
	24 V DC	24	-	1.5	<b>XN-BR-24VDC-D</b> 140071	
	24 V DC	-	≤ 28	-	<b>XN-PF-24VDC-D</b> 140070	
	120/230 V AC	-	≤ 25	-	<b>XN-PF-120/230VAC-D</b> 140072	
	Channels	Rated voltage at supply terminal	Input delay		Input voltage High level	Part no. Article no.
		$U_L$	$t_{\text{rising edge}}$ μs	$t_{\text{falling edge}}$ μs	$U_H$ V	
<b>XI/ON Standard digital input modules</b>						
Base module required Approvals: CE, cULus						
	2	24 V DC	< 200	< 200	11 - 30 V	<b>XN-2DI-24VDC-P</b> 140056
	2	120/230 V AC	< 20000	< 20000	79 V AC - 265 V AC	<b>XN-2DI-120/230VAC</b> 140058
	4	24 V DC	< 200	< 200	15 V - 30 V	<b>XN-4DI-24VDC-P</b> 140052
	16	24 V DC	< 200	< 200	15 V - 30 V	<b>XN-16DI-24VDC-P</b> 140142
	32	24 V DC	< 200	< 200	15 V - 30 V	<b>XN-32DI-24VDC-P</b> 140147

	Channels	Rated voltage at supply terminal $U_L$	Switching frequency with resistive load $f$ Hz	Utilization factor %	Part no. Article no.
<b>XI/ON Standard digital output modules</b>					
Base module required Resistive loads, inductive loads and lamp loads can be connected Approvals: CE, cULus					
	2	24 V DC	5000 ( $R_{L0} < 1 \text{ k}\Omega$ )	100	<b>XN-2DO-24VDC-0.5A-P</b> 140053
	2	120/230 V AC (45 - 65 Hz)	-	100 (observe derating)	<b>XN-2DO-120/230VAC-0.5A</b> 140150
	2	24 V DC	5000 ( $R_{L0} < 1 \text{ k}\Omega$ )	100	<b>XN-2DO-24VDC-2A-P</b> 140055
	4	24 V DC	1000 ( $R_{L0} < 1 \text{ k}\Omega$ )	100	<b>XN-4DO-24VDC-0.5A-P</b> 140148
	16	24 V DC	100 ( $R_{L0} < 1 \text{ k}\Omega$ )	100	<b>XN-16DO-24VDC-0.5A-P</b> 140141


	Channels	Measured variables	Measurement ranges	Measured value representation	Limit frequency (-3 db) Hz	Part no. Article no.
<b>XI/ON Standard analog input modules</b>						
Base module required Rated voltage at supply terminal: 24 V DC Approvals: CE, cULus						
	1	Current	0/4 - 20 mA	16-bit signed integer 12-bit full range, flush left	200	<b>XN-1AI-I(0/4...20MA)</b> 140063
	2	Current	0/4 - 20 mA	16-bit signed integer 12-bit full range, flush left	> 50	<b>XN-2AI-I(0/4...20MA)</b> 140144
	1	Voltage	-10/0 to +10 V DC	16-bit signed integer 12-bit signed integer, flush left 12-bit full range, flush left	200	<b>XN-1AI-U(-10/0...+10VDC)</b> 140064
	2	Voltage	-10/0 to +10 V DC	16-bit signed integer 12-bit full range, flush left	> 50	<b>XN-2AI-U(-10/0...+10VDC)</b> 140145
	4	Voltage, current	-10/0 to +10 V DC	16-bit signed integer 12-bit signed integer, flush left	20	<b>XN-4AI-U/I</b> 140158


	Channels	Measured variables	Temperature ranges °C, (°F)	Measured value representation	Part no. Article no.
<b>XI/ON Standard temperature modules</b>					
Base module required Rated voltage at supply terminal: 24 V DC Approvals: CE, cULus					
	2	Temperature (thermocouple) <sup>1)</sup>	Type B: +100 - +1820 (+212 - +3308) Type E: -270 - +1000 (-454 - +1832) Type J: -210 - +1200 (-346 - +2192) Type K: -270 - +1370 (-454 - +2498) Type N: -270 - +1300 (-454 - +2372) Type R: -50 - +1760 (-58 - +3200) Type S: -50 - +1540 (-58 - +2804) Type T: -270 - +400 (-454 - +752)	16-bit signed integer 12-bit full range, flush left	<b>XN-2AI-THERMO-PI</b> 140068
	2	Temperature (PT, NI), resistance R <sup>2)</sup>	PT: -200 - +850 (-328 - +1562)/-200 - +150 (-328 - +302) Ni: -60 - +250 (-76 - +482)/-60 - +150 (-76 - +302)	16-bit signed integer 12-bit full range, flush left	<b>XN-2AI-PT/NI-2/3</b> 140067


**Notes**

- <sup>1)</sup> Thermocouple types B, E, J, K, N, R, S, T according to IEC 584, Class 1, 2, 3
- <sup>2)</sup> Platinum sensors: PT100, PT500, PT1000 (to DIN IEC 751);  
nickel sensors: Ni100, Ni1000 (to DIN 43760)



	Chan-nels	Measured variables	Measurement ranges	Measured value representation	Part no. Article no.
<b>XI/ON Standard analogue output modules</b>					
Base module required Rated voltage at supply terminal: 24 V DC Approvals: CE, cULus					
	1	Current	0/4 - 20 mA	16-bit signed integer 12-bit full range, flush left	<b>XN-1AO-I(0/4...20MA)</b> 140065
	2	Current	0/4 - 20 mA	16-bit signed integer 12-bit full range, flush left	<b>XN-2AO-I(0/4...20MA)</b> 140146
	2	Voltage	-10/0...+10 V DC	16-bit signed integer 12-bit signed integer, flush left 12-bit full range, flush left	<b>XN-2AO-U(-10/0...+10VDC)</b> 140066

	Contact type	Rated load voltage	Maximum continuous current, resistive load	Part no. Article no.
<b>XI/ON Standard relay modules</b>				
Base module required Rated voltage at supply terminal: 24 V DC Resistive loads, inductive loads and lamp loads can be connected Approvals: CE, cULus				
	2 normally open contacts	230 V AC, 30 V DC	5 A	<b>XN-2DO-R-NO</b> 140062
	2 changeover contacts	230 V AC, 30 V DC	5 A	<b>XN-2DO-R-CO</b> 140054

	Type	Transmission channels	Bit transfer rate	Cable length m	Part no. Article no.
<b>XI/ON Standard interface modules</b>					
Base module required Rated voltage at supply terminal: 24 V DC Approvals: CE, cULus					
	RS232	RxD, TxD, RTS, CTS	Max. 115200 bit/s (configurable), default setting: 9600 bit/s, 7 data bits, odd parity and 2 stop bits	max. 15	<b>XN-1RS232</b> 140151
	RS 484/RS 422	RxD, TxD	Max. 115200 bit/s (configurable), default setting: 9600 bit/s, 7 data bits, odd parity and 2 stop bits	max. 30	<b>XN-1RS485/422</b> 140152

	XN-S3...-SBB	XN-S3...-SBC	XN-S4...-SBBC	XN-S4...-SBBS	XN-S4...-SBCS	XN-S4...-SBBS-CJ	XN-S6...-SBBSBB	XN-S6...-SBCSBC	XN-B3...-SBB	XN-B3...-SBC	XN-B4...-SBBC	XN-B6...-SBBSBB	XN-B6...-SBCSBC	XN-P3...-SBB	XN-P3...-SBB-B	XN-P4...-SBBC	XN-P4...-SBBC-B
<b>Electronic modules</b>																	
<b>Digital input modules</b>																	
XN-2DI-24VDC-P	●		●														
XN-2DI-24VDC-N	●		●														
XN-2DI-120/230VAC	●		●														
XN-4DI-24VDC-P				●			●										
XN-4DI-24VDC-N				●			●										
XN-16DI-24VDC-P								●			●						
XN-32DI-24VDC-P									●			●					
XNE-8DI-24VDC-P <sup>1)</sup>												●					
XNE-16DI-24VDC-P <sup>1)</sup>																	
<b>Digital output modules</b>																	
XN-2DO-24VDC-0.5A-P		●			●												
XN-2DO-24VDC-0.5A-N		●			●												
XN-2DO-24VDC-2A-P		●			●												
XN-2DO-120/230VAC-0.5A		●			●												
XN-4DO-24VDC-0.5A-P					●			●									
XN-16DO-24VDC-0.5A-P									●								
XN-32DO-24VDC-0.5A-P										●							
XNE-8DO-24VDC-0.5A-P <sup>1)</sup>													●				
XNE-16DO-24VDC-0.5A-P <sup>1)</sup>																	
<b>Relay modules</b>																	
XN-2DO-R-NC				●	●												
XN-2DO-R-NO				●	●												
XN-2DO-R-CO				●													
<b>Analog input modules</b>																	
XN-1AI-I(0/4...20MA)	●			●													
XN-2AI-I(0/4...20MA)	●			●													
XN-1AI-U(-10/0...+10VDC)	●			●													
XN-2AI-U(-10/0...+10VDC)	●			●													
XN-2AI-PT/NI-2/3	●			●													
XN-2AI-THERMO-PI						●											
XN-4AI-U/I							●										
XNE-8AI-U/I-4PT/NI <sup>1)</sup>																	
<b>Analog output modules</b>																	
XN-1AO-I(0/4...20MA)	●																
XN-2AO-I(0/4...20MA)	●																
XN-2AO-U(-10/0...+10VDC)	●																
XNE-4AO-U/I <sup>1)</sup>																	
<b>Technology modules</b>																	
XN-1RS232				●													
XN-1RS485/422				●													
XN-1SSI				●													
XNE-1SWIRE <sup>1)</sup>																	
XNE-2CNT-2PWM <sup>1)</sup>																	
<b>Power supply modules</b>																	
XN-BR-24VDC-D														● <sup>2)</sup>	● <sup>3)</sup>	● <sup>2)</sup>	● <sup>3)</sup>
XN-PF-24VDC-D														●		●	
XN-PF-120/230VAC-D														●		●	

Control

**Notes**

- <sup>1)</sup> No base module required
- <sup>2)</sup> Base modules for power supply of gateway
- <sup>3)</sup> Base modules for bus refreshing within the station

## Emergency-stop/emergency switching-off buttons

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## ESR5 safety relay

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## easySafety control relay for safety circuits

Page 4/4 ff.



## Safety contactors

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## Safety position switches

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## RS-Titan safety switches

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## LS-Titan position switches

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## Operating heads

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Roller levers



Adjustable roller levers



Actuating rods



## Electronic position switches



## Photoelectric sensors Comet series

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## E58 Harsh Duty

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## Intelligent and compact: E65-SM series

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## E67 Long Range series

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## E71 NanoView series

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## E76 IntelliView series

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## Inductive metal detection

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### E 57 miniature series Page 4/21



### E57G General Purpose series Page 4/20



### E52 and E56 series Page 4/20



### E57P(S) performance series



 see [Eaton.com/sensors](http://Eaton.com/sensors)

## Intelligent sensor adaption

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### iProx series Page 4/21



### ProxView software Page 4/21



## Verification of capacitive fill levels

### E 53 series Page 4/21



## SL signal towers

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### Complete devices (IP66) Page 4/27



### Continuous light modules, flashing light modules and acoustic modules Page 4/27



### Base modules Page 4/29



## Detection of times, fill levels and currents

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### ETR 2 electronic timing relay Page 4/34



### ETR 4 electronic timing relay Page 4/34



### EMR electronic measuring and monitoring relay Page 4/35





# Functional safety to protect people, machines and the environment



**Safety Technology**

Control the unexpected



Throughout their entire life cycle, machines pose risks to people, other machinery and the environment. For this reason, it is vital to identify any hazards during the design phase of the machine and to reduce them by taking appropriate measures.

The Machinery Directive 2006/42/EC stipulates that machines should not pose any danger. However, as there is no such thing as 100 % safety in engineering, the objective is to minimize dangers and to achieve tolerable levels of residual risk. The overall safety of a machine defines the state in which it either poses no unacceptable risks to people or can be considered hazard-free. Functional safety refers to that part of the overall safety of a system which depends on the correct functioning of the safety-related systems and the external risk-reduction devices.



Get more information



## Risk reduction through the use of safety-related parts in control systems

In international standards, the safety components of machine controls are referred to as "safety-related parts of control systems" (SRP/CS). Safety-related control components cover the entire functional chain of a safety function. In each case, they consist of the input level (sensor), the integrated logic (safe signal processing) and the output level (actuator).

The general objective is to design these components in such a way that the control functions reduce the level or risk in line with the results of the risk analysis, even in the event that the control system malfunctions. The higher the level of risk reduction that the safety-related parts of a control system need to achieve, the higher the required safety level/technical safety performance level.

**Fast and safe detection**



**Input**

**Safe monitoring and processing**



**Logic**

**Reliable shutdown**



**Output**

## Safety Manual for machines and systems in accordance with EN ISO 13849-1 and IEC 62061

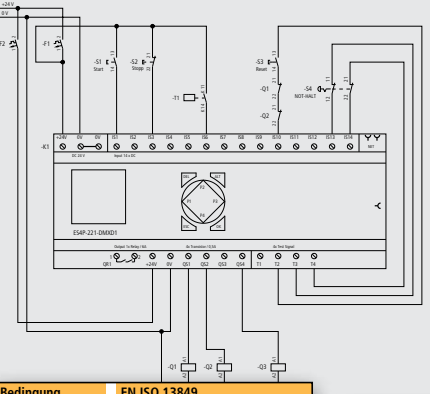
Information about machine safety can be found in Eaton's "Safety Manual", which is aimed at machine builders and system integrators, as well as at teachers and students and anyone else who is interested in the topic.

This manual provides an introduction to the comprehensive literature on safety technology. The Eaton Safety Manual provides an overview of the interplay between the relevant directives, standards and regulations that must be taken into account when designing safety equipment for machines. The safety-related contents of this manual have been certified by TÜV Rheinland Industrie Service GmbH.

Based on example circuits, the manual shows how functional safety can be implemented in safety applications by means of electrical, electronic and programmable components and systems.



Signaling and monitoring



Kat	B	1	2	3	4
PL	a	b	c	d	e
SIL	1	2	3		

Bedingung	EN ISO 13849
Struktur	Kat. 4
MTTF <sub>d</sub>	100 Jahre
B10 <sub>d</sub>	S4: 100000, Q1, Q2: 1300000
r <sub>sp</sub>	1800

Bedingung	IEC 62061
Struktur	TS D, symmetrisch
PFH <sub>d</sub>	1,74 x 10 <sup>-8</sup>
B10	S4: 20000, Q1, Q2: 975000

In addition, the Safety Manual also describes the functioning of each example circuit and contains a clear overview of the possible evaluations.

The calculated variables are based on standard assumptions about the safety applications and the safety-related switchgear being used.

Register now at [Eaton.com/shb](http://Eaton.com/shb) to download our Safety Manual free of charge.

The safety-relevant variables for our products are available at [Eaton.com/fusa](http://Eaton.com/fusa)



## Safe monitoring and processing



Machines and systems rely on potentially dangerous motion sequences whose safety needs to be ensured by technical means. Safety devices such as emergency-stop buttons, protective doors, light curtains and operating elements for safe commissioning must be checked, monitored and, if necessary, set to a safe state. Eaton offers two different products for this purpose, the ESR5 electronic safety relay and the easySafety ES4P safety-related control relay.

Eaton's safety products are approved by TÜV Rheinland and ensure the necessary level of personal and process protection, in both simple and complex machines:

- Performance Level PL e to EN ISO 13849-1
- Safety Integrity Level SILCL 3 according to IEC 62061



### Safe design of logic processing

The ESR5 safety relays provide reliable monitoring of safety device signals and switch off quickly and reliably in an emergency. The internal logic of the safety relays monitors the safety circuits and activates the enabling paths if no fault is present.

The safety-related easySafety control relay monitors all common safety devices and also performs the necessary machine control tasks. Each EasySafety device is equipped with a wide range of classic safety relays in the form of safety function blocks, and thus integrates safety as well as standard functions in a single device – all in one.



### Cost-effective monitoring with the ESR5 safety relay

- Multiple safety switching contacts with up to 5 enabling and 2 signal current paths
- Immediate (stop category 0) or delayed (stop category 1) stop
- Can be duplicated by means of contact expansion modules
- Maximum space savings thanks to the sleek 22.5 mm wide design
- Plug-in screw terminals for fast and fault-free replacement
- Multi-voltage versions with 24-230 V AC/DC for flexible applications
- Suitable for global use with UL, cUL and TÜV Rheinland certifications









### All in one – safety and control relay in a single device

- Safety circuit diagram and standard circuit diagram integrated in the same device
- TÜV-approved safety function blocks
- 14 safety inputs
- 4 safety transistor outputs and 1 redundant relay output, or 4 safety relay outputs
- 4 test signals
- Can be locally expanded via the integrated easyLink interface
- Can be expanded remotely via the integrated easyNet interface
- With or without display
- An additional stand-alone display can be connected via the integrated RS232 interface

# Functional safety

## Monitoring and processing

	Emergency stop	Protective door	OSSD input	Contact expansion module	Feedback circuit	Reset button monitoring	Single-channel	Two-channel	Non-delayed enable current paths	Delayed enable current paths	Non-delayed signal current path	PL / category according to EN ISO 13849	SILCL according to EN62061	Part no. Article no.
<b>ESR5</b>														
Width: 22.5 mm or 45 mm														
	✓	✓	-	-	✓	-	✓	✓	2	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-21-24VAC-DC</b> 118700
	✓	✓	-	-	✓	-	✓	✓	2	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-31-24VAC-DC</b> 118702
	✓	✓	-	-	✓	✓	✓	✓	3	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-31-230VAC</b> 119380
	✓	✓	✓	-	✓	✓	✓	✓	3	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-31-UC</b> 191796
	✓	✓	-	-	✓	-	✓	-	4	-	1	PL c / Cat. 1	SILCL 1	<b>ESR5-NO-41-24VAC-DC</b> 118701
	✓	✓	-	-	✓	-	✓	-	3	-	1	PL c / Cat. 1	SILCL 1	<b>ESR5-NOS-31-230VAC</b> 153152
	✓	✓	✓	-	✓	✓	✓	✓	2	2	-	PL e / Cat. 4	SILCL 3	<b>ESR5-NV3-30</b> 118705
	✓	✓	✓	-	-	-	✓	✓	3	2	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NV3-300</b> 171858
	-	✓	-	-	✓	-	-	✓	2	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NZ-21-24VAC-DC</b> 118703
	-	-	-	✓	-	-	✓	-	5	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NE-51-24VAC-DC</b> 118707
	-	-	-	✓	-	-	✓	-	-	4	2	PL d / Cat. 3	SILCL 3	<b>ESR5-VE3-42</b> 118706
with light curtain functionality														
	✓	✓	-	-	✓	✓	-	-	3	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-BWS-31-24VAC-DC</b> 180413

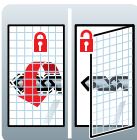
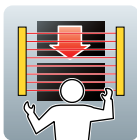
	Transistor outputs	Relay outputs	Display + keypad	Part no. Article no.
<b>ES4P</b>				
<ul style="list-style-type: none"> <li>- Stopping in the event of an emergency</li> <li>- Protective door</li> <li>- ESPE with muting function</li> <li>- Two-hand control</li> <li>- Highest speed monitoring</li> <li>- Zero speed monitoring</li> <li>- Safety timing relay</li> <li>- Mode selection</li> <li>- Enabling switch</li> <li>- Feedback circuit</li> <li>- Width: 107.5 mm</li> <li>- 14 (safety) inputs 24 V DC</li> <li>- Rated operational voltage: 24 V DC</li> </ul>				
Safety parameters				
<ul style="list-style-type: none"> <li>- Performance Level according to EN ISO 13849-1 PL e / Cat. 4</li> <li>- Safety integrity level claim limit (according to EN62061): SILCL 3</li> </ul>				
	4	1 (redundant)	✓	<b>ES4P-221-DMXD1</b> 111017
	-	4	✓	<b>ES4P-221-DRXD1</b> 111019
	4	1 (redundant)	-	<b>ES4P-221-DMXX1</b> 111016
	-	4	-	<b>ES4P-221-DRXX1</b> 111018
Description				Part no. Article no.
<b>ES4P add-on functions</b>				
Programming software				
	easySoft-Safety Selection menu in German, English, French, and Italian Operating systems: Windows XP SP3, Windows 7 (32 bit + 64 bit), Windows 8 (32 bit + 64 bit)			<b>ESP-SOFT</b> 111460
Memory card				
	256 kB module			<b>ES4A-MEM-CARD1</b> 111461
Function	Description	Length m	Part no. Article no.	
<b>Programming cables</b>				
	For downloading the user program from a PC to the device For use with easy800, MFD-...-CP8, MFD-...-CP10, ES4P	SUB-D, 9-pole, serial	2	<b>EASY800-PC-CAB</b> 256277
	For downloading the user program from a PC to the device For use with easy800, MFD-...-CP8, MFD-...-CP10, EC4P, ES4P	USB	2	<b>EASY800-USB-CAB</b> 106408





suva

## Safe, proven and stands out: DILMS safety contactor






The DILMS safety contactors have been specially developed by Eaton to ensure reliable switching in safety-related applications. The combination of our proven technology with the latest safety standards means that the DILMS safety contactor is the right choice for any machine or system.

All versions of the DILMS safety contactor (in the current range from 7 A to 150 A) are equipped with a top-mounted auxiliary contact that is non-detachable. The DILAS safety relay, available in three different coil voltages, rounds out Eaton's product range in this area.

The contactor's yellow cover allows for quick and easy identification of the safety circuits. A built-in inspection window situated directly above the switch-position indicator clearly indicates the current status of the machine or system. This reliably prevents the contactor from being activated manually.

The safety contactors have been approved and certified for global use (including CE, UL, CSA, CCC, and SUVA).

## Moeller series

				<b>AC operation</b> 110 V 50 Hz, 120 V 60 Hz	<b>AC operation</b> 230 V 50 Hz, 240 V 60 Hz	<b>DC operation</b> 24 V DC
				<b>Part no.</b> Article no.	<b>Part no.</b> Article no.	<b>Part no.</b> Article no.
Current AC-15 [A]		Auxiliary contacts N/O = normally open N/C = normally closed				
230 V	400 V					
<b>Complete devices</b>						
<b>DILAS safety relay</b>						
	4	4	4 N/O, 4 N/C	<b>DILAS-44(110V50HZ,120V60HZ)</b> 191700	<b>DILAS-44(230V50HZ,240V60HZ)</b> 191739	<b>DILAS-44(24VDC)</b> 191760
	4	4	3 N/O, 3 N/C + 1NO1NC <sup>1)</sup>	<b>DILAS-R44(110V50HZ,120V60HZ)</b> 191732	<b>DILAS-R44(230V50HZ,240V60HZ)</b> 191753	<b>DILAS-R44(24VDC)</b> 191720
				<b>AC operation</b> 110 V 50 Hz, 120 V 60 Hz	<b>AC operation</b> 230 V 50 Hz, 240 V 60 Hz	<b>DC operation</b> 24 V DC
				<b>Part no.</b> Article no.	<b>Part no.</b> Article no.	<b>Part no.</b> Article no.
Current A	Output kW	Auxiliary contacts N/O = normally open N/C = normally closed				
<b>DILMS safety contactor</b>						
	7	3	2 N/O, 3 N/C	<b>DILMS7-23(110V50HZ,120V60HZ)</b> 191701	<b>DILMS7-23(230V50HZ,240V60HZ)</b> 191740	<b>DILMS7-23(24VDC)</b> 191761
	9	4	2 N/O, 3 N/C	<b>DILMS9-23(110V50HZ,120V60HZ)</b> 191702	<b>DILMS9-23(230V50HZ,240V60HZ)</b> 191741	<b>DILMS9-23(24VDC)</b> 191762
	12	5.5	2 N/O, 3 N/C	<b>DILMS12-23(110V50HZ,120V60HZ)</b> 191703	<b>DILMS12-23(230V50HZ,240V60HZ)</b> 191742	<b>DILMS12-23(24VDC)</b> 191709
	7	3	1 N/O, 2 N/C + 1NO1NC <sup>1)</sup>	<b>DILMS7-R23(110V50HZ,120V60HZ)</b> 191733	<b>DILMS7-R23(230V50HZ,240V60HZ)</b> 191754	<b>DILMS7-R23(24VDC)</b> 191721
	9	4	1 N/O, 2 N/C + 1NO1NC <sup>1)</sup>	<b>DILMS9-R23(110V50HZ,120V60HZ)</b> 191734	<b>DILMS9-R23(230V50HZ,240V60HZ)</b> 191755	<b>DILMS9-R23(24VDC)</b> 191722
	12	5.5	1 N/O, 2 N/C + 1NO1NC <sup>1)</sup>	<b>DILMS12-R23(110V50HZ,120V60HZ)</b> 191735	<b>DILMS12-R23(230V50HZ,240V60HZ)</b> 191756	<b>DILMS12-R23(24VDC)</b> 191723
	18	7.5	2 N/O, 3 N/C	<b>DILMS17-23(110V50HZ,120V60HZ)</b> 191704	<b>DILMS17-23(230V50HZ,240V60HZ)</b> 191743	<b>DILMS17-23(RDC24)</b> 191710
	25	11	2 N/O, 3 N/C	<b>DILMS25-23(110V50HZ,120V60HZ)</b> 191705	<b>DILMS25-23(230V50HZ,240V60HZ)</b> 191744	<b>DILMS25-23(RDC24)</b> 191711
	32	15	2 N/O, 3 N/C	<b>DILMS32-23(110V50HZ,120V60HZ)</b> 191706	<b>DILMS32-23(230V50HZ,240V60HZ)</b> 191745	<b>DILMS32-23(RDC24)</b> 191712
	18	7.5	1 N/O, 2 N/C + 1NO1NC <sup>1)</sup>	<b>DILMS17-R23(110V50HZ,120V60HZ)</b> 191736	<b>DILMS17-R23(230V50HZ,240V60HZ)</b> 191757	<b>DILMS17-R23(RDC24)</b> 191724
	25	11	1 N/O, 2 N/C + 1NO1NC <sup>1)</sup>	<b>DILMS25-R23(110V50HZ,120V60HZ)</b> 191737	<b>DILMS25-R23(230V50HZ,240V60HZ)</b> 191758	<b>DILMS25-R23(RDC24)</b> 191725
	32	15	1 N/O, 2 N/C + 1NO1NC <sup>1)</sup>	<b>DILMS32-R23(110V50HZ,120V60HZ)</b> 191738	<b>DILMS32-R23(230V50HZ,240V60HZ)</b> 191759	<b>DILMS32-R23(RDC24)</b> 191726
	40	18.5	2 N/O, 2 N/C	<b>DILMS40-22(110V50HZ,120V60HZ)</b> 191707	<b>DILMS40-22(230V50HZ,240V60HZ)</b> 191746	<b>DILMS40-22(RDC24)</b> 191713
	50	22	2 N/O, 2 N/C	<b>DILMS50-22(110V50HZ,120V60HZ)</b> 191708	<b>DILMS50-22(230V50HZ,240V60HZ)</b> 191747	<b>DILMS50-22(RDC24)</b> 191714
	65	30	2 N/O, 2 N/C	<b>DILMS65-22(110V50HZ,120V60HZ)</b> 191727	<b>DILMS65-22(230V50HZ,240V60HZ)</b> 191748	<b>DILMS65-22(RDC24)</b> 191715
	80	37	2 N/O, 2 N/C	<b>DILMS80-22(110V50HZ,120V60HZ)</b> 191728	<b>DILMS80-22(230V50HZ,240V60HZ)</b> 191749	<b>DILMS80-22(RDC24)</b> 191716
	95	45	2 N/O, 2 N/C	<b>DILMS95-22(110V50HZ,120V60HZ)</b> 191729	<b>DILMS95-22(230V50HZ,240V60HZ)</b> 191750	<b>DILMS95-22(RDC24)</b> 191717
	115	55	2 N/O, 2 N/C	<b>DILMS115-22(RAC120)</b> 191730	<b>DILMS115-22(RAC240)</b> 191751	<b>DILMS115-22(RDC24)</b> 191718
	150	75	2 N/O, 2 N/C	<b>DILMS150-22(RAC120)</b> 191731	<b>DILMS150-22(RAC240)</b> 191752	<b>DILMS150-22(RDC24)</b> 191719

### Notes

<sup>1)</sup> 1NO1NC is suitable for electronic signals



## Safe and accurate position detection: mechanical, optical, capacitive and inductive



Download the catalog:  
[Eaton.com/catalog](http://Eaton.com/catalog)

Eaton safety/position switches with positive opening contacts can be used wherever positions need to be accurately detected. They are equipped with Cage Clamps or screw terminals and are available in either metal or plastic housings. Their large cable connection area ensures that they can be wired quickly. In addition, the operating heads are both easy to install and versatile. Safety-door switches and safety position switches are used to protect people and processes. They can be used to implement safe shutdowns and to ensure that protective doors are safely locked.

Inductive, capacitive and optical object detection are available, as required. The sensors are available in both AC and DC versions, and in various rectangular and tubular designs, so that they can be easily adapted to any type of location. The iProx sensors, which can be easily adapted to the application at hand, are one of the main highlights of this series. In fact, the E59 iProx can be used to replace a wide range of standard sensors, for example during maintenance.



**More than a mechanical switch:  
LSE-Titan**

- Variable and adjustable operating point
- Precisely defined and reproducible
- The two high-speed and bounce-free PNP switching outputs support high switching frequencies.
- Analog voltage output for precise position control
- Certified by TÜV Rheinland
- With adjustable operating point



**Reliable machine protection with non-contact safety switches**

The RS-Titan non-contact safety switches have been specifically developed for monitoring protective covers.

- Non-contact: durable, easy to install, can also handle doors or flaps that don't close precisely, low maintenance
- High degree of protection (IP67, IP69): easy to clean, rugged and reliable
- Symmetrical enclosures: easy mounting, low inventory levels
- 2 or 3 switching contacts: suitable for many different applications
- Potential-free contacts: easy connection
- SILCL3, PLe: safe and reliable
- M12 plug or cable: quick and easy connection

Signaling and monitoring



**Eaton sensors: versatile and reliable**

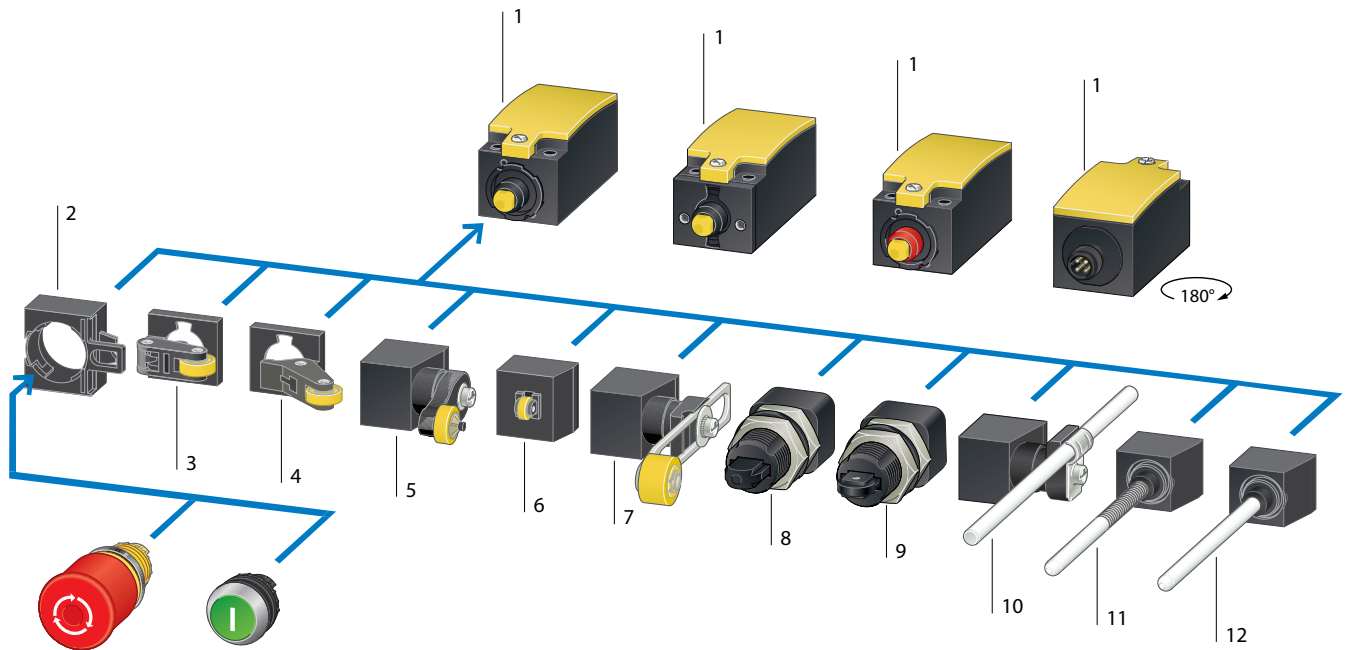
Eaton's inductive and optical sensors are available in many designs and versions and offer maximum reliability.

- Rugged construction
- Nine different series of inductive sensors are available
- E59 AccuProx with analog output
- E56 Pancake with a nominal range of 100 mm
- Opposed, retro-reflective and diffused photoelectric sensors, and more
- Perfect Prox technology for unparalleled background suppression
- The large signal reserve prevents failures and downtime and prolongs maintenance intervals

# Position switches

LS-Titan safety position switches



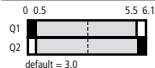
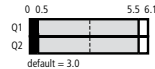

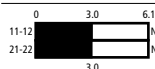
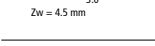
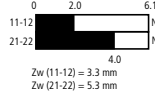
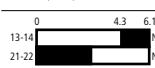

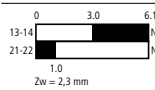
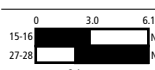

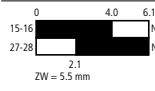
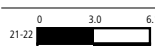

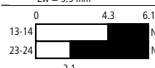
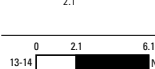
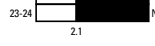
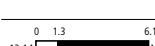

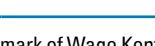
Moeller series



- 1 LS, LSM base device
- 2 Mounting clamp
- 3 Roller lever
- 4 Angled roller lever
- 5 Rotary lever
- 6 Roller plunger

- 7 Adjustable roller lever
- 8 Rounded plunger, center fixing
- 9 Roller plunger, center fixing
- 10 Actuating rod
- 11 Spring-rod actuator
- 12 Actuating rod



	Contact configuration ☉ Safety function implemented with positive opening as per IEC/EN 60947-5-1 N/O = normally open      N/C = normally closed	Contact travel ■ = contact closed □ = contact open Contact diagram	Enclosure	Cage Clamp <sup>1)</sup> Part no. Article no.	Screw terminal Part no. Article no.	
<b>Base device, expandable</b>						
Operating heads → Page 4/17						
With electronically adjustable operating point, IP66, IP67						
Optical status indicator, comparable with positive opening function, conditionally short-circuit-proof, restart after reset						
 	1 N/O	1 N/C		Insulated material	<b>LSE-11</b> 266121	
	-	2 N/C		Insulated material	<b>LSE-02</b> 266122	
<b>Rounded plunger, IP66, IP67</b>						
	-	2 N/C ☉		Insulated material	<b>LS-02</b> 266107	<b>LS-S02</b> 106729
	-	2 N/C ☉		Metal	<b>LSM-02</b> 266142	
-	2 N/C ☉		Insulated material	<b>LS-02A</b> 116702	<b>LS-S02A</b> 116703	
	1 N/O	1 N/C ☉		Insulated material	<b>LS-11</b> 266109	<b>LS-S11</b> 106783
	1 N/O	1 N/C ☉		Metal	<b>LSM-11</b> 266144	
	1 N/O	1 N/C ☉		Insulated material	<b>LS-11A</b> 116704	<b>LS-S11A</b> 116705
	1 N/O	1 N/C ☉		Insulated material	<b>LS-11D</b> 266114	<b>LS-S11D</b> 106791
	1 N/O	1 N/C ☉		Metal	<b>LSM-11D</b> 266149	
	1 N/O	1 N/C ☉		Insulated material	<b>LS-11DA</b> 292361	<b>LS-S11DA</b> 106795
	1 N/O	1 N/C ☉		Metal	<b>LSM-11DA</b> 292363	
	1 N/O	1 N/C ☉		Insulated material	<b>LS-11S</b> 266105	<b>LS-S11S</b> 106798
	1 N/O	1 N/C ☉		Metal	<b>LSM-11S</b> 266140	
	2 N/O	-		Insulated material	<b>LS-20</b> 266120	<b>LS-S20</b> 106808
	2 N/O	-		Metal	<b>LSM-20</b> 266155	
	2 N/O	-		Insulated material	<b>LS-20A</b> 292362	<b>LS-S20A</b> 106810
	2 N/O	-		Metal	<b>LSM-20A</b> 100051	
	2 N/O	-		Insulated material	<b>LS-20B</b> 116706	

Notes

<sup>1)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH, 32432 Minden, Germany  
Accessories for the Cage Clamp terminals from Wago:  
comb-style jumper bar, gray, Wago article no. 264-402

# Position switches



LS-Titan safety position switches

Moeller series

		Contacts		Enclosure	Snap-action contact	Connection <sup>type 1)</sup>		Screw terminal	
		⊖ Safety function implemented with positive opening as per IEC/EN 60947-5-1				Part no.	Article no.	Part no.	Article no.
		N/O = normally open	N/C = normally closed						
<b>Complete devices</b>									
<b>Roller plunger, IP66, IP67</b>									
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11/P</b>	266112	<b>LS-S11/P</b>	106788	
	1 N/O	1 N/C ⊖	Metal	-	<b>LSM-11/P</b>	266147			
	1 N/O	1 N/C ⊖	Insulated material	yes	<b>LS-11S/P</b>	266118	<b>LS-S11S/P</b>	106801	
	1 N/O	1 N/C ⊖	Metal	yes	<b>LSM-11S/P</b>	266153			
<b>Spring-rod actuator IP66, IP67</b>									
Not to be used as a safety position switch									
	1 N/O	1 N/C	Insulated material	yes	<b>LS-11S/S</b>	266104	<b>LS-S11S/S</b>	106805	
	1 N/O	1 N/C	Metal	yes	<b>LSM-11S/S</b>	266139			
<b>Roller lever IP66, IP67</b>									
<b>long</b>									
	-	2 N/C ⊖	Insulated material	-	<b>LS-02/L</b>	266108	<b>LS-S02/L</b>	106781	
	-	2 N/C ⊖	Metal	-	<b>LSM-02/L</b>	266143			
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11/L</b>	266110	<b>LS-S11/L</b>	106785	
	1 N/O	1 N/C ⊖	Metal	-	<b>LSM-11/L</b>	266145			
	1 N/O	1 N/C ⊖	Insulated material	yes	<b>LS-11S/L</b>	266116	<b>LS-S11S/L</b>	106800	
	1 N/O	1 N/C ⊖	Metal	yes	<b>LSM-11S/L</b>	266151			
<b>short</b>									
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11/LS</b>	290173	<b>LS-S11/LS</b>	106787	
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11D/LS</b>	290174	<b>LS-S11D/LS</b>	106794	
<b>large</b>									
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11/LB</b>	290175	<b>LS-S11/LB</b>	106786	
<b>Rotary lever IP66, IP67</b>									
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11/RL</b>	266111	<b>LS-S11/RL</b>	106789	
	1 N/O	1 N/C ⊖	Metal	-	<b>LSM-11/RL</b>	266146			
	1 N/O	1 N/C ⊖	Insulated material	yes	<b>LS-11S/RL</b>	266117	<b>LS-S11S/RL</b>	106802	
	1 N/O	1 N/C ⊖	Metal	yes	<b>LSM-11S/RL</b>	266152			
<b>Adjustable roller lever IP66, IP67</b>									
	1 N/O	1 N/C ⊖	Insulated material	-	<b>LS-11/RLA</b>	266113	<b>LS-S11/RLA</b>	106790	
	1 N/O	1 N/C ⊖	Metal	-	<b>LSM-11/RLA</b>	266148			
	1 N/O	1 N/C ⊖	Insulated material	yes	<b>LS-11S/RLA</b>	266119	<b>LS-S11S/RLA</b>	106803	
	1 N/O	1 N/C ⊖	Metal	yes	<b>LSM-11S/RLA</b>	266154			
<b>Actuating rod IP66, IP67</b>									
	1 N/O	1 N/C ⊖	Insulated material	yes	<b>LS-11S/RR</b>	266106	<b>LS-S11S/RR</b>	106804	
	1 N/O	1 N/C ⊖	Metal	yes	<b>LSM-11S/RR</b>	266141			

**Notes**

<sup>1)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.  
Accessories for the Cage Clamp terminals from Wago: comb-style jumper bar, gray, Wago article no. 264-402

	Contacts		Snap-action contact	Contact travel ■ = contact closed □ = contact open	Contact diagram	Cage Clamp <sup>1)</sup>		Screw terminal	
	⊕ = Safety function implemented with positive opening as per IEC/EN 60947-5-1	N/O = normally open N/C = normally closed				Part no.	Article no.	Part no.	Article no.
<b>Base device, expandable</b>									
<b>-40 - +70, IP65, insulated material</b>									
	Rounded plunger	-	2 N/C ⊕	-		LS-02-CC	176880	LS-S02-CC	176890
		-	2 N/C ⊕	-		LS-02A-CC	176886	LS-S02A-CC	176895
		1 N/O	1 N/C ⊕	-		LS-11-CC	176879	LS-S11-CC	176889
		1 N/O	1 N/C ⊕	-		LS-11A-CC	176887	LS-S11A-CC	176896
		1 N/O	1 N/C ⊕	-		LS-11D-CC	176882	LS-S11D-CC	176891
		1 N/O	1 N/C ⊕	-		LS-11DA-CC	176884	LS-S11DA-CC	176893
		1 N/O	1 N/C ⊕	-		LS-11S-CC	176881	LS-S11S-CC	144118
		2 N/O	-	-		LS-20-CC	176883	LS-S20-CC	176892
		2 N/O	-	-		LS-20A-CC	176885	LS-S20A-CC	176894
		2 N/O	-	-		LS-20B-CC	176888	LS-S20B-CC	176897
<b>Base device, expandable</b>									
<b>With integrated M12 plug, IP66</b>									
	Rounded plunger	-	2 N/C ⊕	-		LS-02-M12A	178128		
		1 N/O	1 N/C ⊕	-		LS-11-M12A	178129		
		1 N/O	1 N/C ⊕	-		LS-11D-M12A	178130		
		1 N/O	1 N/C ⊕	-		LS-11DA-M12A	178131		
		1 N/O	1 N/C ⊕	-		LS-11S-M12A	178132		
		2 N/O	-	-		LS-20-M12A	178133		
		2 N/O	-	-		LS-20A-M12A	178134		
		2 N/O	-	-		LS-20B-M12A	178135		







**Notes**

<sup>1)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.  
Accessories for the Cage Clamp terminals from Wago: comb-style jumper bar, gray, Wago article no. 264-402

# Position switches

LS-Titan safety position switches

Moeller series

	Contact configuration		Snap-action contact	Contact travel	Cage Clamp <sup>1)</sup>	Article no.
	☉ = Safety function implemented with positive opening as per IEC/EN 60947-5-1			■ = contact closed □ = contact open	Part no.	
	N/O = normally open	N/C = normally closed		Contact diagram		
<b>Complete device</b>						
<b>With integrated M12 plug, IP66</b>						
<b>Roller plunger</b>	1 N/O	1 N/C ☉	-		<b>LS-11/P-M12A</b>	178137
	1 N/O	1 N/C ☉	yes		<b>LS-11S/P-M12A</b>	178141
<b>Spring-rod actuator</b> Not to be used as a safety position switch	1 N/O	1 N/C	yes		<b>LS-11S/S-M12A</b>	178145
	1 N/O	1 N/C ☉	-		<b>LS-11/L-M12A</b>	178136
<b>Roller lever</b>	1 N/O	1 N/C ☉	yes		<b>LS-11S/L-M12A</b>	178140
	1 N/O	1 N/C ☉	-		<b>LS-11/RL-M12A</b>	178138
<b>Rotary lever</b>	1 N/O	1 N/C ☉	yes		<b>LS-11S/RL-M12A</b>	178142
	1 N/O	1 N/C ☉	-		<b>LS-11/RLA-M12A</b>	178139
<b>Adjustable roller lever</b>	1 N/O	1 N/C ☉	yes		<b>LS-11S/RLA-M12A</b>	178143
	1 N/O	1 N/C ☉	yes		<b>LS-11S/RR-M12A</b>	178144
<b>Actuating rod</b>	1 N/O	1 N/C ☉	yes			
						

**Notes**

<sup>1)</sup> Cage Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.  
Accessories for the Cage Clamp terminals from Wago: comb-style jumper bar, gray, Wago article no. 264-402

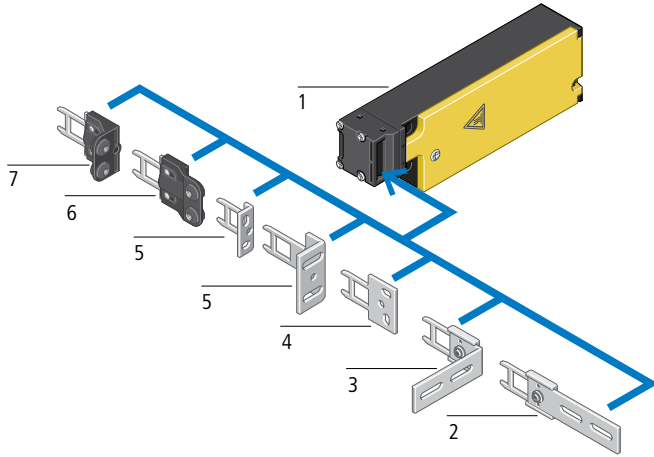
		Insulated material Part no. Article no.	Metal Part no. Article no.	Notes
	For mounting in enclosure wall or mounting plate, with drill hole M18 x 1	<b>LS-XZS</b> 114024		The operating head can be rotated at 90° intervals to adapt to the specified approach direction.
	For mounting in enclosure wall or mounting plate, with drill hole M18 x 1	<b>LS-XZRS</b> 114025		
	-	<b>LS-XP</b> 266125	<b>LSM-XP</b> 266158	
	large	<b>LS-XLB</b> 290178		
	short	<b>LS-XLS</b> 290177		
	long	<b>LS-XL</b> 266123	<b>LSM-XL</b> 266156	
	-	<b>LS-XLA</b> 266124	<b>LSM-XLA</b> 266157	
	-	<b>LS-XRL</b> 266126	<b>LSM-XRL</b> 266159	
	∅ 18 mm	<b>LS-XRLA</b> 266127	<b>LSM-XRLA</b> 266160	
	∅ 30 mm	<b>LS-XRLA30</b> 266128		
	∅ 40 mm roller: rubber	<b>LS-XRLA40R</b> 266130		
	∅ 40 mm	<b>LS-XRLA40</b> 266129		
	Rod: insulated material	<b>LS-XRR</b> 266131	<b>LSM-XRR</b> 266161	
	Rod: metal	<b>LS-XRRM</b> 266132	<b>LSM-XRRM</b> 266162	
	Not to be used as a safety position switch Only permissible with snap-action contact	<b>LS-XS</b> 266133	<b>LSM-XS</b> 266163	
	-	<b>LS-XOR</b> 290190		



# Position switches







LS-...-ZBZ safety position switches



Moeller series






- 1 Base device
- 2 Flat flexible actuator
- 3 Angled flexible actuator
- 4 Flat actuator
- 5 Angled actuator
- 6 Flat compensating actuator
- 7 Angled compensating actuator

Actuators must be ordered separately → online catalog






	Contacts	Rated control voltage for magnetic system $U_c$	Part no. Article no.	Notes	
	⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1 N/O = normally open    N/C = normally closed    V				
<b>Base devices with spring-powered interlock (closed-circuit principle) IP65</b>					
  	1 N/O	1 N/C ⊕	24 V DC	<b>LS-S11-24DFT-ZBZ/X</b> 106829	The switch must never be used as a mechanical stop! The operating head can be manually rotated in 90° intervals to adapt to the specified actuation level. If the actuator inserted, the N/O contact is open and the N/C contact is closed. For IP65 degree of protection, use the V-M20 (206910) cable glands with an entry thread length of max. 9 mm. In the event of a power failure (e.g., during commissioning), the device can be opened with a screwdriver. The auxiliary release mechanism must be sealed! → installation leaflet IL 05208005Z
	-	2 N/C ⊕	24 V DC	<b>LS-S02-24DFT-ZBZ/X</b> 106823	
	1 N/O	1 N/C ⊕	120 V 50/60 Hz	<b>LS-S11-120AFT-ZBZ/X</b> 106825	
	-	2 N/C ⊕	120 V 50/60 Hz	<b>LS-S02-120AFT-ZBZ/X</b> 106778	
	1 N/O	1 N/C ⊕	230 V 50/60 Hz	<b>LS-S11-230AFT-ZBZ/X</b> 106827	
	-	2 N/C ⊕	230 V 50/60 Hz	<b>LS-S02-230AFT-ZBZ/X</b> 106821	
<b>Base devices with magnet-powered interlock (open-circuit principle) IP65</b>					
  	1 N/O	1 N/C ⊕	24 V DC	<b>LS-S11-24DMT-ZBZ/X</b> 106830	The switch must never be used as a mechanical stop! The operating head can be manually rotated in 90° intervals to adapt to the specified actuation level. If the actuator inserted, the N/O contact is open and the N/C contact is closed. For IP65 degree of protection, use the V-M20 (206910) cable glands with an entry thread length of max. 9 mm.
	-	2 N/C ⊕	24 V DC	<b>LS-S02-24DMT-ZBZ/X</b> 106824	
	1 N/O	1 N/C ⊕	120 V 50/60 Hz	<b>LS-S11-120AMT-ZBZ/X</b> 106826	
	-	2 N/C ⊕	120 V 50/60 Hz	<b>LS-S02-120AMT-ZBZ/X</b> 106820	
	1 N/O	1 N/C ⊕	230 V 50/60 Hz	<b>LS-S11-230AMT-ZBZ/X</b> 106828	
	-	2 N/C ⊕	230 V 50/60 Hz	<b>LS-S02-230AMT-ZBZ/X</b> 106822	

Contacts		Approval mark	Connection type	Part no. Article no.	Notes
⊖ Safety function implemented with positive opening according to IEC/EN 60947-5-1 N/O = normally open    N/C = normally closed					
<b>Safety position switches LS-...-ZB, IP65</b>					
	-	2 N/C ⊖		Cage Clamp	<b>LS-02-ZB</b> 106817
	-	2 N/C ⊖		Screw terminal	<b>LS-S02-ZB</b> 106874
	1 N/O	1 N/C ⊖		Cage Clamp	<b>LS-11-ZB</b> 106819
	1 N/O	1 N/C ⊖		Screw terminal	<b>LS-S11-ZB</b> 106876
	1 N/O	1 N/C ⊖		Cage Clamp	<b>LS-11S-ZB</b> 106870
	1 N/O	1 N/C ⊖		Screw terminal	<b>LS-S11S-ZB</b> 106877
<p>The switch must never be used as a mechanical stop! Actuator can be re-positioned for horizontal or vertical mounting. The operating heads can be rotated in 90° intervals to adapt to the specified actuation level. If the actuator inserted, the N/O contact is open and the N/C contact is closed. For IP65 degree of protection, use the V-M20 (206910) cable glands with an entry thread length of max. 9 mm.</p>					




Contacts		Part no.	Article no.	Part no.	Article no.	
N/O = normally open    N/C = normally closed						
<b>Non-contact safety switch</b>						
IP67, IP69 Reed contacts						
	-	2 N/C	<b>3 m connection cable</b>		<b>Plug connector M12 x 1</b>	
	1 N/O	1 N/C	<b>RS2-02-C3</b>	177286	<b>RS2-02-Q4</b>	
	1 N/O	2 N/C	<b>RS2-11-C3</b>	177287	<b>RS2-11-Q4</b>	
	-	2 N/C	<b>RS2-12-C3</b>	177288	<b>RS2-12-Q6</b>	
	1 N/O	1 N/C	<b>RS2R-02-C3</b>	177292	<b>RS2R-02-Q4</b>	
	1 N/O	2 N/C	<b>RS2R-11-C3</b>	177293	<b>RS2R-11-Q4</b>	
	-	2 N/C	<b>RS2R-12-C3</b>	177294	<b>RS2R-12-Q6</b>	
	<b>10 m connection cable</b>					
	1 N/O	1 N/C	<b>RS2-02-C10</b>	177300		
	1 N/O	2 N/C	<b>RS2-11-C10</b>	177301		
	-	2 N/C	<b>RS2-12-C10</b>	177302		
	1 N/O	1 N/C	<b>RS2R-02-C10</b>	177303		
1 N/O	2 N/C	<b>RS2R-11-C10</b>	177304			
1 N/O	2 N/C	<b>RS2R-12-C10</b>	177305			

	Design (outer dimensions)	Rated switching distance	Installation type	Contacts		Degree of protection	Part no.	Article no.
	mm	S <sub>n</sub> mm		N/C = normally closed	N/O = normally open			
<b>E52 Cube series</b>								
2 LEDs for current and output status Housing adapter, 4-wire, plug connector M12 x 1, Rated operating voltage U <sub>e</sub> 10 - 48 V DC Switching type: NPN, PNP Zinc/Insulated material								
	40 x 40 x 40	15	flush	1 N/C	1 N/O	IP67	<b>E52Q-DL15SAD01</b>	135804
		15	not flush				<b>E52Q-DL15UAD01</b>	135805
		20	flush				<b>E52Q-DL20SAD01</b>	135806
		20	not flush				<b>E52Q-DL20UAD01</b>	135807
		25					<b>E52Q-DL25UAD01</b>	135808
		30					<b>E52Q-DL30UAD01</b>	135809
		35					<b>E52Q-DL35UAD01</b>	135810
		40					<b>E52Q-DL40UAD01</b>	135811
<b>E56 Pancake series</b>								
2 LEDs for current and output status 3-wire, plug connector M12 x 1, Rated operating voltage U <sub>e</sub> 10 - 48 V DC Switching type: NPN, PNP Insulated material								
	79 x 79 x 39	40	flush	1 N/C	1 N/O	IP67	<b>E56ADL40SAD01</b>	136234
	79 x 79 x 39	40	not flush				<b>E56ADL40UAD01</b>	136235
	109 x 110 x 41	70	not flush	-	-	-	<b>E56BDL70UAD01</b>	136236
	171.5 x 171.5 x 67.4	100	not flush				<b>E56CDL100UAD01</b>	136237
<b>E57G General Purpose series</b>								
LED for output status 3-wire, plug connector M12 x 1, Rated operating voltage U <sub>e</sub> 10 - 30 V DC Switching type: PNP stainless steel								
	M8 x 1	1	flush	-	1 N/O	IP67	<b>E57-08GS01-GDB</b>	135862
		3	flush				<b>E57-08GE03-GDB</b>	135854
		2	not flush				<b>E57-08GU02-GDB</b>	135866
		6	not flush				<b>E57-08GE06-GDB</b>	135858
	M12 x 1	2	flush	-	-	-	<b>E57G-12SPN2-Q</b>	197688
		4	flush				<b>E57G-12SPN4-Q</b>	197690
		4	not flush				<b>E57G-12UPN4-Q</b>	197704
		8	not flush				<b>E57G-12UPN8-Q</b>	197706
	M18 x 1	5	flush	-	-	-	<b>E57G-18SPN5-Q</b>	197720
		8	flush				<b>E57G-18SPN8-Q</b>	197722
		8	not flush				<b>E57G-18UPN8-Q</b>	197738
		12	not flush				<b>E57G-18UPN12-Q</b>	197736
	M30 x 1.5	10	flush	-	-	-	<b>E57G-30SPN10-Q</b>	197752
		15	flush				<b>E57G-30SPN15-Q</b>	197754
		15	not flush				<b>E57G-30UPN15-Q</b>	197768
		22	not flush				<b>E57G-30UPN22-Q</b>	197770

	Design (outer dimensions)	Rated switching distance	Type of mounting	Contacts		Degree of protection	Part no.	Article no.
	mm	$S_n$ mm		N/C = normally closed	N/O = normally open			
<b>E57 miniature series (inductive)</b>								
3-wire, 2 m connection cable, Rated operating voltage $U_a$ 10 - 30 V DC Switching type: PNP Stainless steel								
	M5 x 1	0.8	flush	-	1 N/O	IP67	<b>E57EAL5T111SP</b>	136241
	Ø 4	0.8	flush	-			<b>E57EAL4T111SP</b>	136239
	Ø 6.5	1	flush	-			<b>E57EAL6T111SP</b>	136245
	Ø 6.5	2	not flush	-			<b>E57EAL6T111EP</b>	136244
<b>iProx series (inductive)</b>								
3-wire, plug connector M12 x 1, Rated operating voltage $U_a$ 6 - 48 V DC Switching type: NPN, PNP Stainless steel								
	M12 x 1	4	flush	-	1 N/O	IP67, IP69	<b>E59-M12A105D01-D1</b>	136207
	M18 x 1	8	flush	-			<b>E59-M18A108D01-D1</b>	136215
	M18 x 1	18	not flush	-			<b>E59-M18C116D01-D1</b>	136219
	M30 x 1.5	15	flush	-			<b>E59-M30A115D01-D1</b>	136223
<b>Programming cable</b> for use with iProx								
							<b>E59RP1</b>	136229
<b>Programming software</b> for use with iProx								
							<b>E59SW1</b>	136230
<b>E53 series (capacitive)</b>								
4-wire Plug connector M12 x 1 Rated operational voltage: $U_a$ 10 - 48 V DC Switching type: NPN, PNP Zinc/insulated material								
	M18 x 1	8	flush	1 N/C	-	IP65	<b>E53KBL18T111SD</b>	134802
		8	flush	-	1 N/O		<b>E53KAL18T111SD</b>	134768
		15	not flush	1 N/C	-		<b>E53KBL18T111ED</b>	134801
		15	not flush	-	1 N/O		<b>E53KAL18T111ED</b>	134767
	M30 x 1.5	20	flush	1 N/C	-	<b>E53KBL30T111SD</b>	134814	
		20	flush	-	1 N/O	<b>E53KAL30T111SD</b>	134780	
		25	not flush	1 N/C	-	<b>E53KBL30T111ED</b>	134813	
		25	not flush	-	1 N/O	<b>E53KAL30T111ED</b>	134779	
	Ø 34	25	flush	1 N/C	-	<b>E53KBL34T111SD</b>	134824	
		25	flush	-	1 N/O	<b>E53KAL34T111SD</b>	134790	
		35	not flush	1 N/C	-	<b>E53KBL34T111ED</b>	134823	
		35	not flush	-	1 N/O	<b>E53KAL34T111ED</b>	134789	

Function	Description	Rated switching distance $S_n$ mm	Type of light	Switching principle	Part no.	Article no.	
<b>Comet series</b>							
4-wire, Rated operating voltage $U_o$ 10 - 30 V DC Switching type: NPN, PNP <sup>2</sup> Insulated material plug connector M12 x 1 Degree of protection: IP67							
M18 x 1 	Retro-reflective sensor	Beam: straight With background suppression (Perfect Prox)	50	Visible red	Adjustable bright/dark switching	<b>13104AQD07</b>	135605
		Beam: straight Can be expanded with fiber optic cable →Accessories	200			Infrared	<b>13106AQD07</b>
		Beam: straight With background suppression (Perfect Prox)	225	<b>13103AQD07</b>			135597
		Beam: straight Can be expanded with fiber optic cable →Accessories	610	<b>13100AQD07</b>		135581	
	Reflexphotoelectric sensor	For combination with reflector Non-polarized Beam: straight	7600	Visible red		<b>14102AQD07</b>	135657
	Thru-beam photoelectric sensor	Detector (for combination with source) Beam: straight	24000			<b>12102AQD07</b>	135577
		Source (for combination with detector) Beam: straight	24000	-		<b>11102AQD07</b>	135565
<b>E58 Harsh Duty series</b>							
4-wire, Rated operating voltage $U_o$ 10 - 30 V DC Switching type: NPN, PNP <sup>2</sup> Stainless steel Plug connector M12 x 1 Degree of protection: IP69							
M18 x 1 	Diffused sensor	With background suppression (Perfect Prox)	50	Visible red	Light switching	<b>E58-18DP50-HLP</b>	135673
			50		Dark switching	<b>E58-18DP50-HDP</b>	135671
			100	Light switching	<b>E58-18DP100-HLP</b>	135667	
			100	Dark switching	<b>E58-18DP100-HDP</b>	135665	
			M30 x 1.5 	280	Dark switching	<b>E58-30DP280-HDP</b>	135681
				280	Light switching	<b>E58-30DP280-HLP</b>	135683
	Reflex photoelectric sensor	For combination with reflector	18000	Visible red	Dark switching	<b>E58-30RS18-HDP</b>	135689
18000			Light switching		<b>E58-30RS18-HLP</b>	135691	
M30 x 1.5 	Thru-beam photoelectric sensor	Source (for combination with detector)	250000	-	<b>E58-30TS250-HAP</b>	135697	
		Detector (for combination with source)	250000	-	Dark switching	<b>E58-30TD250-HDP</b>	135693
		250000	-	Light switching	<b>E58-30TD250-HLP</b>	135695	
<b>E67 Long Range series</b>							
4-wire, Rated operating voltage $U_o$ 18 - 30 V DC Switching type: NPN, PNP <sup>2</sup> Plug connector M12 x 1 Degree of protection: IP67							
Rectangular (166 x 59 x 43) 	Diffused sensor	With background suppression (Perfect Prox)	1000	Infrared	Light switching	<b>E67-LRDP100-HLD</b>	100548
		With background suppression (Perfect Prox)	1000		Dark switching	<b>E67-LRDP100-HDD</b>	100547



Function	Description	Rated switching distance $S_n$ mm	Type of light	Switching mechanism	Part no.	Article no.	
<b>E65 SM series</b>							
4-wire, Rated operating voltage $U_o$ 10 - 30 V DC Switching type: NPN, PNP <sup>o</sup> Insulated material Plug connector M12 x 1 Degree of protection: IP65 and IP66							
	Diffused sensor	With background suppression (Perfect Prox)	100	-	Light switching	<b>E65-SMPP100-HLD</b>	135713
		With background suppression (Perfect Prox)	100	-	Dark switching	<b>E65-SMPP100-HDD</b>	135711
	Thru-beam photoelectric sensor	Source (for combination with detector)	15000	-	Light switching	<b>E65-SMTD15-HLD</b>	135733
		Detector (for combination with source)	15000	-	Dark switching	<b>E65-SMTD15-HDD</b>	135731
		Source (for combination with detector)	15000	-	-	<b>E65-SMTS15-HAD</b>	135735
<b>E71 NanoView series</b>							
4-wire, Rated operating voltage $U_o$ 10 - 30 V DC Switching type: PNP Insulated material Rectangular (20 x 12 x 32) Degree of protection: IP66/IP67							
	Diffused sensor	Beam: focused, straight	100	Visible red	Adjustable light/dark switching	<b>E71-FFDP-M8</b>	100518
		Beam: straight	350	Infrared		<b>E71-SDP-M8</b>	100530
Reflex photoelectric sensor	For combination with reflector	800	Visible red	<b>E71-COP-M8</b>		100428	
	Detection of transparent objects						
2 m connection cable	Thru-beam photoelectric sensor	Detector (for combination with source)	1500	Infrared		<b>E71-NTBS-CA</b>	100521
	Reflex photoelectric sensor	Polarized light	2500	Visible red		<b>E71-PRP-M8</b>	100526
		Thru-beam photoelectric sensor	Detector (for combination with source)	6000	Infrared	<b>E71-TBRP-M8</b>	100534
<b>E75/E76 IntelliView series</b>							
8-wire, Rated operating voltage $U_o$ 10 - 30 V DC Switching type: PNP Plug connector M12 x 1 Degree of protection: IP67							
	Diffused sensor	Color sensing 3 NO PNP outputs	450	Infrared	-	<b>E76-CLRMKP-M12</b>	166927
Typeoutput side	Typeinput side	Length mm	For use with		Part no.	Article no.	
<b>Connecting cables</b>							
	Cable end, open	Coupling, straight	2000	DC sensors, 4-pole, 2-, 3- or 4-wire connector, M12	<b>CSDS4A4CY2202</b>	136292	
			5000		<b>CSDS4A4CY2205</b>	136294	
			10000		<b>CSDS4A4CY2210</b>	136296	
		Coupling, angled	2000		<b>CSDR4A4CY2202</b>	136279	
			5000		<b>CSDR4A4CY2205</b>	136282	
			10000		<b>CSDR4A4CY2210</b>	136284	
	Plug, straight	Coupling, straight	1500		<b>CSDS4A4CY2201.5-D</b>	136316	
			3000		<b>CSDS4A4CY2203-D</b>	136293	
			5000		<b>CSDS4A4CY2205-D</b>	136295	
	Plug, angled		1500	<b>CSDR4A4CY2201.5-D</b>	136313		
			3000	<b>CSDR4A4CY2203-D</b>	136315		
			5000	<b>CSDR4A4CY2205-D</b>	136283		



# Increase the availability of your machines and systems with efficient signaling



Download the catalog:  
[Eaton.com/catalog](http://Eaton.com/catalog)

Signal towers are not only indispensable for the safe operation of machines and systems – they also ensure that processes run smoothly at airports and even in supermarkets. The tasks they perform are as varied as the locations where they are used. This is why Eaton equips its signal towers with extremely versatile light and acoustic modules. And their high degree of protection (IP66) ensures that they can be used virtually anywhere.

Alongside light and signal strength, the efficiency of the system is also determined by the ease with which the complete tower can be installed or dismantled, for example during transport.

This efficiency can be further increased by effectively integrating signal towers into automation solutions. The SmartWire-DT and AS-Interface connections not only make wiring significantly easier, but also enhance the connectivity of the system. Intelligent switchgear can trigger alerts via the system – for example, if an overload is imminent – before a standstill occurs. Based on these alerts, the signal towers will then output their own clearly recognizable signals, thereby ensuring higher machine and system availability.



 [Eaton.com/signaltower](http://Eaton.com/signaltower)



**Two signal tower designs are available: SL4 and SL7**

Both compact and standard versions are available, with diameters of 40 mm and 70 mm, respectively. Eaton thus provides the ideal solution for your signaling tasks, even in places where space is scarce.

**An integrated design**

Eaton's signal towers can be integrated into both SmartWire-DT and AS-Interface networks. These network communication options make it possible to combine the unique advantages of our fast mounting system with improved cost-effectiveness.



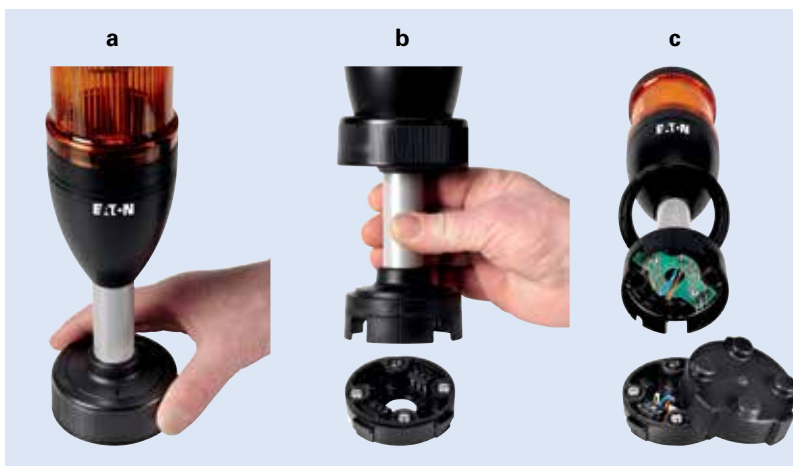
**Significantly brighter and louder signals**

All six lamp modules are available with filament lamps, continuous light LEDs, flashing LEDs, strobe LEDs, or high-performance LEDs. This makes it possible to adapt the brightness and color of the modules to specific customer needs and different market requirements. The same applies to the acoustic modules – eight selectable signals and an adjustable volume of up to 100 dB enable optimum adaptation to any environmental condition.

**Extremely flexible mounting options**

Our new signal towers can be installed in 12 different ways. The cup-shaped base can either be mounted on the side of your equipment or directly on it, in a variety of configurations. If there is not enough clearance to the ceiling, for example, the modules can be installed horizontally. Tube lengths of 100, 250, 400 and 800 mm make the system even more flexible. [Eaton.com/signaltower](http://Eaton.com/signaltower)

Signaling and monitoring



**Rapid assembly and dismantling**

The signal towers can be dismantled during transport. With Eaton's fast mounting system, this is possible in a matter of seconds:

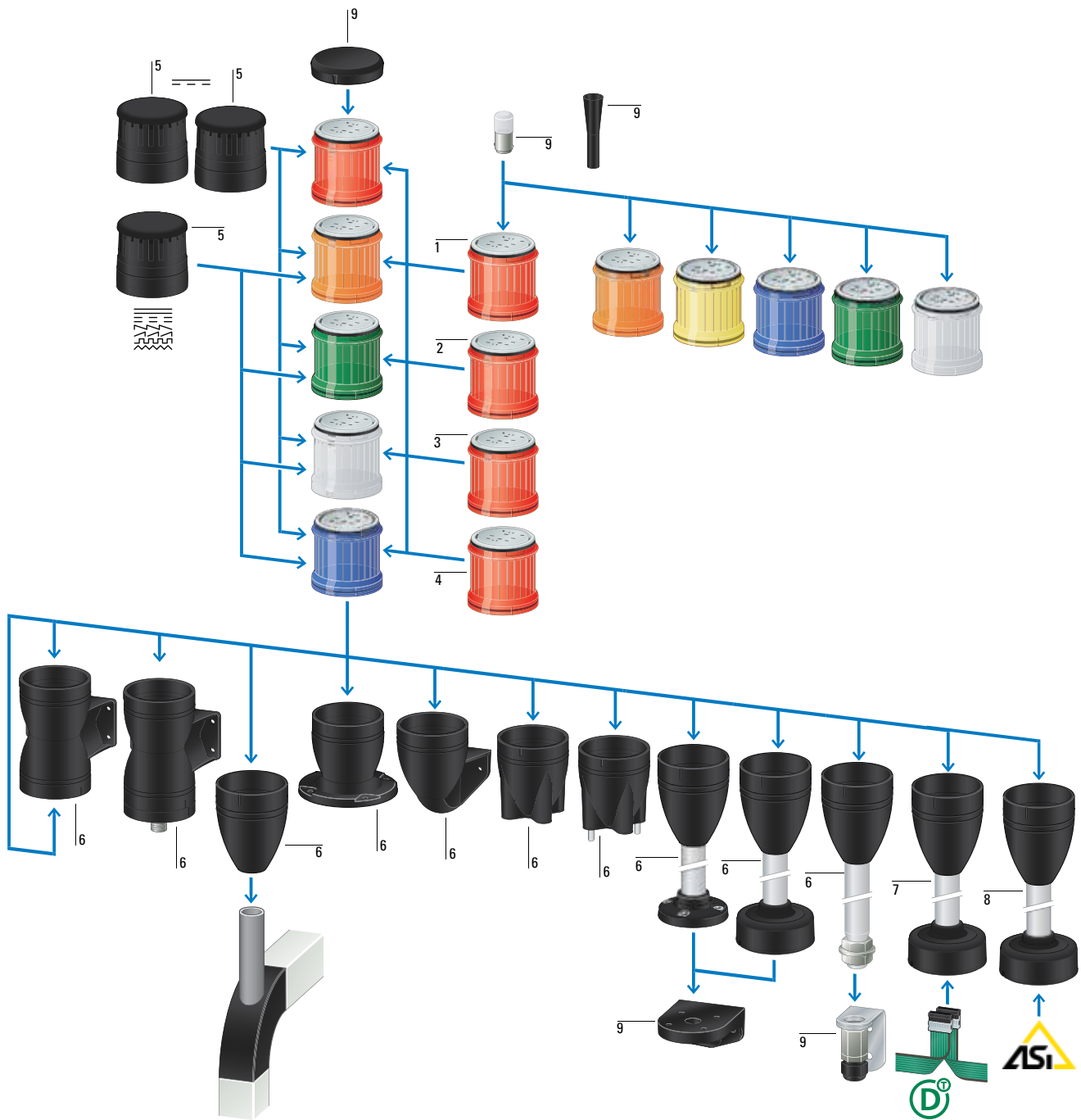
- a) simply loosen the mounting ring,
- b) remove the signal tower,
- c) put the protective cover in place – and you're done!

The electrical and mechanical re-assembly and installation of the signal towers is just as simple.

# SL7, SL4 signal towers




System overview

Moeller series















- 1 Module for filament lamp, continuous light
- 2 LED/high-performance LED module, continuous light
- 3 LED module, flashing light
- 4 LED/high-performance LED module, strobe light

- 5 Acoustic module
- 6 Base modules
- 7 Base module with SWD connection
- 8 Base module with AS-Interface
- 9 Accessories

Rated operational voltage $U_e$ V	Number of modules	Color	Module diameter 70 mm	Module diameter 40 mm
			Part no. Article no.	Part no. Article no.
<b>Complete devices (IP66)</b>				
Continuous light, LED, IP66, base module with foot and 100 mm tube				
24 V AC/DC	2		<b>SL7-100-L-RG-24LED</b> 171424	<b>SL4-100-L-RG-24LED</b> 171295
	3		<b>SL7-100-L-RYG-24LED</b> 171425	<b>SL4-100-L-RYG-24LED</b> 171296
	3		<b>SL7-100-L-RAG-24LED</b> 173982	<b>SL4-100-L-RAG-24LED</b> 173981
<b>Customized complete devices</b>				
Can be ordered on request			<b>SL7-COMBINATION</b> 2011955	<b>SL4-COMBINATION</b> 2011956
























Rated operational voltage <sup>1)</sup> $U_e$ V	Color	Continuous light	Flashing light 2 Hz	Strobe light 1.4 Hz
		Part no. Article no.	Part no. Article no.	Part no. Article no.
<b>Module with LED, IP66</b>				
24 V AC/DC		<b>SL7-L24-B</b> 171461	<b>SL7-BL24-B</b> 171439	<b>SL7-FL24-B</b> 171402
		<b>SL7-L24-G</b> 171462	<b>SL7-BL24-G</b> 171440	<b>SL7-FL24-G</b> 171403
		<b>SL7-L24-R</b> 171463	<b>SL7-BL24-R</b> 171441	<b>SL7-FL24-R</b> 171404
		<b>SL7-L24-W</b> 171464	<b>SL7-BL24-W</b> 171442	<b>SL7-FL24-W</b> 171405
		<b>SL7-L24-Y</b> 171465	<b>SL7-BL24-Y</b> 171388	<b>SL7-FL24-Y</b> 171406
		<b>SL7-L24-A</b> 171466	<b>SL7-BL24-A</b> 171389	<b>SL7-FL24-A</b> 171407
230/240 V AC		<b>SL7-L230-B</b> 171473	<b>SL7-BL230-B</b> 171396	<b>SL7-FL230-B</b> 171414
		<b>SL7-L230-G</b> 171474	<b>SL7-BL230-G</b> 171397	<b>SL7-FL230-G</b> 171415
		<b>SL7-L230-R</b> 171475	<b>SL7-BL230-R</b> 171398	<b>SL7-FL230-R</b> 171416
		<b>SL7-L230-W</b> 171476	<b>SL7-BL230-W</b> 171399	<b>SL7-FL230-W</b> 171417
		<b>SL7-L230-Y</b> 171477	<b>SL7-BL230-Y</b> 171400	<b>SL7-FL230-Y</b> 171418
		<b>SL7-L230-A</b> 171426	<b>SL7-BL230-A</b> 171401	<b>SL7-FL230-A</b> 171419








**Notes**
















<sup>1)</sup> 110/120 V AC → online catalog





Rated operational voltage <sup>1)</sup> U <sub>e</sub> V	Color	Continuous light	Flashing light 2 Hz	Strobe light 1.4 Hz	Multistrobe light 1 - 2.6 Hz	
		Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.	
<b>High-performance LED module, IP66</b>						
24 V AC/DC 		<b>SL7-L24-B-HP</b> 171427	-	<b>SL7-FL24-B-HP</b> 171420	<b>SL7-FL24-B-HPM</b> 171275	
		<b>SL7-L24-G-HP</b> 171428	-	<b>SL7-FL24-G-HP</b> 171421	<b>SL7-FL24-G-HPM</b> 171276	
		<b>SL7-L24-R-HP</b> 171429	-	<b>SL7-FL24-R-HP</b> 171422	<b>SL7-FL24-R-HPM</b> 171277	
		<b>SL7-L24-W-HP</b> 171430	-	<b>SL7-FL24-W-HP</b> 171423	<b>SL7-FL24-W-HPM</b> 171278	
		<b>SL7-L24-Y-HP</b> 171431	-	<b>SL7-FL24-Y-HP</b> 171273	<b>SL7-FL24-Y-HPM</b> 171279	
		<b>SL7-L24-A-HP</b> 171432	-	<b>SL7-FL24-A-HP</b> 171274	<b>SL7-FL24-A-HPM</b> 171280	
<b>Module with LED, IP66</b>						
24 V AC/DC 		<b>SL4-L24-B</b> 171313	<b>SL4-BL24-B</b> 171337	<b>SL4-FL24-B</b> 171355	<b>SL4-FL24-B-M</b> 171373	
		<b>SL4-L24-G</b> 171314	<b>SL4-BL24-G</b> 171338	<b>SL4-FL24-G</b> 171356	<b>SL4-FL24-G-M</b> 171374	
		<b>SL4-L24-R</b> 171315	<b>SL4-BL24-R</b> 171339	<b>SL4-FL24-R</b> 171357	<b>SL4-FL24-R-M</b> 171375	
		<b>SL4-L24-W</b> 171316	<b>SL4-BL24-W</b> 171340	<b>SL4-FL24-W</b> 171358	<b>SL4-FL24-W-M</b> 171376	
		<b>SL4-L24-Y</b> 171317	<b>SL4-BL24-Y</b> 171341	<b>SL4-FL24-Y</b> 171359	<b>SL4-FL24-Y-M</b> 171377	
		<b>SL4-L24-A</b> 171318	<b>SL4-BL24-A</b> 171342	<b>SL4-FL24-A</b> 171360	<b>SL4-FL24-A-M</b> 171378	
	230/240 V AC		<b>SL4-L230-B</b> 171325	<b>SL4-BL230-B</b> 171349	<b>SL4-FL230-B</b> 171367	-
			<b>SL4-L230-G</b> 171326	<b>SL4-BL230-G</b> 171350	<b>SL4-FL230-G</b> 171368	-
			<b>SL4-L230-R</b> 171327	<b>SL4-BL230-R</b> 171351	<b>SL4-FL230-R</b> 171369	-
			<b>SL4-L230-W</b> 171328	<b>SL4-BL230-W</b> 171352	<b>SL4-FL230-W</b> 171370	-
			<b>SL4-L230-Y</b> 171329	<b>SL4-BL230-Y</b> 171353	<b>SL4-FL230-Y</b> 171371	-
			<b>SL4-L230-A</b> 171330	<b>SL4-BL230-A</b> 171354	<b>SL4-FL230-A</b> 171372	-
			-	-	-	-

Notes <sup>1)</sup> 110/120 V AC → online catalog

Rated operational voltage U <sub>e</sub> V	Color	Continuous light Filament lamp max. 7 W	Continuous light Filament lamp max. 4 W
		Part no. Article no.	Part no. Article no.
<b>Module for filament lamp, IP66</b>			
Without lamp, filament lamps → Accessories			
< 250 V AC/DC 		<b>SL7-L-B</b> 171433	<b>SL4-L-B</b> 171331
		<b>SL7-L-G</b> 171434	<b>SL4-L-G</b> 171332
		<b>SL7-L-R</b> 171435	<b>SL4-L-R</b> 171333
		<b>SL7-L-W</b> 171436	<b>SL4-L-W</b> 171334
		<b>SL7-L-Y</b> 171437	<b>SL4-L-Y</b> 171335
		<b>SL7-L-A</b> 171438	<b>SL4-L-A</b> 171336

Description	Rated operating voltage <sup>1)</sup>	Rated operational current	Color	Type of tone	Part no. Article no.	
	U <sub>e</sub> V	I <sub>e</sub> mA				
<b>Acoustic modules, IP66</b>						
Place only at the highest position of a tower.						
	Continuous tone or pulsed tone, adjustable with internal dip switch. Sound pressure: 100 db, adjustable via an internal potentiometer f = 2800 Hz	24 V AC/DC	max. 92			<b>SL7-AP24</b> 171281
		230/240 V AC	max. 43			<b>SL7-AP230</b> 171283
	Continuous tone or pulsed tone, external actuation. Assigned two inputs (2 modules). Sound pressure: 100 db, adjustable via an internal potentiometer f = 2800 Hz	24 V AC/DC	max. 92			<b>SL7-AP24-E</b> 171284
	230/240 V AC	max. 43			<b>SL7-AP230-E</b> 171286	
	Multi-tone; 8 tones, adjustable via an internal dip switch. Sound pressure: 100 db, adjustable via an internal potentiometer f = 500 - 2700 Hz	24 V AC/DC	max. 115			<b>SL7-AP24-M</b> 171287
		230/240 V AC	max. 43			<b>SL7-AP230-M</b> 171289
	Continuous tone or pulsed tone, adjustable via an internal dip switch. Sound pressure: 80 dB. f = 4000 Hz	24 V AC/DC	max. 39			<b>SL4-AP24</b> 171379
		230/240 V AC	max. 21			<b>SL4-AP230</b> 171381

**Notes** <sup>1)</sup> 110/120 V AC → online catalog

Description	Tube length	For use with	Part no. article no.	For use with	Part no. Article no.	
<b>Base modules</b>						
For horizontal mounting Includes cover max. 5 modules						
	Base with aluminum tube and plastic foot	100 mm	SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	<b>Spring-loaded terminals</b>	
		250 mm			<b>SL7-CB-100</b> 171443	<b>Push-in terminals</b>
		400 mm			<b>SL7-CB-250</b> 171444	<b>SL4-PIB-100</b> 171297
		800 mm			<b>SL7-CB-400</b> 171445	<b>SL4-PIB-250</b> 171298
	Base with aluminum tube and banjo screw	100 mm			<b>SL4-PIB-400</b> 171299	
		250 mm			<b>SL4-PIB-800</b> 177313	
		400 mm			<b>SL7-CB-T-100</b> 171452	
		800 mm			<b>SL7-CB-T-250</b> 171453	
			<b>SL7-CB-T-400</b> 171454		<b>SL4-PIB-T-100</b> 171305	
			<b>SL7-CB-T-800</b> 178460		<b>SL4-PIB-T-250</b> 171306	
					<b>SL4-PIB-T-400</b> 171307	
					<b>SL4-PIB-T-800</b> 178461	

Description	Tube length	For use with	Part no. article no.	For use with	Part no. Article no.
<b>Base modules</b>					
For horizontal mounting Includes cover max. 5 modules					
	Base with internal fixing holes	-	SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	<b>Spring-loaded terminals</b> <b>SL7-CB-IMH</b> 171447	<b>Push-in terminals</b> <b>SL4-PIB-IMH</b> 171300
	Base with built-in (pre-assembled) fixing screws	-		<b>SL7-CB-IMS</b> 171448	<b>SL4-PIB-IMS</b> 171301
	Base with external fixing holes	-		<b>SL7-CB-EMH</b> 171449	<b>SL4-PIB-EMH</b> 171302
	Base: can hold tubes with a diameter of 25 mm (±0.5)	-		<b>SL7-CB-TM</b> 179987	<b>SL4-PIB-TM</b> 179986
<b>Base with fast mounting system</b>					
	max. 5 modules	100 mm		<b>Screw terminals</b> <b>SL7-FMS-100</b> 171456	<b>Screw terminals</b> <b>SL4-FMS-100</b> 171308
		250 mm		<b>SL7-FMS-250</b> 171457	<b>SL4-FMS-250</b> 171309
		400 mm		<b>SL7-FMS-400</b> 171458	<b>SL4-FMS-400</b> 171310
		800 mm		<b>SL7-FMS-800</b> 178462	<b>SL4-FMS-800</b> 178463
					<b>Blade terminal</b> <b>SWD4-8MF2</b>
	max. 5 modules max. 0.3 A per module An external power supply can be connected (24 V DC) Configurable with the SWD-Assist planning and ordering tool	100 mm		<b>SL7-SWD</b> 171459 	<b>SL4-SWD</b> 171311 
<b>Identical to SL7-FMS... and SL7-SWD</b>					
	max. 4 modules AS-Interface version 2.0 Power supply via AS-i (max. 190 mA)	100 mm	SL7-L(24)-... SL7-BL24-... SL7-FL24-... SL7-AP24-...	<b>SL7-FMS-ASI-V20</b> 197318	
	max. 4 modules AS-Interface version 2.0 Power supply via external source (24 V DC)			<b>SL7-FMS-ASI-V20E</b> 197319	
	max. 3 modules AS-Interface version 2.1 Power supply via AS-i (max. 190 mA)			<b>SL7-FMS-ASI-V21</b> 197320	
	max. 3 modules AS-Interface version 2.1 Power supply via external voltage source (24 V DC)			<b>SL7-FMS-ASI-V21E</b> 197321	
	max. 4 modules AS-Interface version 3.0 Power supply via AS-i (max. 190 mA)			<b>SL7-FMS-ASI-V30</b> 197322	
	max. 4 modules AS-Interface version 3.0 Power supply via external voltage source (24 V DC)			<b>SL7-FMS-ASI-V30E</b> 197323	

## Moeller series

Description	Tube length	For use with	Part no. Article no.	For use with	Part no. Article no.
For vertical mounting Includes cover			<b>Spring-loaded terminals</b>		<b>Push-in terminals</b>
 One-sided base with bracket max. 5 modules		SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	<b>SL7-CB-FW</b> 171450	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	<b>SL4-PIB-FW</b> 171303
For vertical mounting on both sides Includes cover			<b>Spring-loaded terminals</b>		<b>Push-in terminals</b>
 Base with external fixing holes Max. 2 x 5 modules		SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	<b>SL7-CB-D</b> 171451	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	<b>SL4-PIB-D</b> 171304
For vertical mounting on one side Includes cover			<b>M12A plug, 4-pole</b>		
 Base with external fixing holes max. 3 modules		SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	<b>SL7-CB-D-M12A4</b> 177351		
	Lifespan h	Rated operational voltage $U_e$ V	Power	For use with	Part no. Article no.
<b>Magnetic base, includes M20 cable gland</b> For vertical mounting, metal and plastic	-	-	-	SL4-PIB-100(250)(400) SL7-CB-100(250)(400)	<b>SL7/4-MMS</b> 172954
					
<b>Mounting bracket</b> For vertical mounting, plastic	-	-	-	SL4-PIB-100(250)(400) SL4-FMS... SL7-CB-100(250)(400) SL7-FMS...	<b>SL7/4-FW</b> 171446
					
<b>Mounting bracket, includes M20 cable gland</b> For vertical mounting, metal	-	-	-	SL4-PIB-T... SL7-CB-T...	<b>SL7/4-FW-T</b> 171455
					
<b>Replacement cover</b> for signal towers	-	-	-	SL7-... SL4-...	<b>SL7-COV</b> 192368 <b>SL4-COV</b> 192369
					
<b>Tool for replacing the filament lamp</b>	-	-	-	-	<b>SL7/4-BET</b> 171294
					
<b>Filament lamps</b> socket: Ba15d	> 3000	12 V 24 V 120 V 230 V	5 W 6.5 W 7 W 6.5 W	SL7-L-...	<b>SL7-L12</b> 171290 <b>SL7-L24</b> 171291 <b>SL7-L120</b> 171292 <b>SL7-L230</b> 171293
					
	> 3000	12 V 24 V 120 V 230 V	4 W	SL4-L-...	<b>SL4-L12</b> 171382 <b>SL4-L24</b> 171383 <b>SL4-L120</b> 171384 <b>SL4-L230</b> 171385



## Safe and reliable: Timing relays, measuring relays and monitoring relays



Our range of electronic timing relays includes two different designs, which can be easily adapted to a wide range of applications. All timing relays are mounted on DIN top-hat rails.

The EMR range of measuring and monitoring relays is approved for global use. Most of the relays feature multi-voltage coils. They cover a wide range of applications:

- Current monitoring relays for universal use,
- Phase monitoring relays to protect system components against damage,
- Phase sequence relays for monitoring the rotating field,
- Imbalance relays to safely detect phase failure,
- Multi-functional three-phase monitoring relays for compact monitoring of rotating fields,
- Level monitoring relays for fill-level monitoring,
- Insulation monitoring relays to increase operational safety.



**ETR timing relays –  
precise and economic switching**



- Large selection of setting ranges
- Timing functions for every requirement
- Remote time setting via the integrated potentiometer
- Flexible connection thanks to wide-range power supply
- Additional signal input even for different control voltages



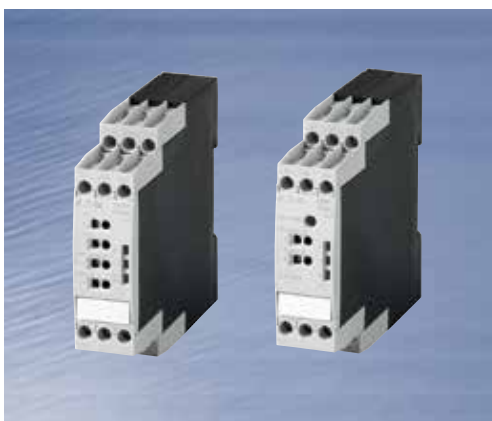
**Multi-functional three-phase monitoring relay –  
compact monitoring of rotating fields**



- Protect motors by monitoring phase sequence, phase loss and phase imbalance, as well as overvoltage and undervoltage
- With optional monitoring of the neutral conductor
- The overvoltage and undervoltage threshold can be adjusted or set to fixed
- 2 changeover contacts for greater flexibility



**EMR insulation monitoring and level monitoring relay –  
the right solution for every application**



- Improved safety with insulation monitoring relays for earth-fault monitoring
- Rapid troubleshooting to keep downtime to a minimum
- Test button for easy function testing
- Simple level monitoring and/or dry run protection
- Enhanced safety thanks to the open-circuit principle










**EMR single-phase current monitoring relay –  
for universal use**



- Precise current monitoring in AC and DC networks
- Adjustable on-delay for bridging transitory current peaks
- Status display via colored LEDs
- The measurement range can be expanded via external current transformers













Function		Time range	Number of changeover contacts	Width mm	24 - 240 V AC, 50/60 Hz	400 V AC, 50/60 Hz								
					24 - 240 V DC	Part no. Article no.	Part no. Article no.							
On-delayed	Multi-functional	Off-delayed	Fleeting contact on energization	Fleeting contact on de-energization	Flashing, pulse-initiating	On- and off-delayed	Pulse-forming	Pulse-generating	Star-delta switching	Flashing, pause-initiating				
<b>ETR4 timing relay</b>														
	Changeover contact with a changeover time of 50 ms	- - - - -	- - - - -	- - - - -	-	✓	-	-	-	3 - 60 s	1	22.5	<b>ETR4-51-A</b> 031884	<b>ETR4-51-W</b> 031885
	Fixed timing function	✓	-	-	-	-	-	-	-	0.05 s - 100 h	-	-	<b>ETR4-11-A</b> 031882	<b>ETR4-11-W</b> 031883
	Adjustable timing functions	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	<b>ETR4-69-A</b> 031891	<b>ETR4-69-W</b> 031887
	With potentiometer connection Changeover contact can be converted to 2 timed contacts or 1 non-delayed contact and 1 timed contact	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	2	<b>ETR4-70-A</b> 031888	-
					<b>12 - 240 V AC, 50/60 Hz</b>	<b>24 - 240 V AC, 50/60 Hz</b>								
					<b>12 - 240 V DC</b>	<b>24 - 48 V DC</b>								
<b>ETR2 timing relay</b>														
	Fixed timing function	✓	-	-	-	-	-	-	-	0.05 s - 100 h	1	17.5	-	<b>ETR2-11</b> 262684
		✓	-	-	-	-	-	-	-	-	2	-	<b>ETR2-11-D</b> 119426	
		-	✓	-	-	-	-	-	-	-	1	-	<b>ETR2-12</b> 262686	
		-	✓	-	-	-	-	-	-	-	2	-	<b>ETR2-12-D</b> 119427	
		-	-	✓	-	-	-	-	-	-	1	-	<b>ETR2-21</b> 262687	
		-	-	-	✓	-	-	-	-	-	-	-	<b>ETR2-42</b> 262688	
	Pulse and pause times can be adjusted independently of one another	-	-	-	-	✓	-	-	-	✓	-	-	-	<b>ETR2-44</b> 262730
	Adjustable timing functions	✓	✓	✓	✓	✓	✓	-	✓	-	-	-	-	<b>ETR2-69</b> 262689
	✓	✓	✓	✓	✓	✓	-	✓	-	-	2	<b>ETR2-69-D</b> 119428	-	

		For monitoring	Monitoring voltage per phase	Adjustable threshold values	Threshold value	Supply voltage	Part no. Article no.
		Phase sequence Phase failure Imbalance Overvoltage Undervoltage Neutral cable break	$U_N$ V AC	Imbalance Overvoltage Undervoltage			
<b>Phase sequence relay</b>							
	For monitoring of three-phase networks Phase failure detection at $< 0.6 \times U_N$ Power supply via the measuring circuit	✓ ✓ - - - -	200 - 500 V AC, 50/60 Hz	- - -	-	200 - 500 V AC, 50/60 Hz	<b>EMR6-F500-G-1</b> 184789
<b>Phase imbalance monitoring relay</b>							
	Power supply via the measuring circuit On-delay: none = 0 or adjustable from 0.1 to 30 s Imbalance threshold values can be set to between 2 % and 25 % of the mean value of the phase voltages	✓ ✓ ✓ - - - ✓ ✓ ✓ - - -	160 - 300 V AC, 50/60 Hz 300 - 500 V AC, 50/60 Hz	✓ - - - ✓ - - -	- -	160 - 300 V AC, 50/60 Hz 300 - 500 V AC, 50/60 Hz	<b>EMR6-A300-C-1</b> 184761 <b>EMR6-A500-D-1</b> 184762
<b>Phase monitoring relay</b>							
Multi-functional Power supply via the measuring circuit On-delay/off-delay: none = 0 or adjustable from 0.1 - 30 s Imbalance threshold values can be set to between 2 % and 25 % of the mean value of the phase voltages							
		✓ ✓ ✓ ✓ ✓ ✓	90 - 170 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 120 - 170 V AC $U_{min}$ 90 - 130 V AC	90 - 170 V AC, 50/60 Hz	<b>EMR6-AWN170-E-1</b> 184768
		✓ ✓ ✓ ✓ ✓ -	160 - 300 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 220 - 300 V AC $U_{min}$ 160 - 230 V AC	160 - 300 V AC, 50/60 Hz	<b>EMR6-AW300-C-1</b> 184763
		✓ ✓ ✓ ✓ ✓ ✓	180 - 280 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 240 - 280 V AC $U_{min}$ 180 - 220 V AC	180 - 280 V AC, 50/60 Hz	<b>EMR6-AWN280-D-1</b> 184770
22.5 mm	Automatic phase sequence correction	✓ ✓ ✓ ✓ ✓ ✓	180 - 280 V AC, 50/60/400 Hz	✓ ✓ ✓	$U_{max}$ 240 - 280 V AC $U_{min}$ 180 - 220 V AC	180 - 280 V AC, 50/60/400 Hz	<b>EMR6-AWN280-K-1</b> 184769
		✓ ✓ ✓ ✓ ✓ -	300 - 500 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 420 - 500 V AC $U_{min}$ 300 - 380 V AC	300 - 500 V AC, 50/60 Hz	<b>EMR6-AW500-D-1</b> 184764
		✓ ✓ ✓ ✓ ✓ ✓	300 - 500 V AC, 50/60/400 Hz	✓ ✓ ✓	$U_{max}$ 420 - 500 V AC $U_{min}$ 300 - 380 V AC	300 - 500 V AC, 50/60/400 Hz	<b>EMR6-AWN500-D-1</b> 184771
	Automatic phase sequence correction	✓ ✓ ✓ ✓ ✓ -	350 - 580 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 480 - 580 V AC $U_{min}$ 350 - 460 V AC	350 - 580 V AC, 50/60 Hz	<b>EMR6-AWM580-H-1</b> 184765
		✓ ✓ ✓ ✓ ✓ -	450 - 720 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 600 - 720 V AC $U_{min}$ 450 - 570 V AC	450 - 720 V AC, 50/60 Hz	<b>EMR6-AWM720-I-1</b> 184766
45 mm		✓ ✓ ✓ ✓ ✓ -	530 - 820 V AC, 50/60 Hz	✓ ✓ ✓	$U_{max}$ 690 - 820 V AC $U_{min}$ 530 - 660 V AC	530 - 820 V AC, 50/60 Hz	<b>EMR6-AWM820-J-1</b> 184767
<b>Voltage monitoring relay for three-phase networks</b>							
	Power supply via the measuring circuit On-delay/off-delay: none = 0 or adjustable from 0.1 - 30 s	✓ ✓ - ✓ ✓ - ✓ ✓ - ✓ ✓ - ✓ ✓ - ✓ ✓ - ✓ ✓ - ✓ ✓ -	160 - 300 V AC, 50/60 Hz 300 - 500 V AC, 50/60 Hz 380 V AC, 50/60 Hz 400 V AC, 50/60 Hz	- ✓ ✓ - ✓ ✓ - - - - - -	$U_{max}$ 220 - 300 V AC $U_{min}$ 160 - 230 V AC $U_{max}$ 420 - 500 V AC $U_{min}$ 300 - 380 V AC $U_{max}$ 418 V AC, fixed $U_{min}$ 342 V AC, fixed $U_{max}$ 440 V AC, fixed $U_{min}$ 360 V AC, fixed	160 - 300 V AC, 50/60 Hz 300 - 500 V AC, 50/60 Hz 380 V AC, 50/60 Hz 400 V AC, 50/60 Hz	<b>EMR6-W300-C-1</b> 184776 <b>EMR6-W500-D-1</b> 184779 <b>EMR6-W380-L-1</b> 184777 <b>EMR6-W400-M-1</b> 184778

# Electronic relays

## EMR6 measuring and monitoring relay

		For monitoring					Measuring range	Adjustable threshold values			Supply voltage	Part no. Article no.	
		Phase sequence	Phase failure	Imbalance	Overvoltage	Undervoltage	Neutral cable break	Imbalance	Overvoltage	Undervoltage			
<b>Voltage monitoring relay</b>													
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Can be configured as open- or closed-circuit principle	-	-	-	✓	✓	-	3 ... 30 V 6 ... 60 V 30 ... 300 V 60 ... 600 V	✓	✓	✓	24 ... 240 V AC 50/60 Hz 24 ... 240 V DC	<b>EMR6-VM600-A-1</b> 184784
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Threshold values can be configured for >U and <U Can be configured as open- or closed-circuit principle	-	-	-	✓	✓	-	3 ... 30 V 6 ... 60 V 30 ... 300 V 60 ... 600 V	✓	✓	✓	24 ... 240 V AC 50/60 Hz 24 ... 240 V DC	<b>EMR6-VF600-A-1</b> 184785
<b>Level monitoring relay</b>													
		For monitoring		Adjustable sensitivity range	Supply voltage	Width mm	Part no. Article no.						
	Can be switched between dry run protection and overflow protection	Fill level of conductive liquids		0.1 - 1000 kΩ	110 - 130 V AC 50/60 Hz 220 - 240 V AC 50/60 Hz	22.5	<b>EMR6-N1000-N-1</b> 184756						
	On-delay or off-delay: adjustable between 0.1 - 10 s	Fill levels of conductive liquids Mixture ratio of conductive liquids		0.1 - 1000 kΩ	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	22.5	<b>EMR6-N1000-A-1</b> 184757						
	-			5 - 100 kΩ	110 - 130 V AC 50/60 Hz 220 - 240 V AC 50/60 Hz	22.5	<b>EMR6-N100-N-1</b> 184758						
<b>Insulation-monitoring relays</b>													
	Status indication via LEDs Open-circuit principle Test or reset function either via a button on the device or via the control input Configurable fault memory/memory function Configurable non-volatile fault memory	Insulation resistance in non-earthed AC supply systems (2-, 3- or 4-phase systems) Insulation resistance in non-earthed DC supply systems (2- or 3-phase systems)		1 - 100 kΩ 0 - 250 V AC 0 - 300 V DC	24 - 240 V AC, 24 - 240 V DC	22.5	<b>EMR6-R250-A-1</b> 184772						
	Status indication via LED Open-circuit principle Test or reset function either via a button on the device or via the control input Configurable fault memory/memory function Configurable non-volatile fault memory	Insulation resistance in non-earthed AC supply systems (2-, 3- or 4-phase systems)		1 - 100 kΩ 0 - 400 V AC	24 - 240 V AC, 24 - 240 V DC	22.5	<b>EMR6-R400-A-1</b> 184773						

	For monitoring	Adjustable sensitivity range	Supply voltage	Width mm	Part no. Article no.	
<b>Insulation-monitoring relays</b>						
	Status indication via LED Open-circuit principle Test or reset function either via a button on the device or via the control input Configurable fault memory/memory function Configurable non-volatile fault memory Wire-break detection	Insulation resistance in non-earthed AC supply systems (3- or 4-phase systems) Insulation resistance in non-earthed DC supply systems (3-phase systems)	1 - 100 kΩ 2 - 200 kΩ Activated via DIP switch 0 - 400 V AC 0 - 600 V DC	24 - 240 V AC, 13.5 - 400 Hz 24 - 240 V DC	45	<b>EMR6-R400-A-2</b> 184774
	Coupling module For expanding the rated voltage range of the EMR5-400-2-A to 690 V AC or 1000 V DC No supply voltage necessary	-	-	-	45	<b>EMR6-RC690</b> 184775
<b>Current monitoring relay</b>						
	Monitoring of single-phase DC and AC networks Switching hysteresis adjustable from 3 - 30 % On-delay: none = 0 or adjustable from 0.1 to 30 s The measurement range can be expanded by means of current transformers	3 - 30 mA 10 - 100 mA 0.1 - 1 A	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	22.5	<b>EMR6-I1-A-1</b> 184790	
		0.3 - 1.5 A 1 - 5 A 3 - 15 A			<b>EMR6-I15-A-1</b> 184754	
	0.3 - 1.5 A 1 - 5 A 3 - 15 A	220 - 240 V AC, 50/60 Hz	<b>EMR6-I15-B-1</b> 184755			
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Can be configured as open- or closed-circuit principle Multi-functional	3 - 30 mA 10 - 100 mA 0.1 - 1 A	24 - 240 V AC, 50/60 Hz 24 - 240 V DC		<b>EMR6-IM1-A-1</b> 184780	
		0.3 - 1.5 A 1 - 5 A 3 - 15 A			<b>EMR6-IM15-A-1</b> 184781	
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Threshold values can be configured for >I and <I Can be configured as open- or closed-circuit principle	3 - 30 mA 10 - 100 mA 0.1 - 1 A			<b>EMR6-IF1-A-1</b> 184782	
0.3 - 1.5 A 1 - 5 A 3 - 15 A		<b>EMR6-IF15-A-1</b> 184783				
<b>Temperature monitoring relay</b>						
	Status display via LED Monitoring of overtemperature, undertemperature or of temperatures between two threshold values Sensor type: PT100 sensor	-50..+50°C	24 - 240 V AC 50/60 Hz 24 - 240 V DC		<b>EMR6-T50-A-1</b> 184786	
		0..+100°C			<b>EMR6-T100-A-1</b> 184787	
		0..+200°C			<b>EMR6-T200-A-1</b> 184788	





## DILM contactors and Z overload relays

Operational switching of motors

- Overload protection
- Auxiliary contact Trip indication

Page 5/4 ff.



## MSC-D motor starters

Operational switching of motors

- Overload protection
- Short-circuit protection
- Disconnectors

Page 5/32 ff., 5/44 ff.



## MSC-DE motor starters

Operational switching of motors

- Electronic wide-range overload protection
- Short-circuit protection
- Disconnectors
- Adjustable current range due to exchangeable terminal blocks

Page 5/32 ff., 5/44 ff.



## EMS2 electronic motor starter with Push-in terminals

- Integrated power supply
- Control of clockwise/counterclockwise rotation
- Indication of the direction of rotation
- Tool-free Push-in terminal technology

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## NZM circuit breakers and DILM contactors

- Overload protection
- Short-circuit protection

Page 6/4 ff.



## DILM contactor with Push-in terminals

- Operational switching of motors

Page 5/4 ff.



## Motor-protective circuit breakers with Push-in terminals

- Overload and short-circuit protection

Page 5/32 ff., 5/44 ff.



## MSC-DEA motor starters with Push-in terminals

- Remote contactor control
- Read-back with SmartWire-DT
  - contactor and PKE switching status
  - Motor current
  - Settings
  - Thermal motor image
  - Trip indication in the event of overload/short circuit/phase failure

Page 5/32 ff., 5/44 ff.



## EMS2 electronic motor starter

- DOL and reversing starts
- Integrated emergency-stop contactor for Ple/SIL3 applications
- Wide-range overload protection
- Tool-free Push-in terminal technology

Page 5/62 ff.

# Soft starting and operation of motors



## DS7 and S811+ soft starters

- Can be combined with PKZ and PKE motor-protective circuit breakers
- Part of the xStart system
- Side-by-side mounting
- SmartWire-DT (optional)

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## PowerXL DE1 variable speed starter up to 7.5 kW

- Out-of-box commissioning without any prior configuration
- No specialist knowledge of drive technology required
- Can be configured with a screwdriver via the optional DXE-EXT-SET module
- Trip-free design for maximum machine availability
- Modbus RTU integrated
- CANopen (DE11 version)
- PROFINET, EtherNet/IP & SmartWire-DT optional

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## PowerXL DC1 variable frequency drives up to 22 kW

- V/f & SLV control with voltage boost
- Speed control of three-phase and AC motors
- Degree of protection: IP20, IP66
- Modbus RTU and CANopen integrated
- PROFINET, EtherNet/IP & SmartWire-DT optional

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## PowerXL DA1 variable frequency drives up to 250 kW

- V/f control, SLV, CLV
- 200 % torque at 0 rpm
- Integrated EMC filter and braking transistor
- Master/slave functionality
- Degree of protection: IP20, IP55 und IP66
- Modbus RTU and CANopen integrated
- Optional fieldbus modules
- SmartWire-DT (optional)

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## PowerXL DM1 and DM1Pro variable frequency drives up to 22 kW

- Safe (DM1Pro) (SIL2, PLd, Cat.2)
- Integrated web server and Bluetooth
- Multi-pump applications
- Integrated energy measurement and energy cost calculator
- Short-circuit protection up to 100 kA without any upstream devices

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## PowerXL DG1 variable frequency drive up to 630 kW

- Safe (STO) and reliable down to -30°C
- Easy commissioning
- Communication on board: Modbus RTU & TCP, BACnet MSTP, EtherNet/IP
- Multi-pump applications
- Integrated energy measurement and energy cost calculator
- Brake control, bypass, synchronization, 2 PID
- V/f, SLV, torque
- RTC and timer
- Two expansion slots

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## PowerXL DB1 variable frequency drives up to 4 kW

- V/f & SLV control with voltage boost
- Speed control of three-phase and AC motors
- IP20 degree of protection
- Modbus RTU and CANopen integrated

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## PowerXL Rapid Link 5

- RAMO5 DOL and reversing starter up to 3 kW
- RASP5 variable frequency drives up to 4 kW
- Plug-in connections only
- Integrated manual and automatic mode
- AS-Interface, Profinet, Ethernet/IP
- Degree of protection: IP65

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# Future-proof switching, protection and operation of motors

With Eaton, you are ideally prepared for meeting the requirements of the new ErP Directive. In addition to revising our existing product range for the safe switching, protection and operation of motors, we have also added a number of clever new solutions.

## Flexible solutions for greater energy efficiency

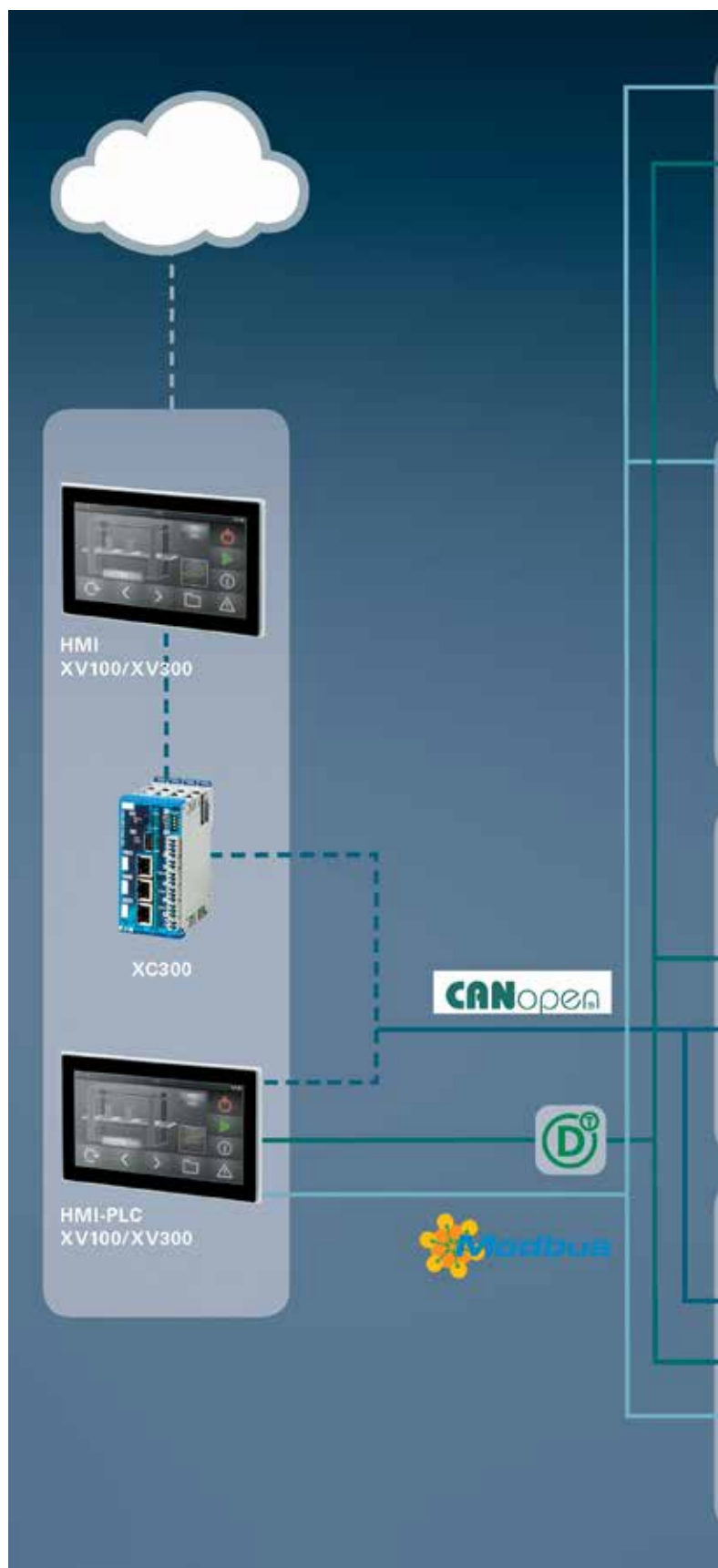
We offer flexible solutions for all types of machine-building applications, from fans, pumps and conveyor belts to hydraulic pumps and more. Whether your application requires constant speed, soft starting or simple or complex speed control – we offer a wide range of products for combination with standard motors and highly energy-efficient drives.

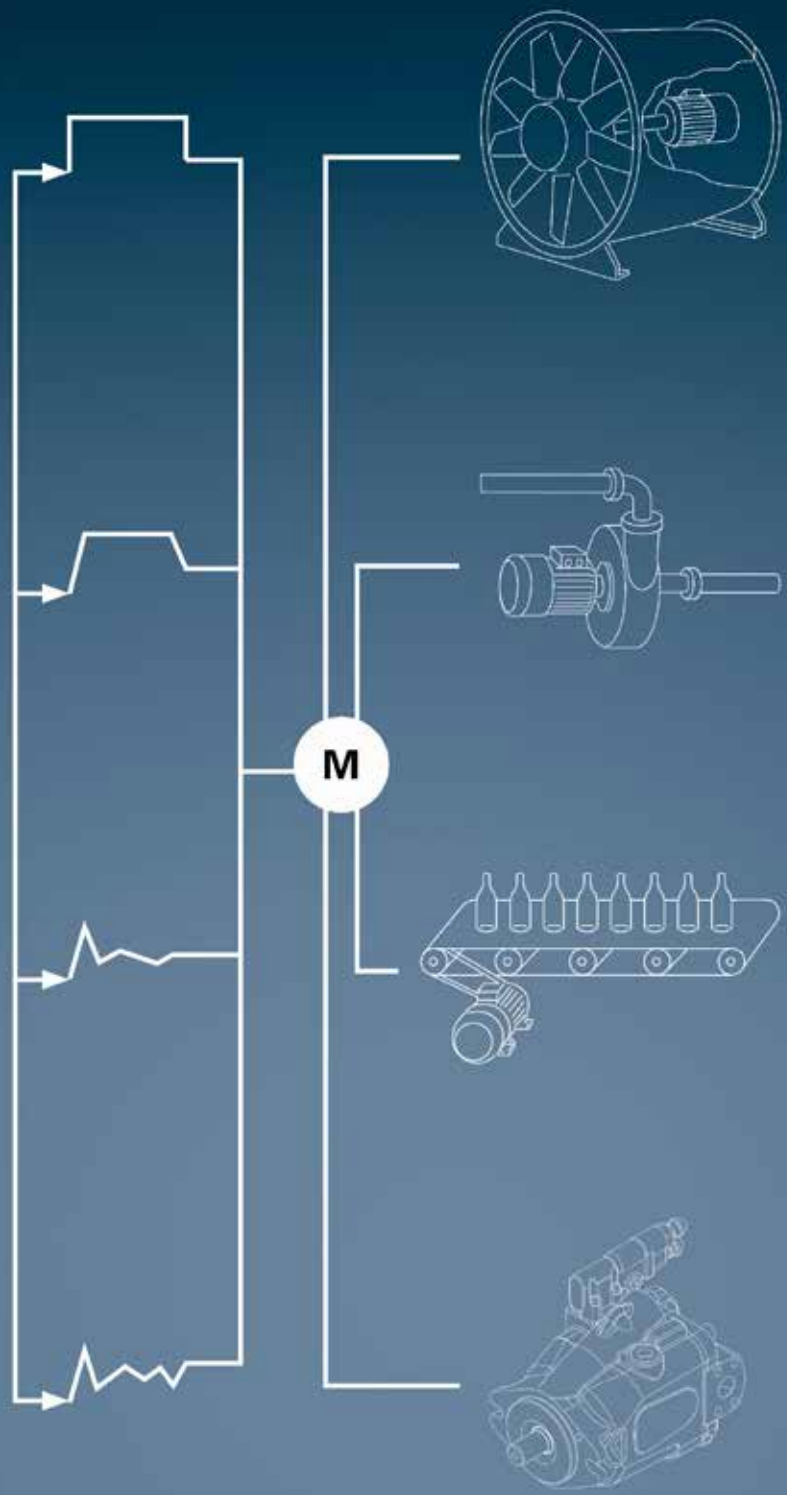
## Versatile communication and data acquisition options

Our intelligent connection system reduces wiring costs by up to 85 %. At the same time, it reduces installation errors and simplifies both planning and commissioning. The connected devices deliver both analog and digital data, for example on machine states, motor currents or energy consumption. This helps to increase the availability of machines and systems while optimizing their energy consumption. Moreover, we also offer additional communication systems. With CANopen or Modbus RTU, you can choose the system that best matches the needs of your plant.

## System control and data storage and visualization

The trend towards greater data transparency, particularly with regard to optimizing energy consumption in motor applications, not only requires data to be collected, but also to be analyzed more effectively. The data storage options offered by the machine itself are not sufficient for this purpose. Therefore, the data need to be collected and forwarded to a server for processing via the control system. We also offer the right solution for this task, irrespective of whether the data are locally processed or uploaded to the cloud.



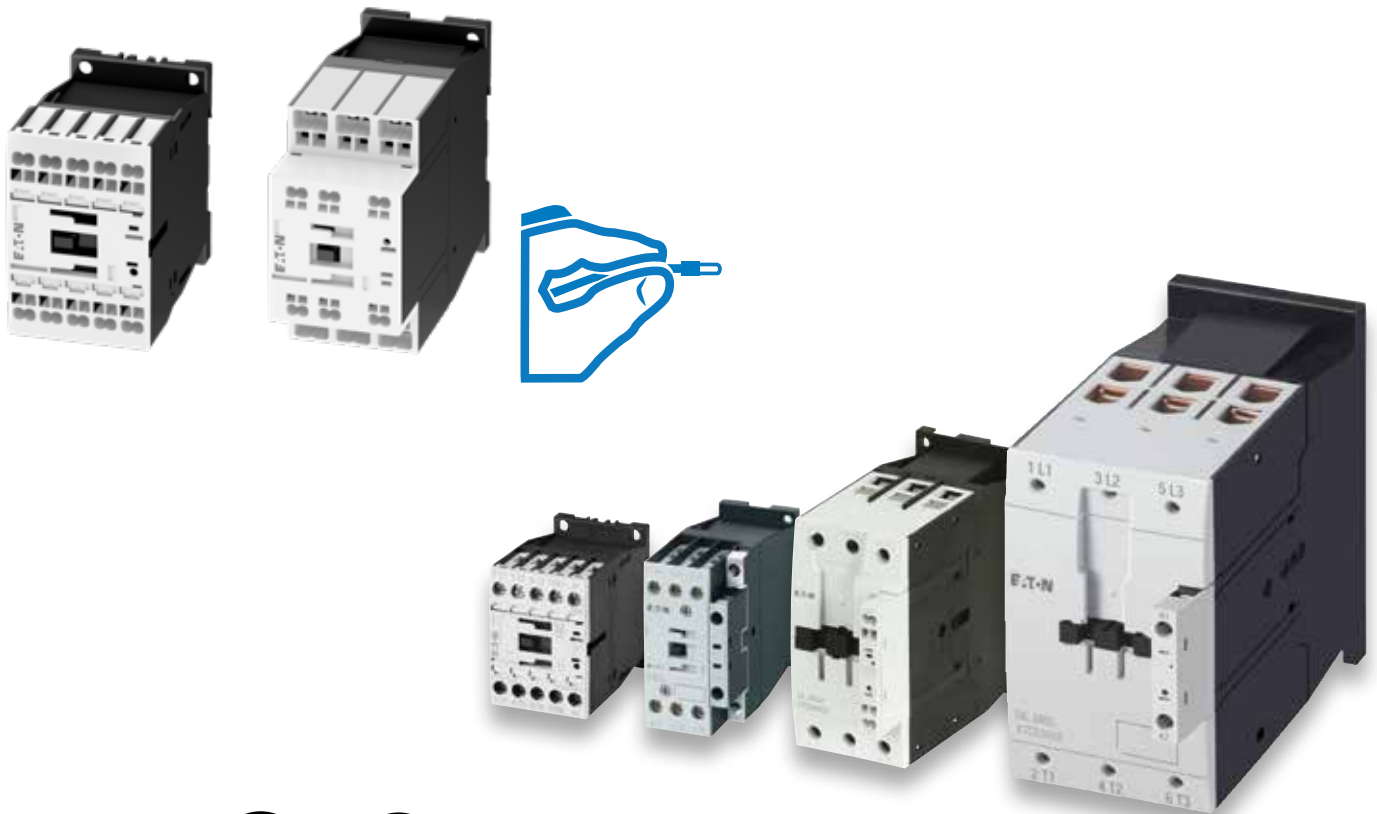


**Energy savings of 15 % for the pumping station of a waterworks**

When the pump system of a waterworks had to be replaced, Aquatech, an Eaton Solution Partner, developed a new drive system in cooperation with the operator. This enabled the operator to reduce its operating and maintenance costs and achieve a rapid return on investment for the system upgrade. The combination of DG1 drives with IE4 motors allows for speed-controlled operation: During start-up, the pumping capacity increases only gradually,

thereby avoiding the voltage peaks and pressure surges that often plagued the old system. In fact, this has enabled the waterworks to entirely eliminate gate valves during start-up. With the new system, sudden pressure changes in the water mains are also a thing of the past – thanks to the variable frequency drives, which gradually reduce the power output of the pumps. As a result, the non-return valves now close in a much more gentle manner, which translates into less wear on the equipment.





# DIL contactors up to 2600 A

## Powerful, efficient and easy to combine



You will find our safety contactors in Chapter 4, page 4/8 ff.

This contactor series covers the entire power range from mini contactor relays up to 7 A through to vacuum contactors up to 2600 A. By combining them with electronic motor protection relays or bimetal relays, you can create motor starters for a wide variety of applications. All devices are suitable for global use and come with UL/CSA, CCC and marine approvals. The motor protection systems are also ATEX certified. What makes the contactors even more efficient are the Eco versions for 15.5, 38, 72, 170 and 570 A, as well as our many new innovations for motor starters, such as SmartWire-DT. A special highlight is our range of contactors and auxiliary contactors up to 38 A with Push-in technology. This enables the devices to be wired without any tools and thus delivers major time savings, as well as making the contacts more resistant to shocks and vibrations.





### Even faster wiring with Push-in terminals

Push-in technology enables the tool-free wiring of the main and auxiliary circuits of our contactors and auxiliary contactors up to 38 A:

- Faster and tool-free wiring of rigid and flexible cables with ferrules
- Maximum reliability even in the face of strong vibrations



### DILE mini contactor relay

We have expanded our portfolio of mini contactor relays to three power ranges. The new DILEM12 can be used to reliably control motors up to 5.5 kW:

- Compact size for installations where space is at a premium
- Expansion of our mini contactor relay range up to 5.5 kW



### DILM contactors up to 170 A

Our contactors up to 170 A are characterized by their compact size. The AC-operated and DC-operated devices thus all have the same dimensions:

- Identical accessories for AC and DC devices simplify project planning

All DC contactors from DILM17 upwards come with an electronically controlled drive:

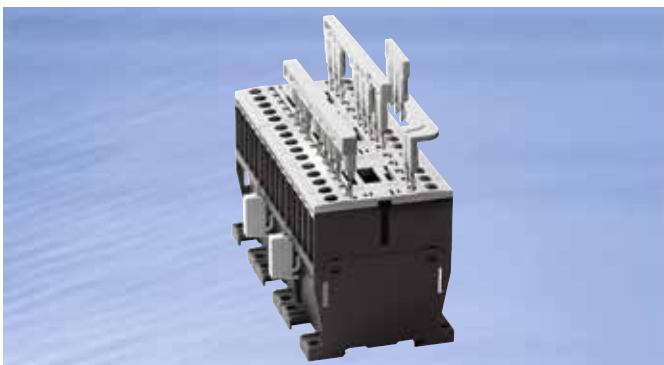
- Significantly less waste heat due to reduced holding power
- Small control transformers due to low pull-in power
- Direct control via a PLC without coupling contactors up to 38 A.



### New ZEB electronic overload relay

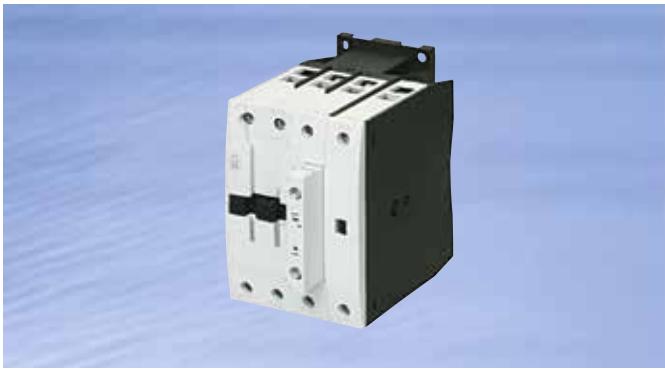
Our new electronic overload relays can be mounted directly on the DILM contactors. They cover the power range up to 175 A.

- Adjustable protection class setting in the case of heavy starting duties
- Selectable manual or auto reset for universal use
- The GF devices provide extended protection in the event of ground faults.



### Easy, fast and reliable wiring

- The combination plug-in technology uses our universally applicable standard components. For contactors up to 15.5 A, the DILM12-XSL or DILM12-XRL main jumpers can be quickly plugged into the sockets of the combination plug-in system to save space.
- Coil connections at the front enable fast and reliable wiring.
- The double box terminals on all DILM contactors up to 170 A ensure reliable wiring even if different conductor cross-sections are used.

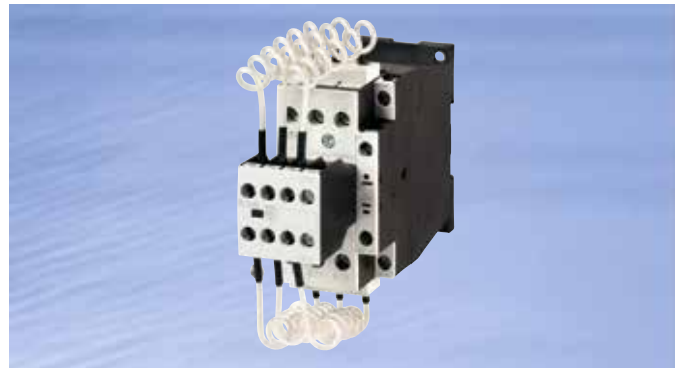


#### 4-pole contactors

The Eaton 4-pole contactors are optimized for switching AC-1 loads.

The contactors are the perfect match for applications that are characterized by frequent mains switch-off or switch-over, as well as for heating systems and 4-pole loads:

- Four compact frame sizes up to 200 A
- Identical accessories for 3- and 4-pole contactors ensure efficient project planning.



#### Contactors for reactive current compensation systems

The design of the DILK capacitor contactors is based on that of the DILM contactors. The installation, connection and handling conditions are thus identical with those of the standard contactors. In addition to a special, weld-proof contact material, these contactors also contain series resistors. The main contacts will only close and carry a continuous current after the capacitors have been precharged by means of a special auxiliary contactor and the series resistors.



#### DILA contactor relays

The DILA contactor relays are the perfect companion to the DILM contactors.

- Special auxiliary contacts for the contactor relays ensure safe marking.



#### Safety technology

Safety technology is becoming increasingly important.

In this context, contactors are used to ensure safe shutdown:

- Reliable feedback on the switching state of the contactor via mirror contacts
- Our new electronics-compatible auxiliary switch reliably switches long release chains with even the smallest of signals. The integrated microswitches reliably switch even the smallest signals.

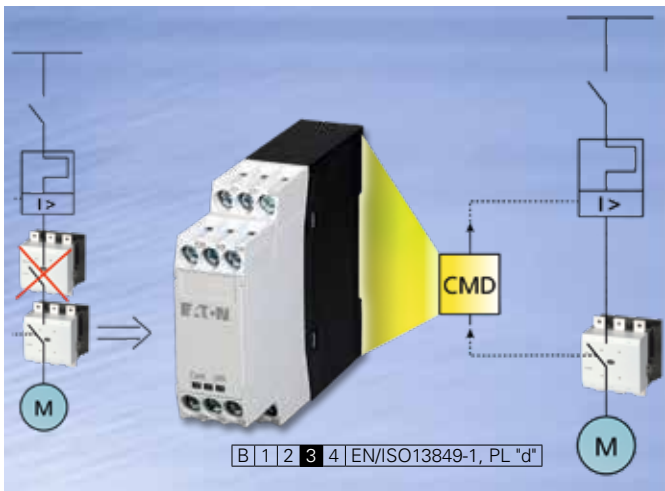


#### EMT6 thermistor overload relay

A broad range of functions despite the very small footprint. The EMT6 thermistor relay protects equipment against over-temperature caused by heavy starting duties, braking operations, undervoltage, overvoltage and high switching frequencies. The temperature is monitored by means of a thermistor directly on the motor winding.

The EMT6 is also suitable for monitoring the temperatures of motor bearings, gearboxes, oils and coolants. Three types are available, with tiered functions:

EMT6, EMT6-DB and EMT6-DBK. The EMT6-DBK is very versatile, featuring automatic and manual reset, short-circuit detection in the sensor circuit and zero-voltage safety.



### CMD contactor monitoring device

The CMD (contactor monitoring device) monitors the main contacts of a contactor for welding. It compares the contactor control voltage with the state of the main contact, which is reliably indicated by means of a mirror contact (IEC EN 60947-4-1 A. F). If the contactor coil is de-energized but the contactor fails to drop out, the CMD will trip the upstream circuit breaker, motor-protective circuit breaker or load-break switch via an undervoltage release.



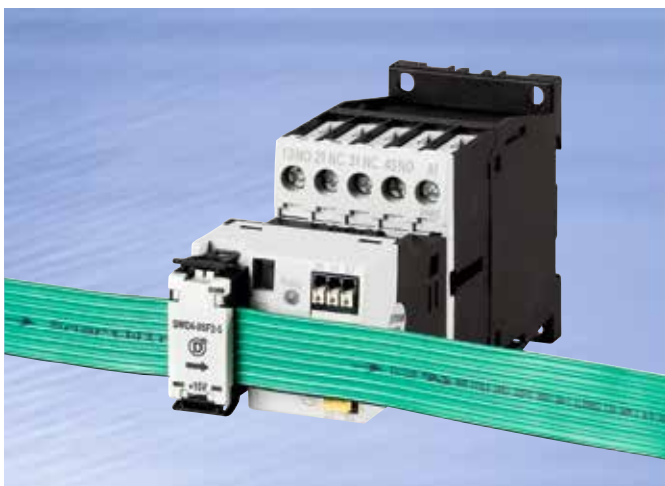
### Large contactors up to 2600 A

All DILM and DILH contactors in the range from 185 A to 2600 A come with electronically controlled coils. This offers the following application advantages:

- Flexible control
- Significantly less heating of the control cabinet due to the reduced holding power
- Significantly greater control voltage tolerance than required by the standard, for greater reliability in the event of voltage fluctuations
- Integrated suppressor circuit
- Equipped with 2 N/O and 2 N/C contacts
- The four wide-range devices of the comfort version cover the entire control voltage range.

The DILM contactors from 580 A and the DILH contactors from 1400 A are vacuum contactors, which offer significant advantages over air contactors:

- Their electrical service life is significantly longer than that of air contactors
- As there are no open arcs and thus no blowout, installations with higher packing density and less cluttered electrical rooms are possible.




### Intelligent networking

The conventional wiring of the control circuits of motor starters and contactors is highly complex, as each device needs to be individually wired to the controller's input/output modules. This requires a lot of time and entails many potential sources of error during wiring and operation. In combination with SmartWire-DT, the contactors of our xStart series eliminate the control wiring and the input/output modules of the control system that were previously required. This in turn reduces the time required for wiring and commissioning to a minimum.


# Overview of motor protection up to 1000 A


Electronic and electric overload relays and thermistor protection relays

Moeller series

<b>Contactors</b>																
																
AC 3 at 400 V AC-1 at 40° C																
Type	DIL	EEM	EM	EM12*	M7	M9	M12	M15*	M17	M25	M32	M38*	M40	M50	M65	M72*
Rated operational power AC-3	kW	3	4	5.5	3	4	5.5	7.5	7.5	11	15	18.5	18.5	22	30	37
Rated operational current AC-3	A	6.6	9	12	7	9	12	15.5	18	25	32	38	40	50	65	72
Rated operational current AC-1	A	22	22	22	22	22	22	22	40	45	45	45	60	80	98	98

\*For motors up to IE2

<b>Bimetal relay</b>				
				
Type	ZE	ZB12	ZB32	ZB65
Setting range of overload release	0.1 - 12 A	0.1 - 16 A	0.1 - 38 A	6 - 75 A





<b>Electronic overload relay</b>			
			
Type	ZEB12	ZEB32	ZEB65
Setting range of overload release	0.33 - 20 A	0.33 - 45 A	9 - 100 A



<b>Thermistor overload relays</b>	
	
Type	EMT6, EMT6-K, EMT6-DB, ...



M80	M95	M115	M150	M170*	M185A	M225A	M250	M300A	M400	M500	M580	M650	M750	M820	M1000
37	45	55	75	90	90	110	132	160	200	250	315	355	400	450	560
80	95	115	150	170	185	225	250	300	400	500	580	650	750	820	1000
110	130	160	190	225	337	356	400	430	612	857	980	1041	1102	1225	1225

\*For motors up to IE2

			
<b>ZB150</b>	<b>Z5-../FF225A</b>	<b>Z5-../FF250</b>	<b>ZW7</b>
35 - 175 A	50 - 250 A	50 - 300 A	42 - 630 A

	
<b>ZEB150</b>	<b>ZEB225A</b>
20 - 175 A	35 - 175 A







... EMT6KDB, EMT6-DBK








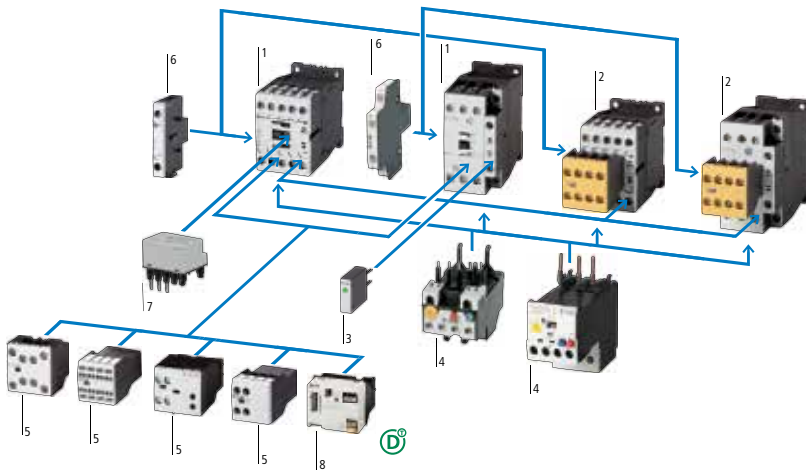
# Mini contactors, contactor monitoring relays

Contactors, mini contactors, contactor monitoring relays

Moeller series

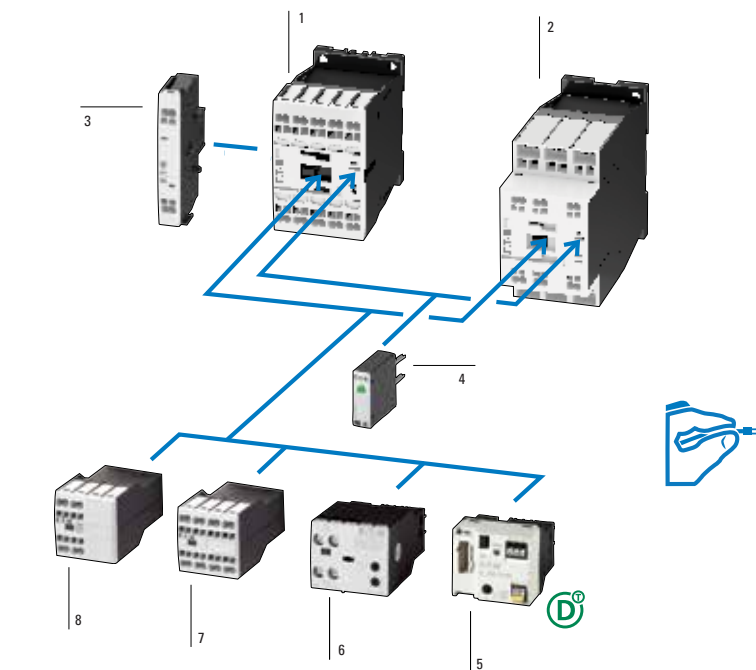
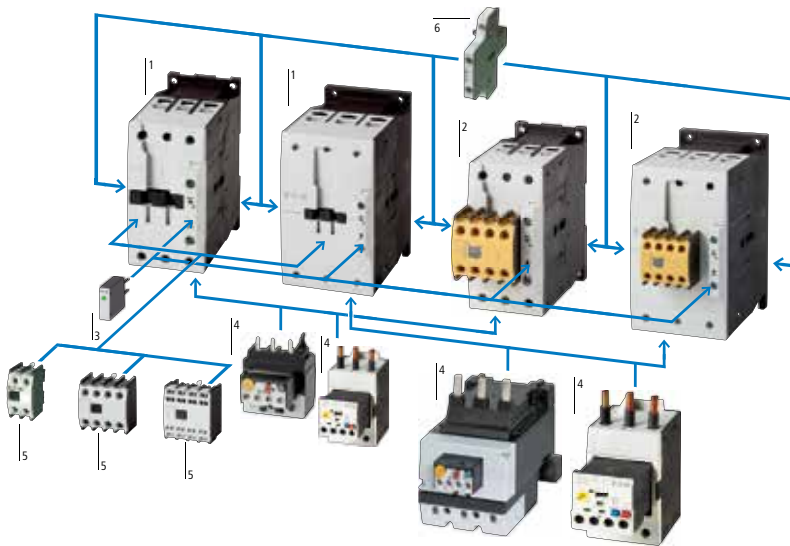
	Max. rated operational power of three-phase motors: 50 - 60 Hz	Rated operational current	Contact configuration	AC operation 230 V 50 Hz, 240 V 60 Hz	AC operation 110 V 50 Hz, 120 V 60 Hz	DC operation 24 V DC	
	AC-3	AC-1	N/O = normally open N/C = normally closed	Part no. Article no.	Part no. Article no.	Part no. Article no.	
	380 V 660 V 400 V 690 V	Conventional thermal current, 3-pole, 50 - 60 Hz					
	P kW	Open at 40 °C $I_{th} = I_e$ A					
<b>DILEM contactors</b>							
Screw terminals							
	3	3	22	1 N/O -	<b>DILEEM-10(230V50HZ,240V60HZ)</b> 051608	<b>DILEEM-10(110V50HZ,120V60HZ)</b> 051611	<b>DILEEM-10-G(24VDC)</b> 051643
	3	3	22	- 1 N/C	<b>DILEEM-01(230V50HZ,240V60HZ)</b> 051633	<b>DILEEM-01(110V50HZ,120V60HZ)</b> 051636	<b>DILEEM-01-G(24VDC)</b> 051650
	4	4	22	1 N/O -	<b>DILEEM-10(230V50HZ,240V60HZ)</b> 051786	<b>DILEEM-10(110V50HZ,120V60HZ)</b> 051783	<b>DILEEM-10-G(24VDC)</b> 010213
	4	4	22	- 1 N/C	<b>DILEEM-01(230V50HZ,240V60HZ)</b> 051795	<b>DILEEM-01(110V50HZ,120V60HZ)</b> 051792	<b>DILEEM-01-G(24VDC)</b> 010343
	5.5	4	22	1 N/O -	<b>DILEEM12-10(230V50HZ,240V60HZ)</b> 127075	<b>DILEEM12-10(110V50HZ,120V60HZ)</b> 127072	<b>DILEEM12-10-G(24VDC)</b> 127132
	5.5	4	22	- 1 N/C	<b>DILEEM12-01(230V50HZ,240V60HZ)</b> 127091	<b>DILEEM12-01(110V50HZ,120V60HZ)</b> 127088	<b>DILEEM12-01-G(24VDC)</b> 127137
<b>DILER mini contactor relays</b>							
Screw terminals							
	-	-	10	4 N/O -	<b>DILER-40(230V50HZ,240V60HZ)</b> 051759	<b>DILER-40(110V50HZ,120V60HZ)</b> 051756	<b>DILER-40-G(24VDC)</b> 010223
	-	-	10	3 N/O 1 N/C	<b>DILER-31(230V50HZ,240V60HZ)</b> 051768	<b>DILER-31(110V50HZ,120V60HZ)</b> 051765	<b>DILER-31-G(24VDC)</b> 010157
	-	-	10	2 N/O 2 N/C	<b>DILER-22(230V50HZ,240V60HZ)</b> 051777	<b>DILER-22(110V50HZ,120V60HZ)</b> 051774	<b>DILER-22-G(24VDC)</b> 010042
<b>DILA contactor relays</b>							
Screw terminals							
	-	-	16	4 N/O -	<b>DILA-40(230V50HZ,240V60HZ)</b> 276329	<b>DILA-40(110V50HZ,120V60HZ)</b> 276326	<b>DILA-40(24VDC)</b> 276344
	-	-	16	3 N/O 1 N/C	<b>DILA-31(230V50HZ,240V60HZ)</b> 276364	<b>DILA-31(110V50HZ,120V60HZ)</b> 276361	<b>DILA-31(24VDC)</b> 276379
	-	-	16	2 N/O 2 N/C	<b>DILA-22(230V50HZ,240V60HZ)</b> 276399	<b>DILA-22(110V50HZ,120V60HZ)</b> 276396	<b>DILA-22(24VDC)</b> 276414
Push-in terminals							
	-	-	16	4 N/O -	<b>DILA-40(230V50HZ,240V60HZ)-PI</b> 199204	<b>DILA-40(110V50HZ,120V60HZ)-PI</b> 199205	<b>DILA-40(24VDC)-PI</b> 199208
	-	-	16	3 N/O 1 N/C	<b>DILA-31(230V50HZ,240V60HZ)-PI</b> 199209	<b>DILA-31(110V50HZ,120V60HZ)-PI</b> 199210	<b>DILA-31(24VDC)-PI</b> 199213
	-	-	16	2 N/O 2 N/C	<b>DILA-22(230V50HZ,240V60HZ)-PI</b> 199214	<b>DILA-22(110V50HZ,120V60HZ)-PI</b> 199215	<b>DILA-22(24VDC)-PI</b> 199218

For use with	Contacts				Part no.	Article no.	
	N/O = normally open	N/O <sub>E</sub> = N/O early-make	N/C = normally closed	N/C <sub>L</sub> = N/C late-break ⊕			
<b>Auxiliary contact modules</b>							
<b>Screw terminals</b>							
	DILEM-10(-G)(...)	-	-	2 N/C	-	<b>02DILEM</b>	010064
	DILEM-4(-G)(...)	1 N/O	-	1 N/C	-	<b>11DILEM</b>	010080
	DILEEM-10(-G)(...)	2 N/O	-	2 N/C	-	<b>22DILEM</b>	010112
	DILEM12-10(-G)(...)	-	-	2 N/C	-	<b>02DILE</b>	010240
	DILEM-01(-G)(...)	1 N/O	-	1 N/C	-	<b>11DILE</b>	010224
	DILEM-4(-G)(...)	2 N/O	-	-	-	<b>20DILE</b>	010208
	DILER40(-G)	-	1 N/O <sub>E</sub>	-	1 N/C <sub>L</sub>	<b>11DDILE</b>	049824
	DILER22	-	-	4 N/C	-	<b>04DILE</b>	010256
	DILEEM-10(-G)(...)	1 N/O	-	3 N/C	-	<b>13DILE</b>	002397
	DILEEM-01(-G)(...)	2 N/O	-	2 N/C	-	<b>22DILE</b>	010288
	DILEM12-10(-G)(...)	3 N/O	-	1 N/C	-	<b>31DILE</b>	048912
	DILEM12-01(-G)(...)	4 N/O	-	-	-	<b>40DILE</b>	010304
		1 N/O	1 N/O <sub>E</sub>	1 N/C	1 N/C <sub>L</sub>	<b>22DDILE</b>	049823
	<b>Suppressor circuit</b>						
<b>Varistor suppressor</b>							
	DILE...	-	-	-	-	<b>VGDILE250</b>	010336
<b>RC suppressor</b>							
	DILE...	-	-	-	-	<b>RCDILE250</b>	046320
<b>Mechanical interlock</b>							
For contactors with the same or a different magnet system. 0 mm distance between relays. mechanical service life: 2.5 x 10 <sup>9</sup> operations. Additional auxiliary contact modules possible.							
		-	-	-	-	<b>MVDILE</b>	010113
<b>Paralleling link</b>							
Consisting of 2 parallel links, 4-pole							
	DILEEM DILEM12 DILEM	-	-	-	-	<b>P1DILEM</b>	019095







- 1 Contactors
- 2 Safety contactors
- 3 Suppressor circuits
- 4 Motor-protection relays
- 5 Auxiliary contact modules
- 6 Side-mounting auxiliary contact modules
- 7 Motor suppressor module
- 8 SmartWire-DT contactor module


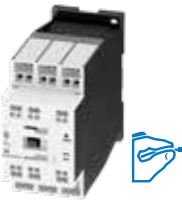


The safety contactors can be found in Chapter 4, page 4/8 ff.




- 1 DILA contactor relay/DILM contactors up to 7.5 kW – Push-in terminal
- 2 DILM contactor up to 18.5 kW – Push-in terminal
- 3 Side-mounting auxiliary contact – Push-in terminal
- 4 Coil protection circuits
- 5 SmartWire-DT networking module
- 6 Electronic timer module – screw terminal
- 7 Front-mounting auxiliary contact, 4-pole – Push-in terminal
- 8 Front-mounting auxiliary contact, 2-pole – Push-in terminal

				AC operation	AC operation	DC operation
				230 V 50 Hz, 240 V 60 Hz	110 V 50 Hz, 120 V 60 Hz	24 V DC
				Part no. Article no.	Part no. Article no.	Part no. Article no.
Max. rated operational power of three-phase motors: 50 - 60 Hz		Rated operational current				
AC-3		AC-1				
380 V	660 V	conventional thermal current, 3-pole, 50-60 Hz				
400 V	690 V	Open at 40 °C				
P	P	$I_{th} = I_e$				
kW	kW	A				
<b>Base device</b>						
<b>Screw terminals</b>						
	3	3.5	22	<b>DILM7-10(230V50HZ,240V60HZ)</b> 276550	<b>DILM7-10(110V50HZ,120V60HZ)</b> 276547	<b>DILM7-10(24VDC)</b> 276565
	3	3.5	22	<b>DILM7-01(230V50HZ,240V60HZ)</b> 276585	<b>DILM7-01(110V50HZ,120V60HZ)</b> 276582	<b>DILM7-01(24VDC)</b> 276600
	4	4.5	22	<b>DILM9-10(230V50HZ,240V60HZ)</b> 276690	<b>DILM9-10(110V50HZ,120V60HZ)</b> 276687	<b>DILM9-10(24VDC)</b> 276705
	4	4.5	22	<b>DILM9-01(230V50HZ,240V60HZ)</b> 276725	<b>DILM9-01(110V50HZ,120V60HZ)</b> 276722	<b>DILM9-01(24VDC)</b> 276740
	5.5	6.5	22	<b>DILM12-10(230V50HZ,240V60HZ)</b> 276830	<b>DILM12-10(110V50HZ,120V60HZ)</b> 276827	<b>DILM12-10(24VDC)</b> 276845
	5.5	6.5	22	<b>DILM12-01(230V50HZ,240V60HZ)</b> 276865	<b>DILM12-01(110V50HZ,120V60HZ)</b> 276862	<b>DILM12-01(24VDC)</b> 276880
	7.5	7	22	<b>DILM15-10(230V50HZ,240V60HZ)</b> 290058	<b>DILM15-10(110V50HZ,120V60HZ)</b> 290055	<b>DILM15-10(24VDC)</b> 290073
	7.5	7	22	<b>DILM15-01(230V50HZ,240V60HZ)</b> 290093	<b>DILM15-01(110V50HZ,120V60HZ)</b> 290090	<b>DILM15-01(24VDC)</b> 290108
	7.5	11	40	<b>DILM17-10(230V50HZ,240V60HZ)</b> 277004	<b>DILM17-10(110V50HZ,120V60HZ)</b> 277001	<b>DILM17-10(RDC24)</b> 277018
	7.5	11	40	<b>DILM17-01(230V50HZ,240V60HZ)</b> 277036	<b>DILM17-01(110V50HZ,120V60HZ)</b> 277033	<b>DILM17-01(RDC24)</b> 277050
	11	14	45	<b>DILM25-10(230V50HZ,240V60HZ)</b> 277132	<b>DILM25-10(110V50HZ,120V60HZ)</b> 277129	<b>DILM25-10(RDC24)</b> 277146
	11	14	45	<b>DILM25-01(230V50HZ,240V60HZ)</b> 277164	<b>DILM25-01(110V50HZ,120V60HZ)</b> 277161	<b>DILM25-01(RDC24)</b> 277178
	15	17	45	<b>DILM32-10(230V50HZ,240V60HZ)</b> 277260	<b>DILM32-10(110V50HZ,120V60HZ)</b> 277257	<b>DILM32-10(RDC24)</b> 277274
	15	17	45	<b>DILM32-01(230V50HZ,240V60HZ)</b> 277292	<b>DILM32-01(110V50HZ,120V60HZ)</b> 277289	<b>DILM32-01(RDC24)</b> 277306
	18.5	21	45	<b>DILM38-10(230V50HZ,240V60HZ)</b> 112428	<b>DILM38-10(110V50HZ,120V60HZ)</b> 112425	<b>DILM38-10(RDC24)</b> 112442
	18.5	21	45	<b>DILM38-01(230V50HZ,240V60HZ)</b> 112456	<b>DILM38-01(110V50HZ,120V60HZ)</b> 112453	<b>DILM38-01(RDC24)</b> 112470
	18.5	23	60	<b>DILM40(230V50HZ,240V60HZ)</b> 277766	<b>DILM40(110V50HZ,120V60HZ)</b> 277763	<b>DILM40(RDC24)</b> 277780
	22	30	80	<b>DILM50(230V50HZ,240V60HZ)</b> 277830	<b>DILM50(110V50HZ,120V60HZ)</b> 277827	<b>DILM50(RDC24)</b> 277844
	30	35	98	<b>DILM65(230V50HZ,240V60HZ)</b> 277894	<b>DILM65(110V50HZ,120V60HZ)</b> 277891	<b>DILM65(RDC24)</b> 277908
	37	35	98	<b>DILM72(230V50HZ,240V60HZ)</b> 107670	<b>DILM72(110V50HZ,120V60HZ)</b> 109191	<b>DILM72(RDC24)</b> 107671
	37	63	110	<b>DILM80(230V50HZ,240V60HZ)</b> 239402	<b>DILM80(110V50HZ,120V60HZ)</b> 239399	<b>DILM80(RDC24)</b> 239416
	45	75	130	<b>DILM95(230V50HZ,240V60HZ)</b> 239480	<b>DILM95(110V50HZ,120V60HZ)</b> 239477	<b>DILM95(RDC24)</b> 239510
	55	90	160	<b>DILM115(RAC240)</b> 239548	<b>DILM115(RAC120)</b> 239547	<b>DILM115(RDC24)</b> 239555
	75	96	190	<b>DILM150(RAC240)</b> 239588	<b>DILM150(RAC120)</b> 239587	<b>DILM150(RDC24)</b> 239591
	90	96	225	<b>DILM170(RAC240)</b> 107013	<b>DILM170(RAC120)</b> 107012	<b>DILM170(RDC24)</b> 107016

Switching and operating motors

				<b>AC operation</b> 230 V 50 Hz, 240 V 60 Hz <b>Part no.</b> Article no.	<b>AC operation</b> 110 V 50 Hz, 120 V 60 Hz <b>Part no.</b> Article no.	<b>DC operation</b> 24 V DC <b>Part no.</b> Article no.
Max. rated operational power of three-phase motors: 50 - 60 Hz		Rated operational current				
AC-3		AC-1				
380 V	660 V	Conventional thermal current, 3-pole, 50-60 Hz				
400 V	690 V	Open at 40 °C				
P	P	$I_{th} = I_e$				
kW	kW	A				
<b>Base device</b>						
<b>Push-in terminals</b>						
	3	3.5	22	<b>DILM7-10(230V50HZ,240V60HZ)-PI</b> 199219	<b>DILM7-10(110V50HZ,120V60HZ)-PI</b> 199220	<b>DILM7-10(24VDC)-PI</b> 199223
	3	3.5	22	<b>DILM7-01(230V50HZ,240V60HZ)-PI</b> 199224	<b>DILM7-01(110V50HZ,120V60HZ)-PI</b> 199225	<b>DILM7-01(24VDC)-PI</b> 199228
	4	4.5	22	<b>DILM9-10(230V50HZ,240V60HZ)-PI</b> 199229	<b>DILM9-10(110V50HZ,120V60HZ)-PI</b> 199230	<b>DILM9-10(24VDC)-PI</b> 199233
	4	4.5	22	<b>DILM9-01(230V50HZ,240V60HZ)-PI</b> 199234	<b>DILM9-01(110V50HZ,120V60HZ)-PI</b> 199235	<b>DILM9-01(24VDC)-PI</b> 199238
	5.5	6.5	22	<b>DILM12-10(230V50HZ,240V60HZ)-PI</b> 199239	<b>DILM12-10(110V50HZ,120V60HZ)-PI</b> 199240	<b>DILM12-10(24VDC)-PI</b> 199243
	5.5	6.5	22	<b>DILM12-01(230V50HZ,240V60HZ)-PI</b> 199244	<b>DILM12-01(110V50HZ,120V60HZ)-PI</b> 199245	<b>DILM12-01(24VDC)-PI</b> 199248
	7.5	7	22	<b>DILM15-10(230V50HZ,240V60HZ)-PI</b> 199249	<b>DILM15-10(110V50HZ,120V60HZ)-PI</b> 199250	<b>DILM15-10(24VDC)-PI</b> 199253
	7.5	7	22	<b>DILM15-01(230V50HZ,240V60HZ)-PI</b> 199254	<b>DILM15-01(110V50HZ,120V60HZ)-PI</b> 199255	<b>DILM15-01(24VDC)-PI</b> 199258
<b>Push-in terminals</b>						
	3	3.5	40	<b>DILM8-11(230V50HZ,240V60HZ)-PI</b> 199264	<b>DILM8-11(110V50HZ,120V60HZ)-PI</b> 199265	<b>DILM8-11(RDC24)-PI</b> 199268
	4	4.5	40	<b>DILM11-11(230V50HZ,240V60HZ)-PI</b> 199269	<b>DILM11-11(110V50HZ,120V60HZ)-PI</b> 199270	<b>DILM11-11(RDC24)-PI</b> 199273
	5.5	6.5	40	<b>DILM14-11(230V50HZ,240V60HZ)-PI</b> 199274	<b>DILM14-11(110V50HZ,120V60HZ)-PI</b> 199275	<b>DILM14-11(RDC24)-PI</b> 199278
	7.5	5	40	<b>DILM17-11(230V50HZ,240V60HZ)-PI</b> 199279	<b>DILM17-11(110V50HZ,120V60HZ)-PI</b> 199280	<b>DILM17-11(RDC24)-PI</b> 199283
	11	14	45	<b>DILM25-11(230V50HZ,240V60HZ)-PI</b> 199284	<b>DILM25-11(110V50HZ,120V60HZ)-PI</b> 199285	<b>DILM25-11(RDC24)-PI</b> 199288
	15	17	45	<b>DILM32-11(230V50HZ,240V60HZ)-PI</b> 199289	<b>DILM32-11(110V50HZ,120V60HZ)-PI</b> 199290	<b>DILM32-11(RDC24)-PI</b> 199293
	18.5	21	45	<b>DILM38-11(230V50HZ,240V60HZ)-PI</b> 199294	<b>DILM38-11(110V50HZ,120V60HZ)-PI</b> 199295	<b>DILM38-11(RDC24)-PI</b> 199298
<b>Spring-loaded terminals on auxiliary and control circuit terminals</b>						
	18.5	23	60	<b>DILMC40(230V50HZ,240V60HZ)</b> 277965	<b>DILMC40(110V50HZ,120V60HZ)</b> 277962	<b>DILMC40(RDC24)</b> 277979
	22	30	80	<b>DILMC50(230V50HZ,240V60HZ)</b> 277995	<b>DILMC50(110V50HZ,120V60HZ)</b> 277992	<b>DILMC50(RDC24)</b> 278009
	30	35	98	<b>DILMC65(230V50HZ,240V60HZ)</b> 278025	<b>DILMC65(110V50HZ,120V60HZ)</b> 278022	<b>DILMC65(RDC24)</b> 278039
	37	63	110	<b>DILMC80(230V50HZ,240V60HZ)</b> 239618	-	<b>DILMC80(RDC24)</b> 239652
	45	75	130	<b>DILMC95(230V50HZ,240V60HZ)</b> 239685	-	<b>DILMC95(RDC24)</b> 239715
	55	90	160	<b>DILMC115(RAC240)</b> 239736	-	<b>DILMC115(RDC24)</b> 239741
	75	96	190	<b>DILMC150(RAC240)</b> 239751	-	<b>DILMC150(RDC24)</b> 239765



				<b>AC operation</b> 230 V 50 Hz, 240 V 60 Hz	<b>DC operation</b> 24 V DC
Max. rated operational power of three-phase motors: 50 - 60 Hz		Rated operational current		<b>Part no.</b> Article no.	<b>Part no.</b> Article no.
AC-3		AC-1			
380 V 400 V		660 V 690 V			
P kW		P kW			
		Conventional thermal current, 3-pole, 50-60 Hz			
		Open at 40 °C			
		$I_{th} = I_e$			
		A			
<b>DILM complete devices</b>					
<b>Screw terminals</b>					
	3	3.5	22	<b>DILM7-32(230V50HZ,240V60HZ)</b> 276655	<b>DILM7-32(24VDC)</b> 276670
	4	4.5	22	<b>DILM9-32(230V50HZ,240V60HZ)</b> 276795	<b>DILM9-32(24VDC)</b> 276810
	5.5	6.5	22	<b>DILM12-32(230V50HZ,240V60HZ)</b> 276935	<b>DILM12-32(24VDC)</b> 276950
	7.5	11	40	<b>DILM17-32(230V50HZ,240V60HZ)</b> 277100	<b>DILM17-32(RDC24)</b> 277114
	11	14	45	<b>DILM25-32(230V50HZ,240V60HZ)</b> 277228	<b>DILM25-32(RDC24)</b> 277242
	15	17	45	<b>DILM32-32(230V50HZ,240V60HZ)</b> 277356	<b>DILM32-32(RDC24)</b> 277370
	18.5	23	60	<b>DILM40-22(230V50HZ,240V60HZ)</b> 277798	<b>DILM40-22(RDC24)</b> 277812
	22	30	80	<b>DILM50-22(230V50HZ,240V60HZ)</b> 277862	<b>DILM50-22(RDC24)</b> 277876
	30	35	98	<b>DILM65-22(230V50HZ,240V60HZ)</b> 277926	<b>DILM65-22(RDC24)</b> 277940
	37	63	110	<b>DILM80-22(230V50HZ,240V60HZ)</b> 239449	<b>DILM80-22(RDC24)</b> 239463
	45	75	130	<b>DILM95-22(230V50HZ,240V60HZ)</b> 239527	<b>DILM95-22(RDC24)</b> 239541
	55	90	160	<b>DILM115-22(RAC240)</b> 239578	<b>DILM115-22(RDC24)</b> 239581
	75	96	190	<b>DILM150-22(RAC240)</b> 239598	<b>DILM150-22(RDC24)</b> 239601

Switching and operating motors

# Contactors and auxiliary contactors

Base devices with screw terminals

Moeller series

			AC operation 230 V 50/60 Hz	AC operation 110 V 50/60 Hz	AC operation 42 V 50 Hz, 48 V 60 Hz	AC operation 24 V 50/60 Hz
AC3 380 V 400 V P kW	AC3 660 V 690 V P kW	AC1 $I_{th}=I_e$ A <sup>-1</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
		10	DILER-40(230V50/60HZ) 52725	DILER-40(110V50/60HZ) 21961	DILER-40(42V50HZ,48V60HZ) 51755	DILER-40(24V50/60HZ) 21924
-	-	10	DILER-31(230V50/60HZ) 52509	DILER-31(110V50/60HZ) 21624	DILER-31(42V50HZ,48V60HZ) 51764	DILER-31(24V50/60HZ) 21594
-	-	10	DILER-22(230V50/60HZ) 52508	DILER-22(110V50/60HZ) 21871	DILER-22(42V50HZ,48V60HZ) 51773	DILER-22(24V50/60HZ) 21704
-	-	16	DILA-40(230V50/60HZ) 276337	DILA-40(110V50/60HZ) 276335	DILA-40(42V50HZ,48V60HZ) 276325	DILA-40(24V50/60HZ) 276333
-	-	16	DILA-31(230V50/60HZ) 276372	DILA-31(110V50/60HZ) 276370	DILA-31(42V50HZ,48V60HZ) 276360	DILA-31(24V50/60HZ) 276368
-	-	16	DILA-22(230V50/60HZ) 276407	DILA-22(110V50/60HZ) 276405	DILA-22(42V50HZ,48V60HZ) 276395	DILA-22(24V50/60HZ) 276403
3	3	22	DILEEM-10(230V50/60HZ) 56674	DILEEM-10(110V50/60HZ) 51592	DILEEM-10(42V50HZ,48V60HZ) 51612	DILEEM-10(24V50/60HZ) 51596
3	3	22	DILEEM-01(230V50/60HZ) 58771	DILEEM-01(110V50/60HZ) 51618	DILEEM-01(42V50HZ,48V60HZ) 51637	DILEEM-01(24V50/60HZ) 51621
4	4	22	DILEM-10(230V50/60HZ) 52302	DILEM-10(110V50/60HZ) 21455	DILEM-10(42V50HZ,48V60HZ) 51782	DILEM-10(24V50/60HZ) 21417
4	4	22	DILEM-01(230V50/60HZ) 51114	DILEM-01(110V50/60HZ) 20436	DILEM-01(42V50HZ,48V60HZ) 51791	DILEM-01(24V50/60HZ) 20402
3	3.5	22	DILM7-10(230V50/60HZ) 276558	DILM7-10(110V50/60HZ) 276556	DILM7-10(42V50HZ,48V60HZ) 276546	DILM7-10(24V50/60HZ) 276554
3	3.5	22	DILM7-01(230V50/60HZ) 276593	DILM7-01(110V50/60HZ) 276591	DILM7-01(42V50HZ,48V60HZ) 276581	DILM7-01(24V50/60HZ) 276589
4	4.5	22	DILM9-10(230V50/60HZ) 276698	DILM9-10(110V50/60HZ) 276696	DILM9-10(42V50HZ,48V60HZ) 276686	DILM9-10(24V50/60HZ) 276694
4	4.5	22	DILM9-01(230V50/60HZ) 276733	DILM9-01(110V50/60HZ) 276731	DILM9-01(42V50HZ,48V60HZ) 276721	DILM9-01(24V50/60HZ) 276729
5.5	6.5	22	DILM12-10(230V50/60HZ) 276838	DILM12-10(110V50/60HZ) 276836	DILM12-10(42V50HZ,48V60HZ) 276826	DILM12-10(24V50/60HZ) 276834
5.5	6.5	22	DILM12-01(230V50/60HZ) 276873	DILM12-01(110V50/60HZ) 276871	DILM12-01(42V50HZ,48V60HZ) 276861	DILM12-01(24V50/60HZ) 276869
7.5	11	40	DILM17-10(230V50/60HZ) 277012	DILM17-10(110V50/60HZ) 277010	DILM17-10(42V50HZ,48V60HZ) 277000	DILM17-10(24V50/60HZ) 277008
7.5	11	40	DILM17-01(230V50/60HZ) 277044	DILM17-01(110V50/60HZ) 277042	DILM17-01(42V50HZ,48V60HZ) 277032	DILM17-01(24V50/60HZ) 277040
11	14	45	DILM25-10(230V50/60HZ) 277140	DILM25-10(110V50/60HZ) 277138	DILM25-10(42V50HZ,48V60HZ) 277128	DILM25-10(24V50/60HZ) 277136
11	14	45	DILM25-01(230V50/60HZ) 277172	DILM25-01(110V50/60HZ) 277170	DILM25-01(42V50HZ,48V60HZ) 277160	DILM25-01(24V50/60HZ) 277168
15	17	45	DILM32-10(230V50/60HZ) 277268	DILM32-10(110V50/60HZ) 277266	DILM32-10(42V50HZ,48V60HZ) 277256	DILM32-10(24V50/60HZ) 277264
15	17	45	DILM32-01(230V50/60HZ) 277300	DILM32-01(110V50/60HZ) 277298	DILM32-01(42V50HZ,48V60HZ) 277288	DILM32-01(24V50/60HZ) 277296
18.5	23	60	DILM40(230V50/60HZ) 277806	DILM40(110V50/60HZ) 277772	DILM40(42V50HZ,48V60HZ) 277762	DILM40(24V50/60HZ) 277770
22	30	80	DILM50(230V50/60HZ) 277870	DILM50(110V50/60HZ) 277836	DILM50(42V50HZ,48V60HZ) 277826	DILM50(24V50/60HZ) 277834
30	35	98	DILM65(230V50/60HZ) 277902	DILM65(110V50/60HZ) 277900	DILM65(42V50HZ,48V60HZ) 277890	DILM65(24V50/60HZ) 277898
37	63	110	DILM80(230V50/60HZ) 239410	DILM80(110V50/60HZ) 239408	DILM80(42V50HZ,48V60HZ) 239394	DILM80(24V50/60HZ) 239406
45	75	130	DILM95(230V50/60HZ) 239488	DILM95(110V50/60HZ) 239486	DILM95(42V50HZ,48V60HZ) 239476	DILM95(24V50/60HZ) 239484
55	90	160	DILM115(RAC240) 239548	DILM115(RAC120) 239547	DILM115(RAC48) 239546	DILM115(RAC24) 239545
75	96	190	DILM150(RAC240) 239588	DILM150(RAC120) 239587	DILM150(RAC48) 239586	DILM150(RAC24) 239585

\*1 conventional thermal current, 3-pole, 50-60 Hz, open at 40 °C  
RAC240±190-240V 50/60Hz; RAC±100-120V 50/60Hz; RAC±42-48V 50/60Hz; RAC24±24V 50/60Hz



			AC operation 230 V 50/60 Hz	AC operation 42 V 50 Hz, 48 V 60 Hz	AC operation 24 V 50/60 Hz
AC3 380 V 400 V P kW	AC3 660 V 690 V P kW	AC1   $I_{th}=I_e$ A <sup>-1</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.

Base device





Contactors from 3 kW to 7.5 kW - frame size 1, Push-in terminals






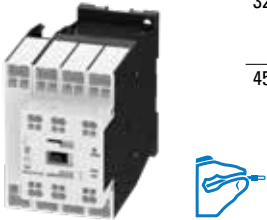
-	-	16	DILA-40(230V50/60HZ)-PI 199636	DILA-40(42V50HZ,48V60HZ)-PI 199207	DILA-40(24V50/60HZ)-PI 199206
-	-	16	DILA-31(230V50/60HZ)-PI 199638	DILA-31(42V50HZ,48V60HZ)-PI 199212	DILA-31(24V50/60HZ)-PI 199211
-	-	16	DILA-22(230V50/60HZ)-PI 199640	DILA-22(42V50HZ,48V60HZ)-PI 199217	DILA-22(24V50/60HZ)-PI 199216
3	3.5	22	DILM7-10(230V50/60HZ)-PI 199642	DILM7-10(42V50HZ,48V60HZ)-PI 199222	DILM7-10(24V50/60HZ)-PI 199221
3	3.5	22	DILM7-01(230V50/60HZ)-PI 199644	DILM7-01(42V50HZ,48V60HZ)-PI 199227	DILM7-01(24V50/60HZ)-PI 199226
4	4.5	22	DILM9-10(230V50/60HZ)-PI 199646	DILM9-10(42V50HZ,48V60HZ)-PI 199232	DILM9-10(24V50/60HZ)-PI 199231
4	4.5	22	DILM9-01(230V50/60HZ)-PI 199648	DILM9-01(42V50HZ,48V60HZ)-PI 199237	DILM9-01(24V50/60HZ)-PI 199236
5.5	6.5	22	DILM12-10(230V50/60HZ)-PI 199650	DILM12-10(42V50HZ,48V60HZ)-PI 199242	DILM12-10(24V50/60HZ)-PI 199241
5.5	6.5	22	DILM12-01(230V50/60HZ)-PI 199652	DILM12-01(42V50HZ,48V60HZ)-PI 199247	DILM12-01(24V50/60HZ)-PI 199246
7.5	11	40	DILM15-10(230V50/60HZ)-PI 199654	DILM15-10(42V50HZ,48V60HZ)-PI 199252	DILM15-10(24V50/60HZ)-PI 199251
7.5	11	40	DILM15-01(230V50/60HZ)-PI 199656	DILM15-01(42V50HZ,48V60HZ)-PI 199257	DILM15-01(24V50/60HZ)-PI 199256
3	3.5	22	DILM8-11(230V50/60HZ)-PI 199660	DILM8-11(42V50HZ,48V60HZ)-PI 199267	DILM8-11(24V50/60HZ)-PI 199266
4	4.5	22	DILM11-11(230V50/60HZ)-PI 199662	DILM11-11(42V50HZ,48V60HZ)-PI 199272	DILM11-11(24V50/60HZ)-PI 199271
5.5	6.5	22	DILM14-11(230V50/60HZ)-PI 199664	DILM14-11(42V50HZ,48V60HZ)-PI 199277	DILM14-11(24V50/60HZ)-PI 199276
7.5	11	40	DILM17-11(230V50/60HZ) 199666	DILM17-11(42V50HZ,48V60HZ)-PI 199282	DILM17-11(24V50/60HZ)-PI 199281
11	14	45	DILM25-11(230V50/60HZ)-PI 199668	DILM25-11(42V50HZ,48V60HZ)-PI 199287	DILM25-11(24V50/60HZ)-PI 199286
15	17	45	DILM32-11(230V50/60HZ)-PI 199670	DILM32-11(42V50HZ,48V60HZ)-PI 199292	DILM32-11(24V50/60HZ)-PI 199291
18.5	23	60	DILM38-11(230V50/60HZ)-PI 199672	DILM38-11(42V50HZ,48V60HZ)-PI 199297	DILM38-11(24V50/60HZ)-PI 199296

Spring-loaded terminals on auxiliary and control circuit terminals

18.5	23	60	DILMC40(230V50/60HZ) 277973	-	DILMC40(24V50/60HZ) 277969
22	30	80	DILMC50(230V50/60HZ) 278003	-	-
30	35	98	DILMC65(230V50/60HZ) 278033	-	-

\*1 conventional thermal current, 3-pole, 50-60 Hz, open at 40 °C

			<b>AC operation</b> 230 V 50 Hz, 240 V 60 Hz <b>Part no.</b> Article no.	<b>AC operation</b> 110 V 50 Hz, 120 V 60 Hz <b>Part no.</b> Article no.	<b>DC operation</b> 24 V DC <b>Part no.</b> Article no.	
Max. rated operational power of three-phase motors: 50 - 60 Hz						
AC-3						
380 V    660 V						
400 V    690 V						
Rated operational current						
AC-1						
Conventional thermal current, 3-pole, 50-60 Hz						
Open at 40 °C						
P	P	$I_{th} = I_e$				
kW	kW	A				
<b>DILM comfort devices</b>						
Screw connection						
	90	140	337	<b>DILM185A/22(RAC240)</b> 139537	<b>DILM185A/22(RAC120)</b> 139536	<b>DILM185A/22(RDC24)</b> 139540
	110	150	386	<b>DILM225A/22(RAC240)</b> 139547	<b>DILM225A/22(RAC120)</b> 139546	<b>DILM225A/22(RDC24)</b> 139550
	132	240	430	<b>DILM250/22(RA250)</b> 208201	<b>DILM250/22(RA110)</b> 208200	<b>DILM250/22(RDC48)</b> 208199
	160	240	490	<b>DILM300A/22(RA250)</b> 139556	<b>DILM300A/22(RA110)</b> 139555	<b>DILM300A/22(RDC48)</b> 139554
	200	344	612	<b>DILM400/22(RA250)</b> 208209	<b>DILM400/22(RA110)</b> 208208	<b>DILM400/22(RDC48)</b> 208207
	250	344	800	<b>DILM500/22(RA250)</b> 208213	<b>DILM500/22(RA110)</b> 208212	<b>DILM500/22(RDC48)</b> 208211
	315	560	980	<b>DILM580/22(RA250)</b> 208216	<b>DILM580/22(RA110)</b> 208215	-
	355	630	1041	<b>DILM650/22(RA250)</b> 208219	<b>DILM650/22(RA110)</b> 208218	-
	400	720	1102	<b>DILM750/22(RA250)</b> 208222	<b>DILM750/22(RA110)</b> 208221	-
	450	750	1225	<b>DILM820/22(RA250)</b> 208225	<b>DILM820/22(RA110)</b> 208224	-
	560	1000	1225	<b>DILM1000/22(RA250)</b> 267214	-	-
Screw connection						
	132	240	430	<b>DILM250-S/22(220-240V50/60HZ)</b> 274190	<b>DILM250-S/22(110-120V50/60HZ)</b> 274189	-
	160	240	490	<b>DILM300A-S/22(220-240V50/60HZ)</b> 139559	<b>DILM300A-S/22(110-120V50/60HZ)</b> 139558	-
	200	344	612	<b>DILM400-S/22(220-240V50/60HZ)</b> 274196	<b>DILM400-S/22(110-120V50/60HZ)</b> 274195	-
	250	344	800	<b>DILM500-S/22(220-240V50/60HZ)</b> 274199	<b>DILM500-S/22(110-120V50/60HZ)</b> 274198	-

	Rated operational current AC-1 Conventional thermal current, 3-pole, 50-60 Hz Open at 40 °C $I_{th} = I_e$ A	at 60 °C $I_{th} = I_e$ A	<b>AC operation</b> 230 V 50 Hz, 240 V 60 Hz <b>Part no.</b> Article no.	<b>AC operation</b> 110 V 50 Hz, 120 V 60 Hz <b>Part no.</b> Article no.	<b>DC operation</b> 24 V DC <b>Part no.</b> Article no.
<b>DILMP base devices</b>					
<b>Screw terminals</b>					
	22	20	<b>DILMP20(230V50HZ,240V60HZ)</b> 276970	<b>DILMP20(110V50HZ,120V60HZ)</b> 276967	<b>DILMP20(24VDC)</b> 276985
	32	28	<b>DILMP32-01(230V50HZ,240V60HZ)</b> 118911	<b>DILMP32-01(110V50HZ,120V60HZ)</b> 118912	<b>DILMP32-01(RDC24)</b> 118913
	32	28	<b>DILMP32-10(230V50HZ,240V60HZ)</b> 109797	<b>DILMP32-10(110V50HZ,120V60HZ)</b> 109790	<b>DILMP32-10(RDC24)</b> 109811
	45	39	<b>DILMP45-01(230V50HZ,240V60HZ)</b> 118914	<b>DILMP45-01(110V50HZ,120V60HZ)</b> 118915	<b>DILMP45-01(RDC24)</b> 118916
	45	39	<b>DILMP45-10(230V50HZ,240V60HZ)</b> 109826	<b>DILMP45-10(110V50HZ,120V60HZ)</b> 109819	<b>DILMP45-10(RDC24)</b> 109840
	63	54	<b>DILMP63(230V50HZ,240V60HZ)</b> 109855	<b>DILMP63(110V50HZ,120V60HZ)</b> 109848	<b>DILMP63(RDC24)</b> 109869
	63	54	<b>DILMP63(RAC240)</b> 167512	-	-
	80	69	<b>DILMP80(230V50HZ,240V60HZ)</b> 109884	<b>DILMP80(110V50HZ,120V60HZ)</b> 109877	<b>DILMP80(RDC24)</b> 109898
	80	69	<b>DILMP80(RAC240)</b> 167513	-	-
	125	108	<b>DILMP125(RAC240)</b> 109905	<b>DILMP125(RAC120)</b> 109903	<b>DILMP125(RDC24)</b> 109910
	160	138	<b>DILMP160(RAC240)</b> 109915	<b>DILMP160(RAC120)</b> 109913	<b>DILMP160(RDC24)</b> 109920
	200	172	<b>DILMP200(RAC240)</b> 109925	<b>DILMP200(RAC120)</b> 109923	<b>DILMP200(RDC24)</b> 109930
<b>Push-in terminals</b>					
	22	20	<b>DILMP20(230V50HZ,240V60HZ)-PI</b> 199259	<b>DILMP20(110V50HZ,120V60HZ)-PI</b> 199260	<b>DILMP20(24VDC)-PI</b> 199263
	32	28	<b>DILMP32-11(230V50HZ,240V60HZ)-PI</b> 199299	<b>DILMP32-11(110V50HZ,120V60HZ)-PI</b> 199300	<b>DILMP32-11(RDC24)-PI</b> 199303
	45	39	<b>DILMP45-1(230V50HZ,240V60HZ)-PI</b> 199304	<b>DILMP45-11(110V50HZ,120V60HZ)-PI</b> 199305	<b>DILMP45-11(RDC24)-PI</b> 199308

Switching and operating motors



	Rated operational power of three-phase capacitors 50-60 Hz				Contact diagram	Part no. Article no.
	Open					
	230 V	400 V	525 V	690 V		
	kvar	kvar	kvar	kvar		
<b>DILK capacitor contactors</b>						
with series resistors	7.5	12.5	16.7	20		<b>DILK12-11(230V50HZ,240V60HZ)</b> 293988
Base devices	11	20	25	33.3		<b>DILK20-11(230V50HZ,240V60HZ)</b> 294010
	15	25	33.3	40		<b>DILK25-11(230V50HZ,240V60HZ)</b> 294032
	20	33.3	40	55		<b>DILK33-10(230V50HZ,240V60HZ)</b> 294054
	25	50	65	85		<b>DILK50-10(230V50HZ,240V60HZ)</b> 294076



	Rated operational current				Conventional thermal current, 3-pole, 50 - 60 Hz AC-1 at 60 °C	Part no. Article no.				
	AC-5a		AC-5b							
	220 V	230 V	380 V	400 V	220 V	230 V	380 V	400 V	Open	
	$I_e$	$I_e$	$I_e$	$I_e$	$I_e$	$I_e$	$I_e$	$I_e$	$I_{th} = I_e$	A
	A	A	A	A	A	A	A	A	A	A
<b>DILL lighting contactors</b>										
	12	12	14	14	24	<b>DILL12(230V50HZ,240V60HZ)</b> 104402				
	18	18	21	21	35	<b>DILL18(230V50HZ,240V60HZ)</b> 104405				
	20	20	27	27	40	<b>DILL20(230V50HZ,240V60HZ)</b> 104408				




Switchgear for lighting systems

	DIL	L12	L18	L20	M7	M9	M12	M17	M25	M32	M40	M50
Permissible compensation capacitance	$C_{max}$ [mF]	470	470	470	47	80	100	220	330	470	470	500
Filament lamps	$I_e$ [A]	14	21	27	6	7.5	10	14	21	27	33	42
Mercury blended lamps	$I_e$ [A]	12	16	23	5	6.5	8.5	12	16	23	30	38
Conventional fluorescent lamps – reactor – starter – circuit	$I_e$ [A]	20	26	35	9	10	15	20	26	35	41	45
Duo fluorescent lamps – circuit (series compensated)	$I_e$ [A]	20	26	35	5.5	8	13	15	22.5	29	36	47
Electronic upstream devices	$I_e$ [A]	12	18	20	5	6.5	8.5	12	17.5	22.5	28	35
High-pressure mercury-arc lamps	$I_e$ [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
Metal halide lamps	$I_e$ [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
High-pressure sodium lamps	$I_e$ [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
Low-pressure sodium lamps	$I_e$ [A]	7.5	10	12	3	4	6	7.5	10	12	15	22


































	DIL	M65	M80	M95	M115	M150	M185A	M225A	M250	M300A	M400	M500
Permissible compensation capacitance	$C_{max}$ [mF]	500	550	620	830	970	2055	2300	2600	3000	3250	3500
Filament lamps	$I_e$ [A]	55	67	79	95	125	153	187	208	249	332	415
Mercury blended lamps	$I_e$ [A]	45	65	67	80	110	123	150	167	200	266	332
Conventional fluorescent lamps – reactor – starter – circuit	$I_e$ [A]	55	95	100	125	145	207	237	263	300	375	525
Duo fluorescent lamps – circuit (series compensated)	$I_e$ [A]	59	71	95	100	138	186	213	236	270	338	473
Electronic upstream devices	$I_e$ [A]	45.5	56	66.5	80.5	105	130	158	175	210	280	350
High-pressure mercury-arc lamps	$I_e$ [A]	36	55	60	80	95	138	158	175	200	250	350
Metal halide lamps	$I_e$ [A]	36	55	60	80	95	138	158	175	200	250	350
High-pressure sodium lamps	$I_e$ [A]	36	55	60	80	95	138	158	175	200	250	350
Low-pressure sodium lamps	$I_e$ [A]	25	35	40	50	70	100	111	123	140	175	245

In the case of compensated lamps, the sum of the capacitances must not exceed the max. permissible capacitor load ( $C_{max}$ ) of the contactors! The values given in the table apply to each contact in the contactors.

Rated operational current AC-3	Max. rated operational power of three-phase motors: 50 - 60 Hz					Max. Changeover time s	Part no. Article no.
	380 V 400 V	220 V 230 V	380 V 400 V	500 V	660 V 690 V		
$I_e$ A	P kW	P kW	P kW	P kW	P kW		
<b>SDAINL star-delta combinations</b>							
Operating frequency: max. 30 starts per hour							
	12	3	5.5	5.5	5.5	< 20	<b>SDAINLM12(230V50HZ,240V60HZ)</b> 278286
	16	4	7.5	7.5	7.5	< 20	<b>SDAINLM16(230V50HZ,240V60HZ)</b> 278311
	22	5.5	11	11	11	< 20	<b>SDAINLM22(230V50HZ,240V60HZ)</b> 278336
	30	7.5	15	18.5	18.5	< 20	<b>SDAINLM30(230V50HZ,240V60HZ)</b> 278361
	45	11	22	30	22	< 20	<b>SDAINLM45(230V50HZ,240V60HZ)</b> 278386
	55	15	30	37	30	< 20	<b>SDAINLM55(230V50HZ,240V60HZ)</b> 278411
	70	18.5	37	45	37	< 20	<b>SDAINLM70(230V50HZ,240V60HZ)</b> 239895
	90	22	45	55	45	< 20	<b>SDAINLM90(230V50HZ,240V60HZ)</b> 239937
	115	30	55	75	55	< 20	<b>SDAINLM115(230V50HZ,240V60HZ)</b> 239963
	140	37	75	90	90	< 20	<b>SDAINLM140(230V50HZ,240V60HZ)</b> 240009
	165	45	90	110	132	< 20	<b>SDAINLM165(230V50HZ,240V60HZ)</b> 240035
	200	55	110	132	160	< 20	<b>SDAINLM200(230V50HZ,240V60HZ)</b> 101010
	260	75	132	160	160	< 20	<b>SDAINLM260(230V50HZ,240V60HZ)</b> 101031




Components for self-assembly of star-delta combinations








Max. rated operational power of three-phase motors: 50 - 60 Hz

AC-3					Changeover time <sup>1)</sup>			Individual combination components				Spare auxiliary contacts		
230 V	400 V	500 V	690 V	1000 V	up to 12 s	up to 20 s	up to 30 s	Coil according to EN 50005, contacts according to EN 50005 and EN 50012			Timing relay K1	Q11	Q15	Q13
kW	kW	kW	kW	kW				Mains contactor Q11	Delta contactor Q15	Star contactor Q13				
90	160	200	250	132	●	●	●	M185A/22	M185A/22	M115/22	ETR4-51			
110	200	250	315	160	●	●	–	M225A/22	M225A/22	M150/22	ETR4-51			
132	250	315	400	200	●	●	●	M250/22	M250/22	M185A/22	ETR4-51			
160	300	355	450	200	●	●	●	M300A/22	M300A/22	M185A/22	ETR4-51			
200	355	450	560	220	●	●	–	M400/22	M400/22	M250/22	ETR4-51			
250	450	560	600	220	●	●	●	M500/22	M500/22	M300A/22	ETR4-51			
300	560	710	900	355	●	●	●	M580/22	M580/22	M400/22	ETR4-51			
350	630	750	950	355	●	●	●	M650/22	M650/22	M400/22	ETR4-51			
400	710	900	1200	1400	●	●	●	M750/22	M750/22	M580/22	ETR4-51			
450	800	950	1300	1400	●	●	●	M820/22	M820/22	M580/22	ETR4-51			
560	1000	1200	1700	1700	●	●	–	M1000/22	M1000/22	M650/22	ETR4-51			



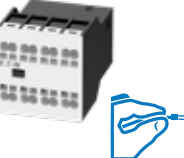


Note <sup>1)</sup> Longer changeover times available on request

Switching and operating motors




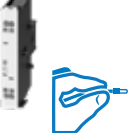
	Rated operational current AC-3	Max. rated operational power of three-phase motors: 50 - 60 Hz						Part no. Article no.
		AC-3			AC-4			
		380 V 400 V	220 V 230 V	380 V 400 V	660 V 690 V	220 V 230 V	380 V 400 V	
I <sub>e</sub> A	P kW	P kW	P kW	P kW	P kW	P kW		
<b>DIUL reversing combinations</b>								
	9	2.2	4	4	1.5	3	3	<b>DIULEM/21(MV(230V50HZ,240V60HZ))</b> 051849
	9	2.2	4	4	1.5	3	3	<b>DIULEM/21(MV-G(24VDC))</b> 214655
	7	2.2	3	3.5	1	2.2	2.9	<b>DIULM7/21(230V50HZ,240V60HZ)</b> 278061
	7	2.2	3	3.5	1	2.2	2.9	<b>DIULM7/21(24VDC)</b> 107021
	9	2.5	4	4.5	1.5	2.5	3.6	<b>DIULM9/21(230V50HZ,240V60HZ)</b> 278086
	9	2.5	4	4.5	1.5	2.5	3.6	<b>DIULM9/21(24VDC)</b> 107022
	12	3.5	5.5	6.5	2	3	4.4	<b>DIULM12/21(230V50HZ,240V60HZ)</b> 278111
	12	3.5	5.5	6.5	2	3	4.4	<b>DIULM12/21(24VDC)</b> 107023
	18	5	7.5	11	2.5	4.5	6.5	<b>DIULM17/21(230V50HZ,240V60HZ)</b> 278136
	18	5	7.5	11	2.5	4.5	6.5	<b>DIULM17/21(RDC24)</b> 107024
	25	7.5	11	14	3.5	6	8.5	<b>DIULM25/21(230V50HZ,240V60HZ)</b> 278161
	25	7.5	11	14	3.5	6	8.5	<b>DIULM25/21(RDC24)</b> 107025
	32	10	15	17	4	7	10	<b>DIULM32/21(230V50HZ,240V60HZ)</b> 278186
	32	10	15	17	4	7	10	<b>DIULM32/21(RDC24)</b> 107026
	40	12.5	18.5	23	5	9	12	<b>DIULM40/11(230V50HZ,240V60HZ)</b> 278211
	50	15.5	22	30	6	10	14	<b>DIULM50/11(230V50HZ,240V60HZ)</b> 278236
	65	20	30	35	7	12	17	<b>DIULM65/11(230V50HZ,240V60HZ)</b> 278261





Contacts		For use with		Part no.	Article no.		
N/O = normally open N/O <sub>E</sub> = N/O early-make N/C = normally closed N/C <sub>L</sub> = N/C late-break ☺							
<b>SmartWire-DT contactor modules</b>							
For connecting contactors to SmartWire-DT One module is needed for each contactor.							
 	Messages Switch state of the contactor, status of the digital inputs 1 and 2 Contactor control commands	DILM7..(-PI) - DILM38..(-PI) DILA..(-PI) DILMP..(-PI) MSC-D(R)..(24VDC)-PI	<b>DIL-SWD-32-001</b>	118560			
	Messages Switch state of the contactor, status of digital inputs 1 and 2, switch state of the 1-0-A switch Contactor control commands		<b>DIL-SWD-32-002</b>	118561			
<b>Auxiliary contact modules</b>							
with positive-opening contacts, except for ...XHI(C)V							
<b>Top-mounting auxiliary contacts</b>							
Screw terminals 	1 N/O	1 N/C	DILM7-10... DILM9-10... DILM12-10... DILM15-10... DILM17-10... DILM25-10... DILM32-10... DILM38-10... DILMP20 DILMP32-10... DILMP45-10...	<b>DILM32-XHI11</b>	277376		
	-	2 N/C		<b>DILM32-XHI02</b>	277375		
	2 N/O	2 N/C		<b>DILM32-XHI22</b>	277377		
	3 N/O	1 N/C		<b>DILM32-XHI31</b>	106112		
Push-in terminals 	1 N/O	1 N/C		DILM7-10.. (-PI) DILM9-10.. (-PI) DILM12-10.. (-PI) DILM15-10.. (-PI) DILMP20.. (-PI)	<b>DILM12-XHI11-PI</b>	199456	
	-	2 N/C			<b>DILM12-XHI02-PI</b>	199457	
2 N/O	2 N/C	<b>DILM12-XHI22-PI</b>			199458		
3 N/O	1 N/C	<b>DILM12-XHI31-PI</b>			199459		
	1 N/O	1 N/C			DILM7-10.. (-PI) DILM9-10.. (-PI) DILM12-10.. (-PI) DILM15-10.. (-PI) DILMP20.. (-PI) DILM17-11.. (-PI) DILM25-11.. (-PI) DILM32-11.. (-PI) DILM38-11.. (-PI) DILMP32.. (-PI) DILMP45.. (-PI)	<b>DILM32-XHI11-PI</b>	199309
	-	2 N/C				<b>DILM32-XHI02-PI</b>	199310
	2 N/O	2 N/C	<b>DILM32-XHI22-PI</b>			199311	
	3 N/O	1 N/C	<b>DILM32-XHI31-PI</b>			199312	
Screw terminals 	2 N/O	-	DILA DILM7... DILM9... DILM12... DILM15... DILM17... DILM25... DILM32... DILM38 DILMP20 DILMP32... DILMP45...			<b>DILA-XHI20</b>	276422
	1 N/O	1 N/C				<b>DILA-XHI11</b>	276421
	-	2 N/C		<b>DILA-XHI02</b>		276420	
	1 N/O <sub>E</sub>	1 N/C <sub>L</sub>		<b>DILA-XHIV11</b>		276423	
	4 N/O	-		<b>DILA-XHI40</b>		276428	
	3 N/O	1 N/C		<b>DILA-XHI31</b>		276427	
	2 N/O	2 N/C		<b>DILA-XHI22</b>	276426		
	1 N/O	3 N/C		<b>DILA-XHI13</b>	276425		
	-	4 N/C		<b>DILA-XHI04</b>	276424		
	1 N/O	1 N/C		<b>DILA-XHIV22</b>	276429		
1 N/O <sub>E</sub>	1 N/C <sub>L</sub>						

Switching and operating motors











	Contacts N/O = normally open N/O <sub>E</sub> = N/O early-make N/C = normally closed N/C <sub>L</sub> = N/C late-break ☺	For use with	Part no.	Article no.	
<b>Auxiliary contact modules</b>					
with positive-opening contacts, except for ...XHIV					
<b>Top-mounting auxiliary contacts</b>					
Screw terminals 	1 N/O (for electronic applications)	1 N/C (for electronic applications)	DILA DILM7... DILM9... DILM12... DILM15... DILM17... DILM25... DILM32... DILM38 DILMP20 DILMP32... DILMP45...	<b>DILA-XHIR11</b>	110140
	2 N/O (1 N/O via microswitch for electronic applications)	2 N/C (1 N/C via microswitch for electronic applications)		<b>DILA-XHIR22</b>	139580
Push-in terminals 	2 N/O	-	DILA..(-PI) DILM7..(-PI) up to DILM15..(-PI) DILM8..-PI up to DILM14..-PI DILM17..(-PI) up to DILM38..(-PI) DILMP20..(-PI) to DILMP45.. (-PI) DILL.. DILMF8.. up to DILMF14.. DILMF17.. up to DILMF32..	<b>DILA-XHI20-PI</b>	199313
	1 N/O	1 N/C		<b>DILA-XHI11-PI</b>	199314
	-	2 N/C		<b>DILA-XHI02-PI</b>	199315
	1 N/O <sub>E</sub>	1 N/C <sub>L</sub>		<b>DILA-XHIV11-PI</b>	199316
	4 N/O	-		<b>DILA-XHI40-PI</b>	199317
	3 N/O	1 N/C		<b>DILA-XHI31-PI</b>	199318
	2 N/O	2 N/C		<b>DILA-XHI22-PI</b>	199319
	1 N/O	3 N/C		<b>DILA-XHI13-PI</b>	199320
	-	4 N/C		<b>DILA-XHI04-PI</b>	199321
	1 N/O	1 N/C		<b>DILA-XHIV22-PI</b>	199322
	1 N/O <sub>E</sub>	1 N/C <sub>L</sub>			
Screw terminals 	2 N/O	-	DILM40 DILM50 DILM65 DILM72... DILM80 DILM95 DILM115 DILM150 DILM170... DILMP63... DILMP80... DILMP125... DILMP160... DILMP200...	<b>DILM150-XHI20</b>	277945
	1 N/O	1 N/C		<b>DILM150-XHI11</b>	277946
	1 N/O	1 N/C		<b>DILM150-XHIA11</b>	283463
	-	2 N/C		<b>DILM150-XHI02</b>	277947
	4 N/O	-		<b>DILM150-XHI40</b>	277948
	3 N/O	1 N/C		<b>DILM150-XHI31</b>	277949
	2 N/O	2 N/C		<b>DILM150-XHI22</b>	277950
	2 N/O	2 N/C		<b>DILM150-XHIA22</b>	283464
	1 N/O	3 N/C		<b>DILM150-XHI13</b>	277951
	-	4 N/C		<b>DILM150-XHI04</b>	277952
	1 N/O	1 N/C		<b>DILM150-XHIV22</b>	277953
	1 N/O <sub>E</sub>	1 N/C <sub>L</sub>			



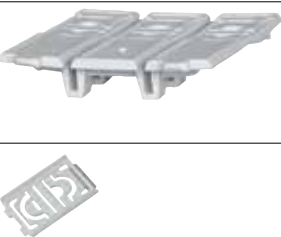




		Contacts	For use with	Part no.	Article no.
		N/O = normally open N/O <sub>E</sub> = N/O early-make N/C = normally closed N/C <sub>L</sub> = N/C late-break ☺			
<b>Auxiliary contact modules</b>					
with positive-opening contacts, except for ...XHIV					
Lateral auxiliary contacts					
	Screw terminals	1 N/O	-	DILM7... DILM9... DILM12... DILM15... DILMP20... DILA...	<b>DILA-XHI10-S</b> 115948
		-	1 N/C		<b>DILA-XHI01-S</b> 115949
		1 N/O	1 N/C	DILM17... DILM25... DILM32... DILM38...	<b>DILM32-XHI11-S</b> 101371
		1 N/O	1 N/C	DILM250 - DILH2600	<b>DILM820-XHI11-SI</b> 208281
		1 N/O	1 N/C		<b>DILM820-XHI11-SA</b> 208282
		1 N/O <sub>E</sub>	1 N/C <sub>L</sub>		<b>DILM820-XHI11V-SI</b> 208283
		1 N/O	1 N/C	DILM40 - DILM225A	<b>DILM1000-XHI11-SI</b> 278425
		1 N/O <sub>E</sub>	1 N/C <sub>L</sub>	DILMP63 - DILMP200	<b>DILM1000-XHIV11-SI</b> 278426
		1 N/O	1 N/C		<b>DILM1000-XHI11-SA</b> 278427
	Push-in terminals	1 N/O	-	DILM7..(-PI) up to DILM15..(-PI)	<b>DILA-XHI10-S-PI</b> 199323
		-	1 N/C	DILA..(-PI)	<b>DILA-XHI01-S-PI</b> 199324

For use with		AC operation 230 V 50 Hz, 240 V 60 Hz <b>Part no.</b> Article no.	AC operation 110 V 50 Hz, 120 V 60 Hz <b>Part no.</b> Article no.	DC operation 24 V DC <b>Part no.</b> Article no.
<b>Suppressor circuits</b>				
<b>RC suppressors</b>				
	DILM7 ..(-PI) - DILM15 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	<b>DILM12-XSPR240</b> 281200	<b>DILM12-XSPR240</b> 281200	-
	DILM8..-PI - DILM14..-PI DILM17 ..(-PI) - DILM32 ..(-PI) DILMP32 ..(-PI) - DILMP45 ..(-PI)	<b>DILM32-XSPR240</b> 281203	<b>DILM32-XSPR240</b> 281203	-
	DILM40 - DILM95 DILMP63 - DILMP200	<b>DILM95-XSPR240</b> 281206	<b>DILM95-XSPR240</b> 281206	-
<b>Varistor suppressors</b>				
	DILM7 ..(-PI) - DILM15 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	<b>DILM12-XSPV240</b> 281210	<b>DILM12-XSPV130</b> 281209	-
	DILM8..-PI - DILM14..-PI DILM17 ..(-PI) - DILM32 ..(-PI) DILMP32 ..(-PI) - DILMP45 ..(-PI)	<b>DILM32-XSPV240</b> 281214	<b>DILM32-XSPV130</b> 281213	-
	DILM40 - DILM95 DILMP63 - DILMP200	<b>DILM95-XSPV240</b> 281218	<b>DILM95-XSPV130</b> 281217	-
<b>Varistor suppressors with integrated LED</b>				
	DILM7 ..(-PI) - DILM12 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	<b>DILM12-XSPVL240</b> 281221	<b>DILM12-XSPVL240</b> 281221	-
	DILM8..-PI - DILM14..-PI DILM17 ..(-PI) - DILM32 ..(-PI) DILMP32 ..(-PI) - DILMP45 ..(-PI)	<b>DILM32-XSPVL240</b> 281223	<b>DILM32-XSPVL240</b> 281223	-
	DILM40 - DILM95 DILMP63 - DILMP200	<b>DILM95-XSPVL240</b> 281225	<b>DILM95-XSPVL240</b> 281225	-
<b>Diode suppressor</b>				
	DILM7 ..(-PI) - DILM15 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	-	-	<b>DILM12-XSPD</b> 101672

Moeller series

	For use with	Part no. Article no.
<b>Mechanical interlock</b>		
	DILM7..(-PI) - DILM15..(-PI) DILMP20..(-PI) DILA..(-PI)	<b>DILM12-XMV</b> 281196
	DILM17..(-PI) - DILM38..(-PI) DILMP32..(-PI) - DILMP45..(-PI)	<b>DILM32-XMV</b> 281197
	DILM40 - DILM72 DILMP63 - DILMP80	<b>DILM65-XMV</b> 281198
	DILM80 - DILM170 DILMP125 - DILMP200	<b>DILM150-XMV</b> 240081
	DILM185A, DILM225A, DILM250, DILM300A, DILM400, DILM500	<b>DILM500-XMV</b> 208289
	DILM580, DILM650 DILM750, DILM820 DILM1000	<b>DILM820-XMV</b> 208288
<b>Paralleling link for main contacts</b>		
consisting of two paralleling links		
	DILM7 - DILM15	<b>DILM12-XP1</b> 281193
	DILM17 - DILM32	<b>DILM32-XP1</b> 281194
	DILM40 - DILM72	<b>DILM65-XP1</b> 281195
	DILM80 - DILM170	<b>DILM150-XP1</b> 284769
	DILM185A	<b>DILM185-XP1</b> 208292
<b>Star-point bridges</b>		
	DILM7 - DILM15	<b>DILM12-XS1</b> 281190
	DILM17 - DILM32	<b>DILM32-XS1</b> 281191
	DILM40 - DILM72	<b>DILM65-XS1</b> 281192
	DILM80 - DILM170	<b>DILM150-XS1</b> 284768
	DILM185A - DILM400	<b>DILM400-XS1</b> 208291
	DILM500	<b>DILM500-XS1</b> 208290

	For use with	Part no. Article no.
<b>Star-delta wiring kits, including star-point bridge</b>		
Main power wiring for star-delta combination		
	Mains contactor DILM7/9/12/15-10..(-PI) Delta contactor DILM7/9/12/15-01..(-PI) Star contactor DILM7/9/12/15-01..(-PI)	<b>DILM12-XSL</b> 283130
	Mains contactor DILM17/25/32 Delta contactor DILM17/25/32 Star contactor DILM17/25/32	<b>DILM32-XSL</b> 283131
	Mains contactor DILM17/25/32-11..-PI Delta contactor DILM17/25/32-11..-PI Star contactor DILM17/25/32-11..-PI	<b>DILM32-XSL-PI</b> 199461
	Mains contactor DILM40/50/65 Delta contactor DILM40/50/65 Star contactor DILM40/50/65	<b>DILM65-XSL</b> 101058
<b>Reversing wiring kits</b>		
Main power wiring for reversing combination		
	DILM7...01(-PI) DILM9...01(-PI) DILM12...01(-PI)	<b>DILM12-XRL</b> 283108
	DILM17 DILM25 DILM32	<b>DILM32-XRL</b> 283109
	DILM17-11...-PI DILM25-11...-PI DILM32-11...-PI	<b>DILM32-XRL-PI</b> 199460
	DILM40 DILM50 DILM50	<b>DILM65-XRL</b> 101057
<b>IP2X cover</b>		
	DILM17 DILM25 DILM32 DILM38 DILMP32 DILMP45	<b>DILM32-XIP2X</b> 118855
	DILM40 DILM50 DILM65 DILM72 DILMP63 DILMP80	<b>DILM65-XIP2X</b> 106491
	DILM80 DILM95 DILM115 DILM150 DILM170 DILMP125 DILMP160 DILMP200 ZB150	<b>DILM150-XIP2X</b> 106492
<b>Covers</b>		
	DILM185A DILM225A Z5... FF225A	<b>DILM225A-XHB</b> 139560
	DILM250 DILM300A DILM400	<b>DILM400-XHB</b> 208287
	DILM500 DILM570	<b>DILM500-XHB</b> 208286
	DILM580 DILM650	<b>DILM650-XHB</b> 208285
	DILM750 DILM820, DILM1000	<b>DILM820-XHB</b> 208284
<b>Cable terminal block</b>		
With control circuit terminal consisting of 3 box terminals Connection options: round conductors, flexible and stranded, strip conductors.		
	DILM185A DILM225A	<b>DILM225A-XKU-S</b> 139561
	DILM250 DILM300A DILM400	<b>DILM400-XKU-S</b> 208293



**Setting range**  
Overload release

$I_r$   
A



For use with	DILEM		DILM7 - DILM15		DILM17 - DILM38		DILM40 - DILM72		DILM80 - DILM170	
	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.

#### ZE, ZB bimetal relays

Setting range	ZE-0,16	014263	ZB12-0,16	278431	ZB32-0,16	278442	-	-	-	-
0.16 - 0.24	ZE-0,24	014285	ZB12-0,24	278432	ZB32-0,24	278443	-	-	-	-
0.24 - 0.4	ZE-0,4	014300	ZB12-0,4	278433	ZB32-0,4	278444	-	-	-	-
0.4 - 0.6	ZE-0,6	014333	ZB12-0,6	278434	ZB32-0,6	278445	-	-	-	-
0.6 - 1	ZE-1,0	014376	ZB12-1	278435	ZB32-1	278446	-	-	-	-
1 - 1.6	ZE-1,6	014432	ZB12-1,6	278436	ZB32-1,6	278447	-	-	-	-
1.6 - 2.4	ZE-2,4	014479	ZB12-2,4	278437	ZB32-2,4	278448	-	-	-	-
2.4 - 4	ZE-4	014518	ZB12-4	278438	ZB32-4	278449	-	-	-	-
4 - 6	ZE-6	014565	ZB12-6	278439	ZB32-6	278450	-	-	-	-
6 - 9	ZE-9	014708	-	-	-	-	-	-	-	-
6 - 10	-	-	ZB12-10	278440	ZB32-10	278451	ZB65-10	278455	-	-
9 - 12	ZE-12	014752	ZB12-12	278441	-	-	-	-	-	-
10 - 16	-	-	-	-	-	-	ZB65-16	278456	-	-
12 - 16	-	-	ZB12-16	290168	-	-	-	-	-	-
16 - 24	-	-	-	-	ZB32-24	278453	ZB65-24	278457	-	-
24 - 32	-	-	-	-	ZB32-32	278454	-	-	-	-
24 to 40	-	-	-	-	-	-	ZB65-40	278458	-	-
32 - 38	-	-	-	-	ZB32-38	112474	-	-	-	-
35 - 50	-	-	-	-	-	-	-	-	ZB150-50	278462
40 to 57	-	-	-	-	-	-	ZB65-57	278459	-	-
50 - 65	-	-	-	-	-	-	ZB65-65	278460	-	-
50 to 70	-	-	-	-	-	-	-	-	ZB150-70	278463
65 - 75	-	-	-	-	-	-	ZB65-75	108792	-	-
70 - 100	-	-	-	-	-	-	-	-	ZB150-100	278464
95 - 125	-	-	-	-	-	-	-	-	ZB150-125	278465
120 - 150	-	-	-	-	-	-	-	-	ZB150-150	278466
145 - 175	-	-	-	-	-	-	-	-	ZB150-175	107316



# Motor-protection relays

Bimetal relays, thermistor motor protection relay

Moeller series

Setting range of overload release $I_r$ A	For use with	Part no.	Article no.

## Z5 bimetal relays

	50 - 70	DILM185A DILM225A	<b>Z5-70/FF225A</b>	139572
	70 - 100		<b>Z5-100/FF225A</b>	139573
	95 - 125		<b>Z5-125/FF225A</b>	139574
	120 - 160		<b>Z5-160/FF225A</b>	139575
	160 - 220		<b>Z5-220/FF225A</b>	139576
	200 - 250		<b>Z5-250/FF225A</b>	139577
	50 - 70	DILM250	<b>Z5-70/FF250</b>	210070
	70 - 100		<b>Z5-100/FF250</b>	210071
	95 - 125		<b>Z5-125/FF250</b>	210072
	120 - 160		<b>Z5-160/FF250</b>	210073
	160 - 220	DILM250	<b>Z5-220/FF250</b>	210074
	200 - 250	DILM300A	<b>Z5-250/FF250</b>	210075
	200 - 300	DILM300A	<b>Z5-300/FF250</b>	139578

Function	Part no.	Article no.	
	<b>EMT6</b>	066166	
	<b>EMT6(230V)</b>	066400	
	<b>EMT62</b>	171889	
	<b>EMT6-K</b>	269470	
	<b>EMT6-DB</b>	066167	
	<b>EMT6-DB(230V)</b>	066401	
	<b>EMT62-DB</b>	171890	
	<b>EMT6-KDB</b>	269471	
	<b>EMT6-DBK</b>	066168	
	Without manual reset Mains and fault LED indicator		
	Without manual reset Mains and fault LED indicator With 2 sensor circuits		
	Without manual reset Mains and fault LED indicator Trips in the event of a short circuit in the sensor cable		
Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator			
Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator With 2 sensor circuits			
Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator Trips in the event of a short circuit in the sensor cable			
Multifunctional device Switchable with/without manual reset Trips in the event of a short circuit in the sensor cable Fail-safe For manual or remote reset Test button Short-circuit detection and fail-safe operation can be switched off Mains and fault LED indicator			



		For use with				
		DILM7 - DILM15	DILM17 - DILM38	DILM40 - DILM72	DILM80 - DILM150	DILM185A - DILM225A
Earth fault monitoring	Setting range	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
	Overload release					
	$I_r$					
	A					
<b>ZEB electronic overload relays</b>						
<b>Direct mounting</b>						
None	0.33 - 1.65	<b>ZEB12-1,65</b> 136480	<b>ZEB32-1,65</b> 136486	-	-	-
	1 - 5	<b>ZEB12-5</b> 136481	<b>ZEB32-5</b> 136487	-	-	-
	4 - 20	<b>ZEB12-20</b> 136482	<b>ZEB32-20</b> 136488	-	-	-
	9 - 45	-	<b>ZEB32-45</b> 136489	<b>ZEB65-45</b> 136502	-	-
	20 - 100	-	-	<b>ZEB65-100</b> 136504	<b>ZEB150-100</b> 136506	-
	35 - 175	-	-	-	<b>ZEB150-175</b> 164303	<b>ZEB225A-175</b> 164307
	With	0.33 - 1.65	<b>ZEB12-1,65-GF</b> 136483	<b>ZEB32-1,65-GF</b> 136490	-	-
1 - 5		<b>ZEB12-5-GF</b> 136484	<b>ZEB32-5-GF</b> 136491	-	-	-
4 - 20		<b>ZEB12-20-GF</b> 136485	<b>ZEB32-20-GF</b> 136492	-	-	-
9 - 45		-	<b>ZEB32-45-GF</b> 136493	<b>ZEB65-45-GF</b> 136503	-	-
20 - 100		-	-	<b>ZEB65-100-GF</b> 136505	<b>ZEB150-100-GF</b> 136507	-
35 - 175		-	-	-	<b>ZEB150-175-GF</b> 164304	<b>ZEB225A-175-GF</b> 164308
<b>Stand-alone installation</b>						
None	0.33 - 1.65	-	<b>ZEB32-1,65/KK</b> 136494	-	-	-
	1 - 5	-	<b>ZEB32-5/KK</b> 136495	-	-	-
	4 - 20	-	<b>ZEB32-20/KK</b> 136496	-	-	-
	9 - 45	-	<b>ZEB32-45/KK</b> 136497	-	-	-
	20 - 100	-	-	-	<b>ZEB150-100/KK</b> 136508	-
	35 - 175	-	-	-	<b>ZEB150-175/KK</b> 164305	-
	With	0.33 - 1.65	-	<b>ZEB32-1,65-GF/KK</b> 136498	-	-
1 - 5		-	<b>ZEB32-5-GF/KK</b> 136499	-	-	-
4 - 20		-	<b>ZEB32-20-GF/KK</b> 136500	-	-	-
9 - 45		-	<b>ZEB32-45-GF/KK</b> 136501	-	-	-
20 - 100		-	-	-	<b>ZEB150-100-GF/KK</b> 136509	-
35 - 175		-	-	-	<b>ZEB150-175-GF/KK</b> 164306	-

Switching and operating motors



## PKZ and PKE motor-protective circuit breakers Flexible plug-in solutions: simple, intelligent, versatile.



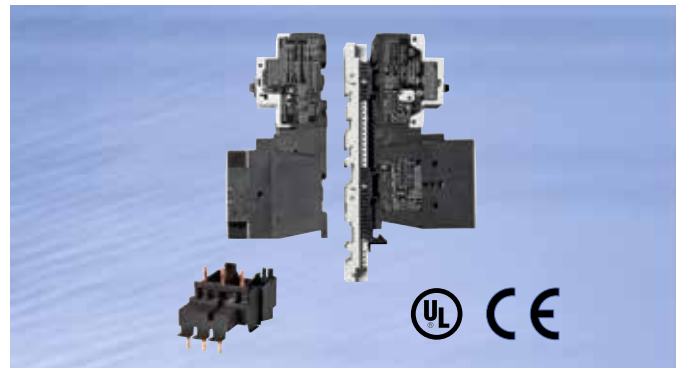
Machine and system downtimes should be kept as short as possible. Our fuseless PKZ motor-protective circuit breakers combine short-circuit and overload protection in a single device, thereby enabling fast reclosing. The PKZM0, PKZM01, PKZM4 and PKE devices share the same accessories, and they can be easily combined with the DILM contactors and the DS7 soft starters. Switching technology can be so simple.

Thanks to Push-in technology, the installation of our motor-protective circuit breakers is even easier, more reliable and, above all, tool-free. This results in easier handling with additional protection of the contacts against mechanical shocks and vibrations.



**Push-in connection technology speeds up wiring based on proven power feed design**

With our new motor-protective circuit breakers with Push-in technology, we offer a universal product range for tool-free wiring of main and auxiliary circuits up to 32 A that also reduces installation times to a minimum. Our Push-in range boasts a winning combination that integrates both screw and Push-in connections in a single device. This means that the new devices can also be easily incorporated into existing control cabinet designs.



**PKZM0-XDM32ME connection module for motor starters up to a motor rating of 15 kW**

The connection module enables the assembly of motor starter combinations: The PKZM0, PKE12 or PKE32 motor-protective circuit breakers in combination with the DILM17...38 contactors or the DS7 soft starters with a rated current of 16 A to 32 A. Thanks to the new connection module, the motor starter is faster to assemble, more compact and safer than the previous solution.



**Uniform accessories – tool-free installation**

The two versions of the motor-protective circuit breakers come in 20 different types that cover the entire voltage range from 0.1 A to 63 A . The motor-protective circuit breakers are fully compatible with the DIL contactors and are thus ideally suited for use in motor starter combinations.



**Modular design. Maximum flexibility. Powerful performance.**

Thanks to their special features, the PKE motor- and system-protective circuit breakers with electronic overload protection offer a convincing alternative to bimetal solutions and make for an intelligent addition to the PKZ device family. The compact and modular design of the PKE devices with plug-in trip blocks for currents up to 65 A offers maximum flexibility.



**Ideal for push and impact actuation (pressing or hitting)**

The PKZM01 motor-protective circuit breaker for motors up to 25 A is ideal for small machines and other applications where push or impact actuation is the preferred means of operation. In addition to the auxiliary contacts from our PKZM0 range, we also offer special housings with IP65 and IP40 degree of protection, also in combination with an emergency-stop button. The devices have a short-circuit breaking capacity of 50 kA.

Switching and operating motors



The PKE communication module enables transparent and open communication in any application. Thanks to the use of the established serial fieldbus Modbus RTU, the communication module acts as an open and standardized communication interface that can be easily integrated into existing systems.

Like our variable frequency drives, programmable logic controllers and circuit breakers, our motor starters can now also be controlled and configured via Modbus RTU. The PKE communication module is thus the perfect addition to our comprehensive product portfolio.

## FuturFit - All Information at a glance

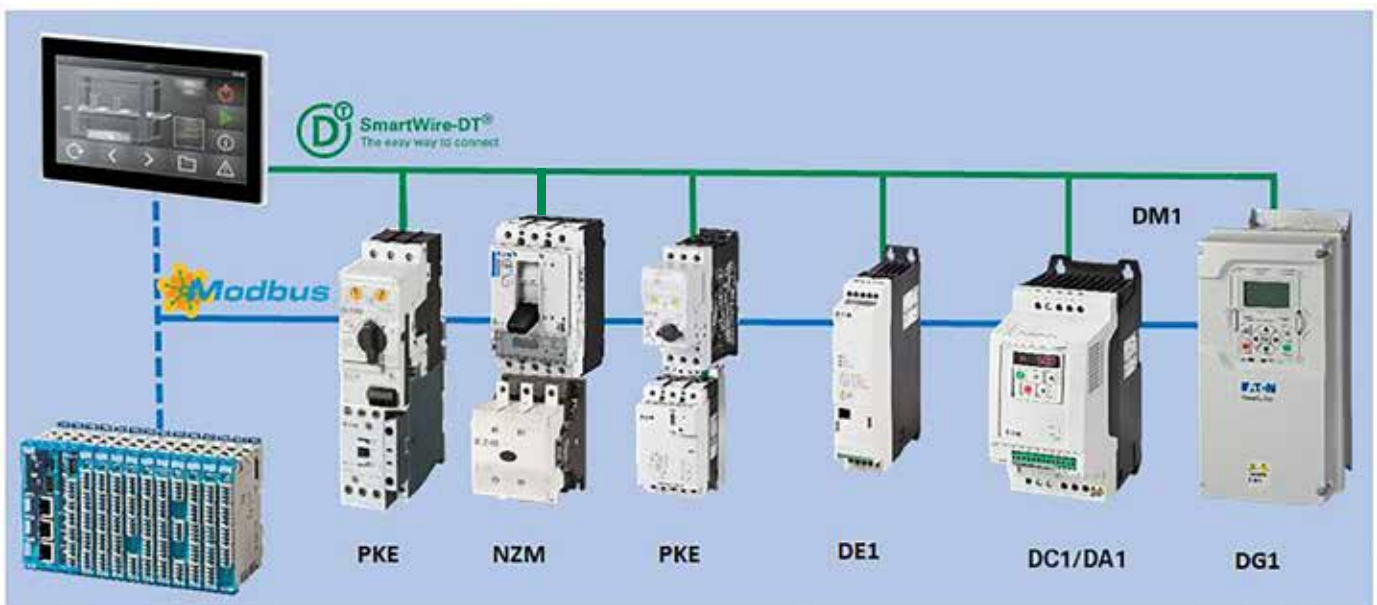
### Data transparency

- Capturing the condition of the entire machine
  - On or off
  - Trip reason (e.g. overload, short circuit, unbalance, phase failure, etc.)
  - Number of power-up operations
  - Current detection
  - Thermal motor image
- Continuous and transparent condition monitoring supports the optimal planning of preventative maintenance

### Flexible

- All-in-one: switching, protecting and measuring with just one device
- A single device for all applications from motor to system protection
- Simple, cost-effective and fast integration into existing systems
- Open and standardized communication via Modbus RTU
- Network range up to 1000 m with 63 addressable nodes
- No special software or proprietary peripherals required
- Simple addressing via dip switches

### Continuous communication at the motor feeders





## Future fit - all details at a glance

### Status

- PKE contactor state
- Nominal current setting
- Time lag setting



### Power/utilization

- Relative motor current
- Thermal motor load



### Diagnostics

- Overcurrent (short circuit), overload, phase failure, test
- Thermal motor load



### Additional functions

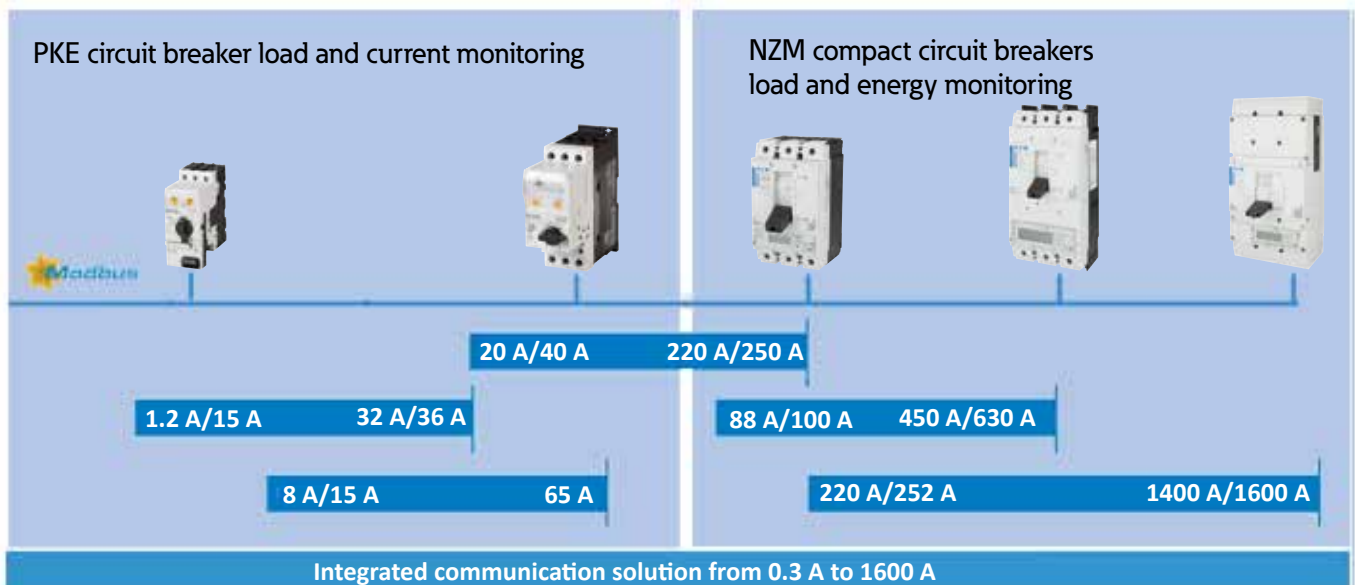
- Overcurrent (short circuit), overload, phase failure, test trip, unbalance
- Records the trip type and frequency and the number of power-up operations
- Remote control
- Readings transmitted as plain text (e.g. current in A)



### All the information at your fingertips thanks to SmartWire-DT

The PKZ and PKE motor starter combinations can be integrated into any automation environment via SmartWire-DT. In the case of the PKE, modular COM connections are used for various signaling functions, including real-time current detection. Data can be transferred directly to the controls and made available across the entire system.

### Continuous communication at the motor feeders



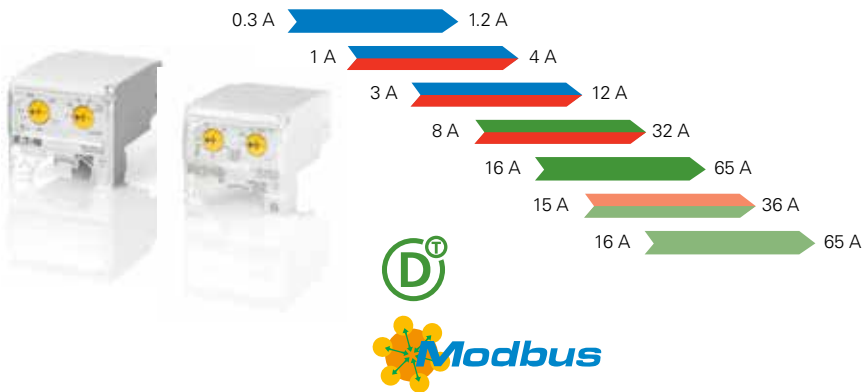
**3 base devices + 8 trip blocks = current range up to 65 A**



**Modular design with wide setting range**

The functional safety and service life of a motor crucially depend on how it is protected. Thanks to their special features, the PKE motor-protective circuit breakers with electronic overload protection offer a convincing alternative to bimetal solutions and make for an intelligent addition to the PKZ device family. The compact and modular design of the PKE devices with plug-in trip blocks up to 65 A offers maximum flexibility. The wide current setting ranges significantly reduce the number of available versions, thereby minimizing the costs and effort involved in project planning.

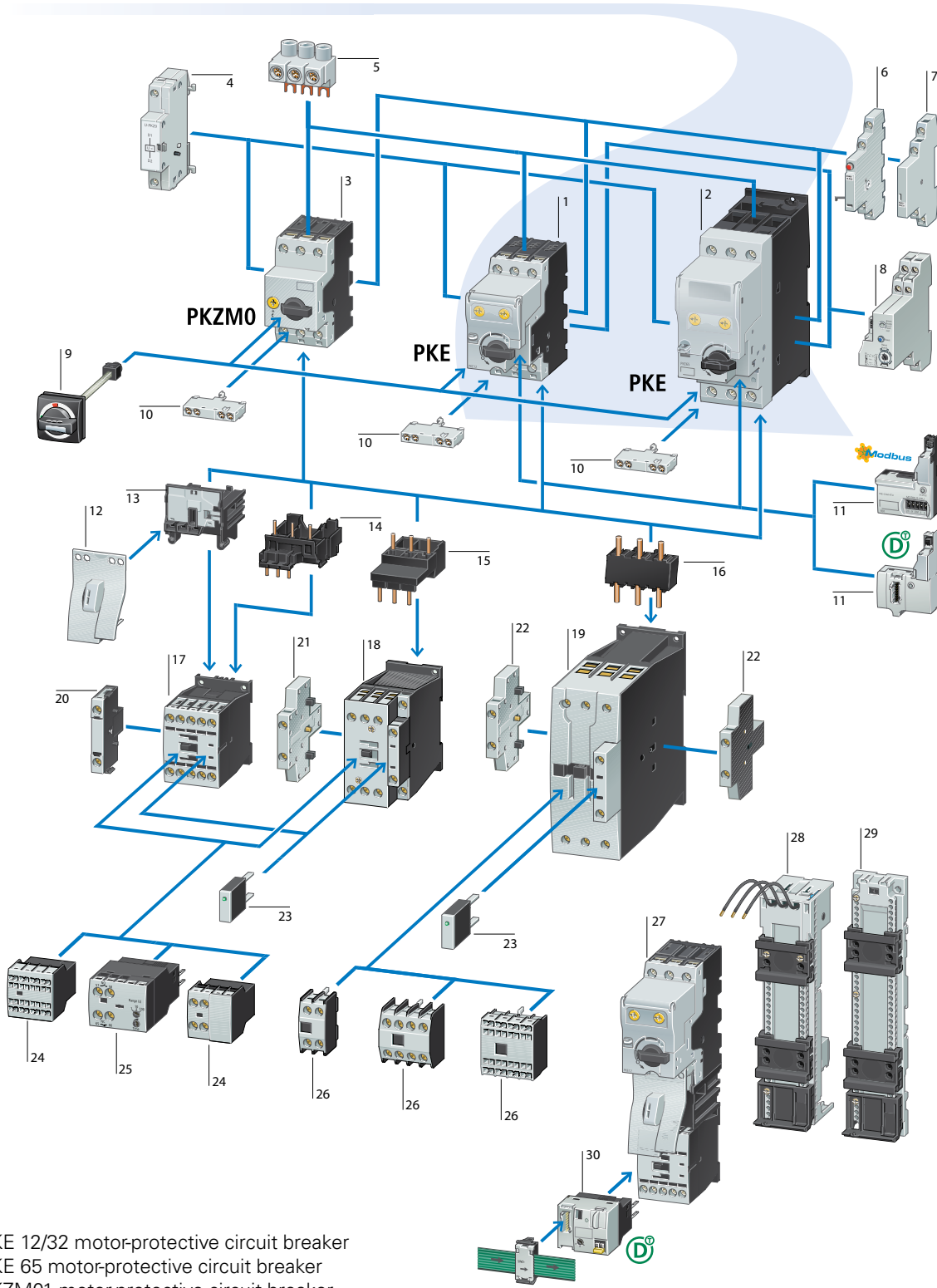
**8 plug-in trip blocks up to 65 A in 2 versions.**



The PKE's electronic trip blocks not only enable wide setting ranges, low power dissipation and precise and highly stable tripping characteristics over long periods of time, but also provide a wealth of data on the machine status. These data can be easily made available for system control and monitoring by means of the new PKE communication module and the thermal motor image. Regardless of which trip block is currently plugged in, it can be easily supplemented with the new PKE Modbus RTU communication module, without any need for special tools or cables.

**PKZ and PKE within the xStart system**

The PKZ and PKE motor-protective circuit breakers can be equipped with a wide range of approved accessories from the xStart range for safe and efficient control system design. Most applications require auxiliary contacts with different contact configurations for interlocking or signaling. Motor starter assemblies with two separate contact systems, including a visible isolating distance, enable the PKZ/PKE protective devices and the DIL switching devices to be clearly assigned. In addition, the switchgear can also be replaced individually. Universal accessories from the xStart system simplify procurement and minimize the effort involved in project planning.



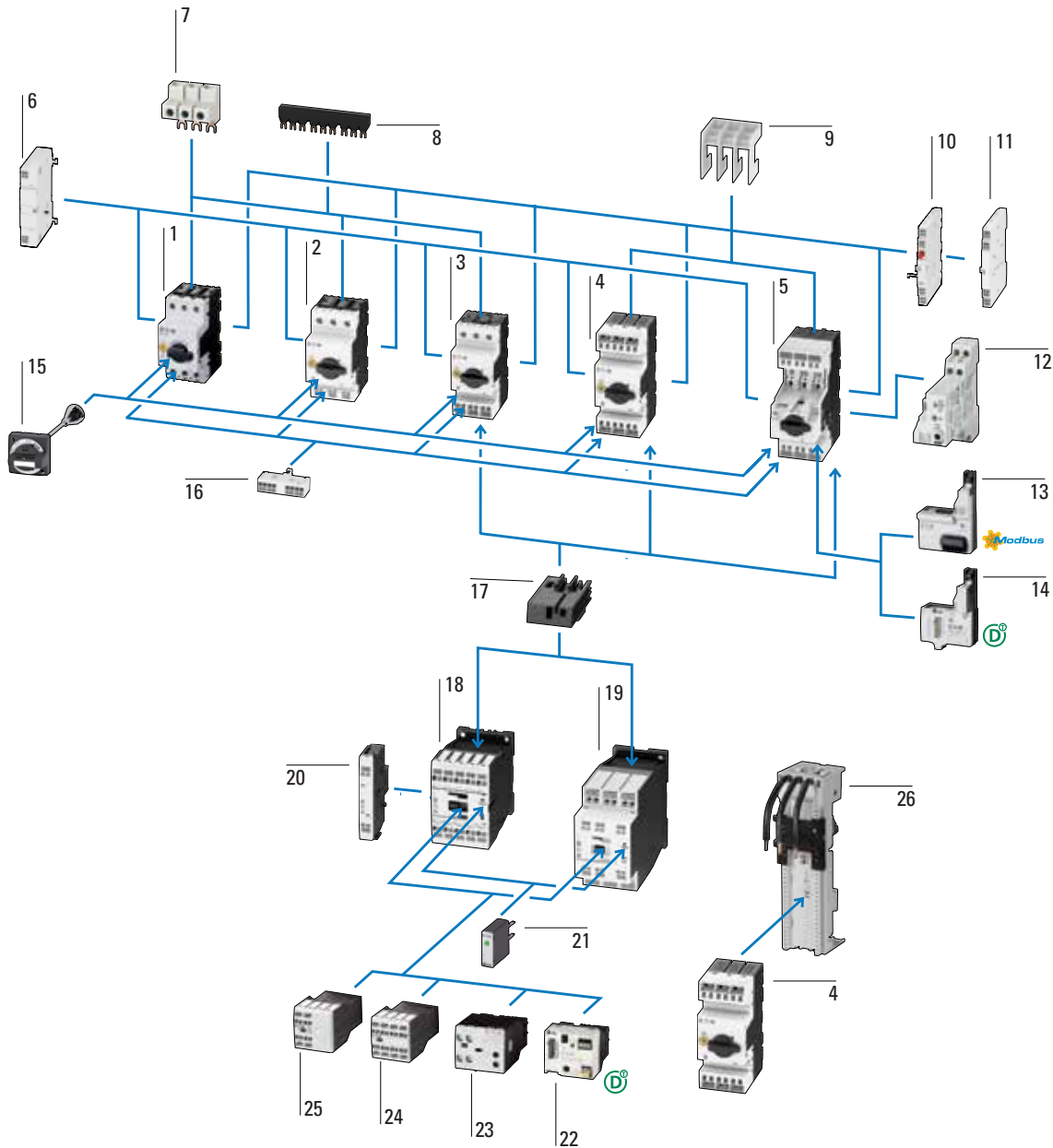
- 1 PKE 12/32 motor-protective circuit breaker
- 2 PKE 65 motor-protective circuit breaker
- 3 PKZM01 motor-protective circuit breaker
- 4 Undervoltage release/shunt release
- 5 Incoming power feed terminal
- 6 Trip indicator
- 7 Side-mounting auxiliary contact
- 8 PKE overload relay module
- 9 Door-coupling rotary handle and shaft extension
- 10 Front-mounting auxiliary contact
- 11 SmartWire-DT/Modbus communication interface for PKE
- 12 Combination plug-in connector
- 13 Mechanical connector
- 14 Motor starter module
- 15 Electrical connector
- 16 Electrical connector
- 17 Contactor up to 15 A
- 18 Contactor up to 38 A
- 19 Contactor up to 65 A
- 20 Side-mounting auxiliary contact
- 21 Side-mounting auxiliary contact
- 22 Side-mounting auxiliary contact
- 23 Suppressor circuit
- 24 Surface-mounting auxiliary contact
- 25 Electronic timer
- 26 Surface-mounting auxiliary contact
- 27 MSC-DEA DOL starter up to 5.5 kW with PKE
- 28 Busbar adapter
- 29 DIN-rail adapter
- 30 SmartWire-DT PKE module

Switching and operating motors







# Motor-protective circuit breakers

## System overview

Moeller series



- |    |  |    |  |
|----|--|----|--|
| 1  | PKZM0 motor-protective circuit breaker up to 32 A – screw terminal                 | 12 | Overload relay module – screw terminal                               |
| 2  | PKZM0 motor-protective circuit breaker up to 16 A – screw/Push-in terminal         | 13 | Modbus RTU networking module for PKE                                 |
| 3  | PKZM0 motor-protective circuit breaker up to 32 A – screw/Push-in terminal         | 14 | SmartWire-DT networking module for PKE                               |
| 4  | PKZM0 motor-protective circuit breaker up to 32 A – Push-in terminal               | 15 | Door-coupling rotary handle  |
| 5  | PKE motor-protective circuit breaker/circuit breaker up to 32 A – Push-in terminal | 16 | Front-mounting auxiliary contact – Push-in terminal                  |
| 6  | Undervoltage/shunt release – Push-in terminal                                      | 17 | Mechanical connection module for motor starters                      |
| 7  | IEC/UL power supply terminal for three-phase busbar link – screw terminal          | 18 | DILA contactor relay/DILM contactors up to 7.5 kW – Push-in terminal |
| 8  | Three-phase busbar link – screw terminal   | 19 | DILM contactor up to 18.5 kW – Push-in terminal                      |
| 9  | PKZM0...-PI phase isolator for UL Type E and Type F applications                   | 20 | Side-mounting auxiliary contact – Push-in terminal                   |
| 10 | Trip indicator for overload and short circuit – Push-in terminal                   | 21 | Coil protection circuits   |
| 11 | Side-mounting auxiliary contact – Push-in terminal                                 | 22 | SmartWire-DT networking module                                       |
|    |  | 23 | Electronic timer module – screw terminal                             |
|    |  | 24 | Front-mounting auxiliary contact, 4-pole – Push-in terminal          |
|    |  | 25 | Front-mounting auxiliary contact, 2-pole – Push-in terminal          |
|    |  | 26 | Adapter for motor-protective circuit breakers / motor starters       |

Setting range Overload release 	Screw terminals		Screw terminal / Push-in terminal		Screw terminal / Push-in terminal		
	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	
<b>PKZM01 motor-protective circuit breakers, type 1 and 2 coordination</b>							
	0.1 - 0.16	PKZM01-0,16	278475	-	-	-	
	0.16 - 0.25	PKZM01-0,25	278476	-	-	-	
	0.25 - 0.4	PKZM01-0,4	278477	-	-	-	
	0.4 - 0.63	PKZM01-0,63	278478	-	-	-	
	0.63 - 1	PKZM01-1	278479	-	-	-	
	1 - 1.6	PKZM01-1,6	278480	-	-	-	
	1.6 - 2.5	PKZM01-2,5	278481	-	-	-	
	2.5 - 4	PKZM01-4	278482	-	-	-	
	4 - 6.3	PKZM01-6,3	278483	-	-	-	
	6.3 - 10	PKZM01-10	278484	-	-	-	
	8 - 12	PKZM01-12	278485	-	-	-	
	10 - 16	PKZM01-16	283390	-	-	-	
	16 - 20	PKZM01-20	283383	-	-	-	
	20 - 25	PKZM01-25	288893	-	-	-	
<b>PKZM0 motor-protective circuit breakers, type 1 and 2 coordination</b>							
	0.1 - 0.16	PKZM0-0,16	072730	-	-	-	
	0.16 - 0.25	PKZM0-0,25	072731	-	-	-	
	0.25 - 0.4	PKZM0-0,4	072732	-	-	-	
	0.4 - 0.63	PKZM0-0,63	072733	-	-	-	
	0.63 - 1	PKZM0-1	072734	-	-	-	
	1 - 1.6	PKZM0-1,6	072735	-	-	-	
	1.6 - 2.5	PKZM0-2,5	072736	-	-	-	
	2.5 - 4	PKZM0-4	072737	-	-	-	
	4 - 6.3	PKZM0-6,3	072738	-	-	-	
	6.3 - 10	PKZM0-10	072739	-	-	-	
	8 - 12	PKZM0-12	278486	-	-	-	
	10 - 16	PKZM0-16	046938	-	-	-	
	16 - 20	PKZM0-20	046988	-	-	-	
	20 - 25	PKZM0-25	046989	-	-	-	
25 - 32	PKZM0-32	278489	-	-	-		
<b>PKZM4 motor-protective circuit breakers, type 1 and 2 coordination</b>							
	10 - 16	PKZM4-16	222350	-	-	-	
	16 - 25	PKZM4-25	222352	-	-	-	
	24 - 32	PKZM4-32	222353	-	-	-	
	32 - 40	PKZM4-40	222354	-	-	-	
	40 - 50	PKZM4-50	222355	-	-	-	
	50 - 58	PKZM4-58	222394	-	-	-	
55 - 65	PKZM4-63	222413	-	-	-		
<b>UL circuit breakers to NFPA79</b>							
	10 - 16	PKZM4-16-CB	132591	-	-	-	
	16 - 25	PKZM4-25-CB	132592	-	-	-	
	24 - 32	PKZM4-32-CB	132593	-	-	-	
<b>PKZM0 motor-protective circuit breakers, type 1 and 2 coordination</b>							
	0.1 - 0.16	PKZM0-0,16-PI	199148	PKZM0-0,16-SPI32	199189	PKZM0-0,16-SPI16	199177
	0.16 - 0.25	PKZM0-0,25-PI	199149	PKZM0-0,25-SPI32	199190	PKZM0-0,25-SPI16	199178
	0.25 - 0.4	PKZM0-0,4-PI	199150	PKZM0-0,4-SPI32	199191	PKZM0-0,4-SPI16	199179
	0.4 - 0.63	PKZM0-0,63-PI	199151	PKZM0-0,63-SPI32	199192	PKZM0-0,63-SPI16	199180
	0.63 - 1	PKZM0-1-PI	199152	PKZM0-1-SPI32	199193	PKZM0-1-SPI16	199181
	1 - 1.6	PKZM0-1,6-PI	199153	PKZM0-1,6-SPI32	199194	PKZM0-1,6-SPI16	199182
	1.6 - 2.5	PKZM0-2,5-PI	199154	PKZM0-2,5-SPI32	199195	PKZM0-2,5-SPI16	199183
	2.5 - 4	PKZM0-4-PI	199155	PKZM0-4-SPI32	199196	PKZM0-4-SPI16	199184
	4 - 6.3	PKZM0-6,3-PI	199156	PKZM0-6,3-SPI32	199197	PKZM0-6,3-SPI16	199185
	6.3 - 10	PKZM0-10-PI	199157	PKZM0-10-SPI32	199198	PKZM0-10-SPI16	199186
	8 - 12	PKZM0-12-PI	199158	PKZM0-12-SPI32	199199	PKZM0-12-SPI16	199187
	10 - 16	PKZM0-16-PI	199159	PKZM0-16-SPI32	199200	PKZM0-16-SPI16	199188
	16 - 20	PKZM0-20-PI	199160	PKZM0-20-SPI32	199201	-	-
	20 - 25	PKZM0-25-PI	199161	PKZM0-25-SPI32	199202	-	-
25 - 32	PKZM0-32-PI	199162	PKZM0-32-SPI32	199203	-	-	

Switching and operating motors



# PKE motor-protective circuit breaker

Base devices with Push-in terminals



Moeller series

Motor output	Rated motor current	Setting range	Base device with: standard handle, lockable rotary handle /AK	Complete device (with trip block) with: standard handle, lockable rotary handle /AK
	380 V / 400 V / 415 V	Overload release		
P	I	$I_r$	Part no.	Part no.
kW	A	A	Article no.	Article no.

## Type of coordination: 1 and 2

0.06	-	0.3 - 1.2	<b>PKE12-PI</b> 199474	<b>PKE12-PI/XTU-1,2</b> 199478
0.09	0.31		<b>PKE12-PI/AK</b> 199475	<b>PKE12-PI/AK/XTU-1,2</b> 199479
0.12	0.41			
0.25	0.6			
0.55	0.8			
0.75	1.1			
0.18	-	1 - 4	<b>PKE12-PI</b> 199474	<b>PKE32-PI/XTU-4</b> 199480
0.25	-		<b>PKE12-PI/AK</b> 199475	<b>PKE32-PI/AK/XTU-4</b> 199481
0.37	1.1			
0.55	1.5			
0.75	1.9			
1.1	2.6			
1.5	3.6			
0.75	-	3 - 12	<b>PKE12-PI</b> 199474	<b>PKE32-PI/XTU-12</b> 199482
1.1	-		<b>PKE12-PI/AK</b> 199475	<b>PKE32-PI/AK/XTU-12</b> 199483
1.5	3.6			
2.2	5			
3	6.6			
4	8.5			
5.5	11.3			
2.2	-	8 - 32	<b>PKE32-PI</b> 199476	<b>PKE32-PI/XTU-32</b> 199484
3	-		<b>PKE32-PI/AK</b> 199477	<b>PKE32-PI/AK/XTU-32</b> 199485
4	8.5			
5.5	11.3			
7.5	15.2			
11	21.7			
15	29.3			

## PKE system-protective circuit breaker

Motor output	Rated current	Setting range	Base device with: standard handle, lockable rotary handle /AK	Complete device (with trip block) with: standard handle, lockable rotary handle /AK
	380 V / 400 V / 415 V	Overload release		
P	I	$I_r$	Part no.	Part no.
kW	A	A	Article no.	Article no.
-	36	15-36	<b>PKE32-PI</b> 199476	<b>PKE32-PI/XTUCP-36</b> 199486
			<b>PKE32-PI/AK</b> 199477	<b>PKE32-PI/AK/XTUCP-36</b> 199487

# Motor-protective circuit breakers

Moeller series

PKE base devices and trip blocks, PKZM0 transformer-protective circuit breakers



Setting range of overload release



Base device with standard handle	
Part no.	Article no.

Motor protection trip block Standard	
Part no.	Article no.

Motor protection trip block Expanded by Connection to SmartWire-DT and Modbus RTU	
Part no.	Article no.

Complete device with standard handle	
Part no.	Article no.

## PKE motor-protective circuit breakers, type 1 and 2 coordination

Setting range	PKE12	Article no.	PKE-XTU-1,2	Article no.	PKE-XTUA-1,2	Article no.	PKE12/XTU-1,2	Article no.
0.3 - 1.2	PKE12	121721	PKE-XTU-1,2	121723	PKE-XTUA-1,2	121727	PKE12/XTU-1,2	121731
1 - 4	PKE12	121721	PKE-XTU-4	121724	PKE-XTUA-4	121728	PKE12/XTU-4	121732
3 - 12	PKE12	121721	PKE-XTU-12	121725	PKE-XTUA-12	121729	PKE12/XTU-12	121733
8 - 32	PKE32	121722	PKE-XTU-32	121726	PKE-XTUA-32	121730	PKE32/XTU-32	121734

## PKE system-protective circuit breaker, short-circuit release 5 - 8 x I<sub>n</sub>

Setting range	PKE32	Article no.	PKE-XTUCP-36	Article no.	PKE-XTUACP-36	Article no.	PKE32/XTUCP-36	Article no.
15 - 36	PKE32	121722	PKE-XTUCP-36	153164	PKE-XTUACP-36	168795	PKE32/XTUCP-36	168972



Setting range of overload release



Base device with standard handle	
Part no.	Article no.

Motor protection trip block Standard	
Part no.	Article no.

Motor protection trip block Expanded Connection to SmartWire-DT and Modbus RTU	
Part no.	Article no.

Complete device with standard handle	
Part no.	Article no.

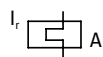
## PKE motor-protective circuit breakers, type 1 and 2 coordination

Setting range	PKE65	Article no.	PKE-XTUW-32	Article no.	PKE-XTUWA-32	Article no.	PKE65/XTUW-32	Article no.
8 - 32	PKE65	138258	PKE-XTUW-32	138261	PKE-XTUWA-32	138262	PKE65/XTUW-32	138517
16 - 65	PKE65	138258	PKE-XTU-65	138259	PKE-XTUA-65	138260	PKE65/XTU-65	138516

## PKE system-protective circuit breakers, short-circuit release 5 - 8 x I<sub>n</sub>

Setting range	PKE65	Article no.	PKE-XTUWCP-36	Article no.	PKE-XTUWACP-36	Article no.	PKE65/XTUWCP-36	Article no.
15 - 36	PKE65	138258	PKE-XTUWCP-36	168796	PKE-XTUWACP-36	168797	PKE65/XTUWCP-36	168973
30 - 65	PKE65	138258	PKE-XTUCP-65	168798	PKE-XTUACP-65	168799	PKE65/XTUCP-65	168974

Setting range Overload release



Screw terminals

Push-in terminal/ Push-in terminal



Part no. Article no. Part no. Article no.












## Transformer-protective circuit breaker

Setting range	PKZM0-0,16-T	Article no.	PKZM0-0,16-T-PI	Article no.
0.1 - 0.16	PKZM0-0,16-T	088907	PKZM0-0,16-T-PI	199163
0.16 - 0.25	PKZM0-0,25-T	088908	PKZM0-0,25-T-PI	199164
0.25 - 0.4	PKZM0-0,4-T	088909	PKZM0-0,4-T-PI	199165
0.4 - 0.63	PKZM0-0,63-T	088910	PKZM0-0,63-T-PI	199166
0.63 - 1	PKZM0-1-T	088911	PKZM0-1-T-PI	199167
1 - 1.6	PKZM0-1,6-T	088912	PKZM0-1,6-T-PI	199168
1.6 - 2.5	PKZM0-2,5-T	088913	PKZM0-2,5-T-PI	199169
2.5 - 4	PKZM0-4-T	088914	PKZM0-4-T-PI	199170
4 - 6.3	PKZM0-6,3-T	088915	PKZM0-6,3-T-PI	199171
6.3 - 10	PKZM0-10-T	088916	PKZM0-10-T-PI	199172
8 - 12	PKZM0-12-T	278492	PKZM0-12-T-PI	199173
10 - 16	PKZM0-16-T	088917	PKZM0-16-T-PI	199174
16 - 20	PKZM0-20-T	088918	PKZM0-20-T-PI	199175
20 - 25	PKZM0-25-T	278493	PKZM0-25-T-PI	199176






# Motor-protective circuit breakers

Communication modules, busbar adapters

Moeller series





			Part no.	Article no.
<b>PKE communication module</b>				
		For connecting motor-protective circuit breakers with PKE-XTU(W)A-... trip blocks (motor protection) to SmartWire-DT  Messages PKE contactor state, motor current in % Thermal motor image in % Trip indication (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block  Commands Remote disconnect	<b>PKE-SWD-SP</b>	150614
		For connecting PKE circuit breakers with PKE-XTU(W)ACP-... trip blocks (motor protection) to SmartWire-DT  For connecting PKE circuit breakers with PKE-XTU(W)ACP-... trip blocks (system protection) to SmartWire-DT	<b>PKE-SWD-CP</b>	172735
		For connecting motor-protective circuit breakers with PKE-XTU(W)A-... trip blocks (motor protection) and circuit breakers with trip blocks PKE-XTU(W)ACP-... (system protection) to Modbus-RTU	<b>PKE-COM-RTU</b>	199344
				
	Rated operational current $I_e$ A	For use with	Part no.	Article no.
<b>Busbar adapter for PKZ and PKE</b>				
	25	PKZM0 + DILM7 (9) (12) (15) PKE + DILM7 (9) (12) (15) MSC-D-0,25-M7... - MSC-D-16-M15...	<b>BBA0-25</b>	101451
		PKZM0...-PI + DILM7 (9) (12) (15) -PI MSC-D-0,25-M7... -PI - MSC-D-16-M15... -PI	<b>BBA0-25-PI</b>	199467
	25	PKZM0 + 2 x DILM7-01 (9) (12) PKE + 2 x DILM7-01 (9) (12) MSC-R-0,25-M7... - MSC-R-12-M12...	<b>BBA0R-25</b>	101453
		PKZM0...-PI + 2 x DILM7-01 (9) (12)-PI PKE...-PI + 2 x DILM7-01 (9) (12)-PI MSC-R-0,25-M7... -PI - MSC-R-16-M15... -PI	<b>BBA0R-25-PI</b>	199468
	32	PKZM0 + DILM17 (25) (32) PKE + DILM17 (25) (32)	<b>BBA0-32</b>	101452
		PKZM0...-PI + DILM8 (11) (14) (17) (25) (32) -PI PKE...-PI + DILM7(9)(12)(15)-PI PKE...-PI + DILM8 (11) (14) (17) (25) (32) -PI	<b>BBA0-32-PI</b>	199469
		PKZM0...-PI PKE12...-PI, PKE32...-PI	<b>BBA0K-32-PI</b>	199635
	32	PKZM0 + 2 x DILM17-01 (25) (32) PKE + 2 x DILM17-01 (25) (32)	<b>BBA0R-32</b>	101454
		PKZM0...-PI + 2 x DILM8 (11) (14) (17) (25) (32) -PI PKE...-PI + 2 x DILM8 (11) (14) (17) (25) (32) -PI	<b>BBA0R-32-PI</b>	199470
	63	PKZM4, PKE65 + DILM(C)40 PKZM4, PKE65 + DILM(C)50 PKZM4, PKE65 + DILM(C)65	<b>BBA4L-63</b>	101459












	Contacts		For use with	Part no.	Article no.
	N/O = normally open	N/C = normally closed			
<b>Standard auxiliary contacts</b>					
	1 N/O	1 N/C	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0..-T(-PI) PKZM4 PKE12..(-PI) PKE32..(-PI)	<b>NHI11-PKZ0-PI</b>	199328
	1 N/O	1 N/C			
	1 N/O	1 N/C			
	1 N/O	-			
	1 N/O	1 N/C		<b>NHI-E-11-PKZ0-PI</b>	199325
	1 N/O	1 N/C		<b>NHI-B-11-PKZ0-PI</b>	199326
	1 N/O	-		<b>NHI-E-10-PKZ0-PI</b>	199327
<b>Trip indicators</b>					
	2 x 1 N/O	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0..-T(-PI) PKZM0..-T(-PI) PKZM4 PKM0 PKE32..(-PI) PKE12..(-PI)	<b>AGM2-10-PKZ0-PI</b>	199329
	-	2 x 1 N/C		<b>AGM2-01-PKZ0-PI</b>	199330
<b>Shunt releases</b>					
	-	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0..-T(-PI) PKZM0..-T(-PI) PKZM4 PKM0 PKE32..(-PI) PKE12..(-PI)	<b>A-PKZ0(230V50 HZ)-PI</b>	199339
	-	-		<b>A-PKZ0(24VDC)-PI</b>	199336
<b>Undervoltage release</b>					
	-	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0..-T(-PI) PKZM0..-T(-PI) PKZM4 PKM0 PKE32..(-PI) PKE12..(-PI)	<b>U-PKZ0(230V50 HZ)-PI</b>	199334
	-	-		<b>U-PKZ0(24VDC)-PI</b>	199331






















Switching and operating motors











For use with		Part no.	Article no.
<b>PKZM0 Type E phase isolator</b>			
	PKZM0...-PI	<b>LSA-PKZ0-E-PI</b>	199341
<b>Wiring set For DOL starters</b>			
	PKZM0...-PI / SPI32, PKE...-PI + DILM7...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM9...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM12...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM15...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM8...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM11...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM14...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM17...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM25...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM32...-PI	<b>PKZM0-XDM12-PI</b>	199463
	PKZM0...-PI(-SPI32) PKE12../32..-PI, + DILM7...-PI - DILM38..-PI	<b>PKZM0-XDM32M-PI</b>	199462
<b>For reversing starters</b>			
	PKZM0...-PI / SPI32, PKE...-PI + DILM7-01...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM9-01...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM12-01...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM15-01...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM8-11...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM11-11...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM14-11...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM17-11...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM25-11...-PI PKZM0...-PI / SPI32, PKE...-PI + DILM32-11...-PI	<b>PKZM0-XRM12-PI</b>	199464
		<b>PKZM0-XRM32-PI</b>	199466



	Contacts		For use with	Part no.	Article no.	
	N/O = normally open	N/C = normally closed				
<b>Standard auxiliary contacts</b>						
	1 N/O	1 N/C	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0...-T(-PI) PKM0 PKZM4 PKE12..(-PI) PKE32..(-PI)	<b>NHI11-PKZ0</b>	072896	
	1 N/O	2 N/C		<b>NHI12-PKZ0</b>	072895	
	2 N/O	1 N/C		<b>NHI21-PKZ0</b>	072894	
	1 N/O	1 N/C		<b>NHI-E-11-PKZ0</b>	082882	
	1 N/O	-		<b>NHI-E-10-PKZ0</b>	082884	
<b>Trip indicators</b>						
	2 x 1 N/O	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0...-T(-PI) PKM0 PKZM4 PKE12..(-PI) PKE32..(-PI)	<b>AGM2-10-PKZ0</b>	072898	
	-	2 x 1 N/C		<b>AGM2-01-PKZ0</b>	072899	
	2 x 1 N/O	-				
<b>Early-make auxiliary contacts</b>						
	2 N/O	-		PKZM0 PKZM0-T PKM0 PKZM4	<b>VHI20-PKZ0</b>	203595
	2 N/O	-		PKZM01	<b>VHI20-PKZ01</b>	278495
<b>Shunt releases</b>						
	-	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0...-T(-PI) PKM0 PKZM4 PKE12..(-PI) PKE32..(-PI)	<b>A-PKZ0(230V50HZ)</b>	073187	
	-	-		<b>A-PKZ0(24VDC)</b>	073200	
	-	-				
<b>Undervoltage releases</b>						
	-	-		PKZM01 PKZM0..(-PI)(-SPI32) PKZM0...-T(-PI) PKM0 PKZM4 PKE12..(-PI) PKE32..(-PI)	<b>U-PKZ0(230V50HZ)</b>	073135
	-	-			<b>U-PKZ0(24VDC)</b>	157862
	-	-				
<b>Overload relay function module</b>						
	1 N/O	1 N/C	PKE12 PKE32 PKE65 with XTUA trip block from release 04 and up		<b>PKE-XZMR(24VDC)</b>	173425
	1 N/O	1 N/C			<b>PKE-XZMR(230V50HZ)</b>	173416
<b>Lockable rotary handle</b>						
	for locking the PKZM0, PKZM4 and PKE motor-protective circuit breakers when used as main switches as per EN 60204 Lockable in the "0" position by means of a padlock Shackle thickness 3 - 6.35 mm			<b>AK-PKZ0</b>	030851	

	For use with	Part no.	Article no.
<b>Three-phase busbar link, power supply via terminals 1, 3, 5</b>			
For PKZM0-..(-SPI16), (-SPI32) or PKE12/32 without lateral auxiliary contacts or voltage releases			
	-	<b>B3.0/2-PKZ0</b>	063961
	-	<b>B3.0/3-PKZ0</b>	232289
	-	<b>B3.0/4-PKZ0</b>	063960
	-	<b>B3.0/5-PKZ0</b>	232290
For PKZM0-..(-SPI16), (-SPI32) or PKE12/32 with one lateral auxiliary contact or one trip indicator mounted on the right			
	-	<b>B3.1/2-PKZ0</b>	044945
	-	<b>B3.1/3-PKZ0</b>	044946
	-	<b>B3.1/4-PKZ0</b>	044947
	-	<b>B3.1/5-PKZ0</b>	044948
For PKZM0-..(-SPI16), (-SPI32) or PKE12/32 with one lateral auxiliary contact mounted on the side or one trip-indicating auxiliary contact mounted on the right or one voltage release mounted on the left			
	-	<b>B3.2/2-PKZ0</b>	063963
	-	<b>B3.2/4-PKZ0</b>	063959
<b>Incoming terminal</b>			
	PKZM0-.., PKZM0-..-SPI16, PKZM0-..-SPI32	<b>BK25/3-PKZ0</b> <b>BK25/3-PKZ0-E</b>	032720 262518
<b>Shroud for unused terminals</b>			
	Touch safe To cover unused terminals on the B3...-PKZ0 three-phase busbar link	<b>H-B3-PKZ0</b>	032721
<b>PKZM0 Type E phase isolator</b>			
	PKZM0-...	<b>LSA-PKZ0-E</b>	197479
<b>Wiring set</b>			
For DOL starters			
Plug-in version 	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15	<b>PKZM0-XDM12</b>	283149
Screw-in version 	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15	<b>PKZM0-XDM15ME</b>	179646
Screw-in version 	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32 PKZM0, PKE + DS7	<b>PKZM0-XDM32ME</b>	190312
	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15	<b>PKZM4-XDM65</b>	101053
For reversing starters			
	PKZM0, PKE + DILM7-01 PKZM0, PKE + DILM9-01 PKZM0, PKE + DILM12-01	<b>PKZM0-XRM12</b>	283185
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32	<b>PKZM0-XRM32</b>	283189
Electrical contact module			
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32 DS7-34...SX016... DS7-34...SX024... DS7-34...SX032...	<b>PKZM0-XM32DE</b>	239349
	PKZM4, PKE65 + DILM40 PKZM4, PKE65 + DILM50 PKZM4, PKE65 + DILM65	<b>PKZM4-XM65DE</b>	101056

Description	For use with	Part no.	Article no.
<b>Door coupling handles</b>			
 For use as a main switch according to EN 60204	PKZM0 PKZM4	<b>PKZ0-XH</b>	106132
 For use as a main switch according to EN 60204 in MCC distribution boards with the PKZM0 rotated by 90°.	PKZM0 PKZM4	<b>PKZ0-XH-MCC</b>	106136
 For use as a main switch according to EN 60204	PKE	<b>PKE-XH</b>	142416
 For use as a main switch according to EN 60204 in MCC distribution boards with the PKE rotated by 90°.	PKE	<b>PKE-XH-MCC</b>	142418
 For use as a main switch with emergency-stop according to EN 60204	PKZM0 PKZM4	<b>PKZ0-XRH</b>	106133
 For use as a main switch with emergency-stop function according to EN 60204 in MCC distribution boards with the PKZM0 rotated by 90°.	PKZM0 PKZM4	<b>PKZ0-XRH-MCC</b>	106137
 For use as a main switch with emergency-stop according to EN 60204	PKE	<b>PKE-XRH</b>	142417
 For use as a main switch with emergency-stop function according to EN 60204 in MCC distribution boards with the PKE rotated by 90°.	PKE	<b>PKE-XRH-MCC</b>	142419

### Manual self-protected combination controller, UL 60947-4-1, Type E

PKZM0(4) motor-protective circuit breakers, for use as "Manual self-protected motor starters" – UL 508 Type E																																																		
Maximum motor output (three-phase current) HP = hp				Setting range		Interrupting capacity = short-circuit current rating (SCCR)			Components																																									
200 V	230 V	460 V	575 V	Overload release	Short-circuit release	240 V	480V/ 277 V <sup>2)</sup>	600V/ 347 V <sup>2)</sup>	Motor-protective circuit breaker	Incoming terminal <sup>3)</sup>																																								
208 V	240 V	480 V	600 V			[kA]	[kA]	[kA]																																										
[HP]	[HP]	[HP]	[HP]	[A]	[A]	[kA]	[kA]	[kA]	Part no.	Part no.																																								
<sup>1)</sup> <table border="1"> <tr> <td></td> <td></td> <td>¾</td> <td>¾</td> </tr> <tr> <td>½</td> <td>½</td> <td>1</td> <td>1½</td> </tr> <tr> <td>¾</td> <td>¾</td> <td>2</td> <td>3</td> </tr> <tr> <td>½</td> <td>1½</td> <td>3</td> <td>5</td> </tr> <tr> <td>2</td> <td>3</td> <td>5</td> <td>7½</td> </tr> <tr> <td>3</td> <td>3</td> <td>7½</td> <td>10</td> </tr> <tr> <td>3</td> <td>5</td> <td>10</td> <td>10</td> </tr> <tr> <td>5</td> <td>–</td> <td>–</td> <td>15</td> </tr> <tr> <td>–</td> <td>7½</td> <td>15</td> <td>20</td> </tr> <tr> <td>7½</td> <td>10</td> <td>20</td> <td>25</td> </tr> </table>						¾	¾	½	½	1	1½	¾	¾	2	3	½	1½	3	5	2	3	5	7½	3	3	7½	10	3	5	10	10	5	–	–	15	–	7½	15	20	7½	10	20	25	0.1 - 0.16	2.5	65	65	50	<b>PKZM0 - 0,16 -(S)PI</b>	<b>BK25/3-PKZ0-E /</b>
						¾	¾																																											
				½	½	1	1½																																											
				¾	¾	2	3																																											
				½	1½	3	5																																											
				2	3	5	7½																																											
				3	3	7½	10																																											
				3	5	10	10																																											
				5	–	–	15																																											
				–	7½	15	20																																											
				7½	10	20	25																																											
0.16 - 0.25	3.9	65	65	50	<b>PKZM0 - 0,25 -(S)PI</b>																																													
0.25 - 0.4	6.2	65	65	50	<b>PKZM0 - 0,4 -(S)PI</b>																																													
0.4 - 0.63	9.8	65	65	50	<b>PKZM0 - 0,63 -(S)PI</b>																																													
0.63 - 1	16	65	65	50	<b>PKZM0 - 1 -(S)PI</b>																																													
1 - 1.6	25	65	65	50	<b>PKZM0 - 1,6 -(S)PI</b>																																													
1.6 - 2.5	39	65	65	50	<b>PKZM0 - 2,5 -(S)PI</b>																																													
2.5 - 4	62	65	65	50	<b>PKZM0 - 4 -(S)PI</b>																																													
4 - 6.3	98	65	65	50	<b>PKZM0 - 6,3 -(S)PI</b>																																													
6.3 - 10	155	65	65	50	<b>PKZM0 - 10 -(S)PI</b>																																													
8 - 12	186	65	65	–	<b>PKZM0 - 12 -(S)PI</b>																																													
10 - 16	248	42	42	–	<b>PKZM0 - 16 -(S)PI</b>																																													
16 - 20	310	18	18	–	<b>PKZM0 - 20 -(S)PI</b>																																													
20 - 25	388	18	18	–	<b>PKZM0 - 25 -(S)PI</b>																																													
25 - 32	496	18	18	–	<b>PKZM0 - 32 -(S)PI</b>																																													
10 - 16	248	65	65	25	<b>PKZM4 - 16</b>	<b>BK50/3-PKZ4-E</b>																																												
16 - 25	388	65	65	25	<b>PKZM4 - 25</b>																																													
25 - 32	496	65	65	25	<b>PKZM4 - 32</b>																																													
32 - 40	620	65	65	25	<b>PKZM4 - 40</b>																																													
40 - 50	775	65	65	–	<b>PKZM4 - 50</b>																																													
50 - 58	899	65	65	–	<b>PKZM4 - 58</b>																																													
55 - 65	977	65	65	–	<b>PKZM4 - 63</b>																																													

#### Notes

<sup>1)</sup> In this range, calculate the motor power according to the rated current. Specified values according to NEC Table 430-150

<sup>2)</sup> Suitable for star-point grounded networks

<sup>3)</sup> For PKZM0-... Feed-in terminal BK25/3-PKZ0-E or LSA-PKZ-E, for PKZM0-...-SPI BK25/3-PKZ0-E, for PKZM0-...-PI LSA-PKZ0-E-PI

Switching and operating motors

# Motor-protective circuit breakers

PKZM0 switching capacity

Moeller series

## Switching capacity of circuit breakers from serial no. 04 and up

Rated uninterrupted current  $I_u$

Rated conditional short-circuit current  $I_q$  IEC/EN 60947-4-1

Rated ultimate short-circuit breaking capacity  $I_{cu}$  IEC/EN 60947-2

Rated operational short-circuit breaking capacity  $I_{cs}$  IEC/EN 60947-2

$I_u$ A	230 V				400 V				440 V				500 V				690 V			
	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>

### PKZM0, PKZM0...-T, PKM0 with type 1 and 2 coordination

0.16 - 1	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N
1.6	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N
2.5	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	5	5	5	50
4	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	3	3	3	50
6.3	150	150	150	N	150	150	150	N	150	150	150	N	42	42	42	N	3	3	3	50
10	150	150	150	N	150	150	150	N	50	50	50	50	42	42	11	50	3	3	2	50
12	50	50	38	50	50	50	38	50	50	15	12	50	15	15	4	50	3	3	2	50
16	50	50	38	50	50	50	38	50	50	15	12	50	15	15	4	50	3	3	2	50
20	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50
25	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50
32	50	40	10	50	50	40	10	50	50	10	3	50	10	3	3	50	3	3	1	50

### PKZM0 (PKZM0...-T, PKM0) + CL-PKZO

0.16 - 1				N				N				N					20	N		
1.6				N				N				N					20	N		
2.5				N				N				N				20	20	20	N	
4				N				N				N				20	20	20	N	
6.3				N				N				N			50	N	20	20	20	N
10				N				N				N			20	N	20	20	20	N
12				N				N				N			20	N	5	5	2.5	N
16				N				N				N			20	N	5	5	2.5	N
20				N				N				N	10	10	10	N	5	5	2.5	N
25				N				N				N	10	10	10	N	5	5	2.5	N
32				N				N				N	10	10	10	N	5	5	2.5	N

### PKZM0 (PKZM0...-T, PKM0) + 2 CL-PKZO

0.16 - 1				N				N				N					20	N		
1.6				N				N				N					20	N		
2.5				N				N				N				40	40	20	N	
4				N				N				N				40	40	20	N	
6.3				N				N				N			50	N	20	20	20	N
10				N				N				N			40	N	20	20	20	N
12				N				N				N			40	N	10	10	2.5	N
16				N				N				N			40	N	10	10	2.5	N
20				N				N				N	20	20	20	N	10	10	2.5	N
25				N				N				N	20	20	20	N	10	10	2.5	N
32				N				N				N	20	20	20	N	10	10	2.5	N

### Notes

■ No upstream protection necessary, as the device is intrinsically safe (100/150 kA range)

N Not required

<sup>1)</sup> Required back-up fuse if the short-circuit current exceeds the conditional rated short-circuit current of the devices ( $I_{cs} \cdot I_q$ ).

## Switching capacity of circuit breaker

Rated uninterrupted current  $I_u$

Rated conditional short-circuit current  $I_q$  IEC/EN 60947-4-1

Rated ultimate short-circuit breaking capacity  $I_{cu}$  IEC/EN 60947-2

Rated operational short-circuit breaking capacity  $I_{cs}$  IEC/EN 60947-2

$I_u$ A	230 V				400 V				440 V				500 V <sup>2)</sup>				690 V			
	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	A <sup>1)</sup>
PKZM01 with type 1 and 2 coordination																				
0.16 - 1	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
1.6	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
2.5	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
4	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
6.3	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
10	50	50	50	50	50	50	50	50	42	42	10	50	50	50	50	50	50	50	50	50
12	50	50	10	50	50	50	10	50	15	15	10	50	15	15	10	50	50	50	50	50
16	50	50	10	50	50	50	10	50	15	15	10	50	15	15	10	50	50	50	50	50
20, 25	50	50	10	50	50	50	10	50	10	10	3	50	10	10	3	50	50	50	50	50
PKZM4 with type 1 and 2 coordination																				
16	150	25	N	150	25	N	45	45	12	100	15	15	4	100	8	8	2.5	100		
25	150	25	N	150	25	N	45	45	12	100	15	15	4	100	8	8	2.5	100		
32	50	50	25	100	50	50	25	100	45	45	12	100	15	15	4	100	5	5	2.5	100
40	50	50	25	100	50	50	25	100	45	45	12	100	15	15	4	100	5	5	2.5	100
50	50	50	25	100	50	50	25	100	45	45	12	100	15	15	4	100	5	5	2.5	100
58	50	50	25	160	50	50	25	160	45	45	12	160	15	15	4	160	5	5	2.5	160
63	50	50	25	160	50	50	25	160	45	45	12	160	15	15	4	160	5	5	2.5	160

### Notes

No upstream protection necessary, as the device is intrinsically safe (100/150 kA range)

<sup>1)</sup> Fuse (A gG/gL) for increasing the breaking capacity of the motor-protective circuit breaker to 100 kA

N Not required

$I_u$ A	230/400V			415 V			440 V			500 V			525 V			690 V		
	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA
PKE12/XTU(A)-... with type 1 and 2 coordination																		
1.2	100	N	N	50	N	N	15	N	N	10	N	N	10	N	N	3	N	N
4	100	N	N	50	N	N	50	N	N	10	N	N	10	N	N	3	N	N
12	100	N	N	50	N	N	20	N	N	20	N	N	10	N	N	3	N	N
PKE32/XTU(A)-... with type 1 and 2 coordination																		
32	100			50	N	N	25	N	N	6	N	N	3	N	N	3	N	N
PKE32/XTUCP(A)-... with type 1 and 2 coordination																		
36	N	50	12.5	N	-	-	N	-	-	N	-	-	N	-	-	N	-	-
PKE65/XTU(W)(A) with type 1 and 2 coordination																		
32 - 65	80	N	N	80	N	N	45	N	N	15	N	N	10	N	N	5	N	N
Motor starter combinations MSC-DE(A)-...-M7(12)... with type 1 coordination																		
1.2	100	N	N	50	N	N	15	N	N	10	N	N	-	N	N	-	N	N
4	100	N	N	50	N	N	50	N	N	50	N	N	-	N	N	-	N	N
12	100	N	N	50	N	N	50	N	N	20	N	N	-	N	N	-	N	N
Motor starter combinations MSC-DE(A)-...-M17(32)... with type 1 coordination																		
12	100	N	N	65	N	N	65	N	N	50	N	N	50	N	N	3	N	N
32	100	N	N	100	N	N	50	N	N	50	N	N	5	N	N	5	N	N
Motor starter combinations MSC-DE(A)-...-M17(32)... with type 2 coordination																		
1.2	100	N	N	65	N	N	65	N	N	10	N	N	3	N	N	-	N	N
4	100	N	N	65	N	N	65	N	N	50	N	N	3	N	N	-	N	N
12	100	N	N	65	N	N	65	N	N	50	N	N	50	N	N	-	N	N
32	100	N	N	100	N	N	65	N	N	50	N	N	20	N	N	5	N	N
PKE12/XTU-...+DILM17+CL-PKZ0 with type 2 coordination																		
1.2 - 12	100	N	N	100	N	N	100	N	N	100	N	N	50	N	N	-	N	N
PKE32/XTU-32+DILM32+CL-PKZ0 with type 2 coordination																		
32	100	N	N	100	N	N	100	N	N	100	N	N	50	N	N	25	N	N
PKE65/XTU(A)-65+DILM(40, 50)65 with type 2 coordination																		
65	80	N	N	50	N	N	50	N	N	50	N	N	-	N	N	10	N	N





## xStart motor starter system Quick and flexible installation and connection



Download the catalog:  
[Eaton.com/catalog](http://Eaton.com/catalog)

Our xStart system offers a comprehensive range of products for starting motors: from contactors to soft starters and from bimetal relays to motor-protective circuit breakers with electronic wide-range overload protection. All standard components can be combined with simple mechanical and electronic connectors. Three-phase busbar links act as convenient aids for motor current wiring. SmartWire-DT also replaces the control current wiring and integrates comprehensive communication options into the system.

Our pre-assembled motor starter combinations cover the most common motor ratings and control voltages. The device combinations can be installed directly. For maximum time savings during installation, the motor starter combinations with Push-in technology can also be wired without any tools.

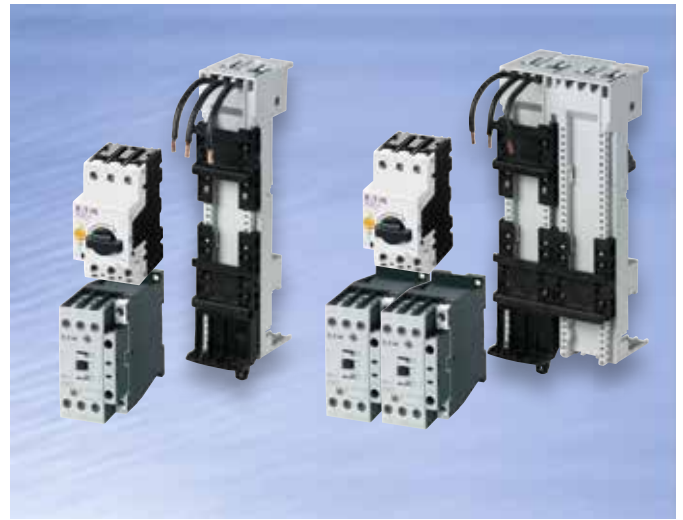




### Assemble motor starter combinations in only one quick step

In the case of xStart switchgear up to 15.5 A, we have replaced the conventional main and control current wiring with plug-in connectors. The individual PKZM0/PKE standard components and the wiring sets can be used to assemble DOL, reversing or soft starters with screw terminals within seconds.

The wiring sets include the complete main current wiring between the motor-protective circuit breaker and the DIL contactor up to 15.5 A or the DS7 soft starter. In addition to the main electrical connection, the PKZM0-XRM12 reversing starter set includes an electrical interlock and a reversing bridge.



### Flexible power distribution

Whether it's motor starters, soft starters or motor-protective circuit breakers, assembling a flexible power supply/distribution system is quick, safe and easy thanks to our dedicated BBA busbar adapters. Apart from matching adapters for motor-protective circuit breakers, such as the PKZM0, PKE and PKZM4 with rated currents from 0.1 to 63 A, we also offer additional universal adapters up to 80 A. Thanks to their standardized dimensions, they are compatible with all 60 mm rail systems from leading manufacturers. And their UL/CSA approvals mean that they are certified for both the European and North American markets. Our new busbar adapters can accommodate motor starter combinations that have been assembled from our product range using the combination plug-in technology. They are available as individual units or as complete assemblies including motor starters.

→ Complete solutions save both time and money



### Simple, compact and fast thanks to Push-in terminals

In addition to the motor starter combinations with screw connections, we also offer pre-assembled combinations based on our portfolio of motor starter components with Push-in technology. This results in compact device combinations that can be installed and wired without any tools, for maximum time savings.



### Important for exports to North America: The U.S. National Electrical Code has been updated (NEC 2011).

In the U.S., the frequently used UL 508 Type E devices (manual self-protected combination motor controllers) must now be equipped with a lockable handle, as has been the case in Canada for some time. The handles on Eaton's motor-protective circuit breakers can thus be exchanged for lockable ones.



**PKE motor starter combinations, all information retrievable**

Via SmartWire-DT, the PKE motor-protective circuit breaker with electronic wide-range overload protection can be integrated into the communication structure of the automation system in just a few steps. This provides deeper insights into the motor feeder load and opens up additional options for optimizing system availability. The associated SmartWire-DT modules can be used to establish the communication connection for compact PKE motor starter combinations with a rated motor current of up to 32 A. They also facilitate direct connection to PKE motor-protective circuit breakers with a rated motor current of up to 65 A.



**Connection technology inside the control panel**

For manufacturers of machinery and systems, the challenge is to strike a balance between maximizing functionality and optimizing costs. Our SmartWire-DT communication system for industrial switchgear has been designed with expansion in mind, both inside and outside the control cabinet, from control to protection, switching, actuation, operation and monitoring.

**EMS2 – five functions in a single device**

The EMS2 electronic motor starter can handle DOL and reversing starts, while offering wide-range overload protection and an emergency-stop function (SiI3). Additional functions can be implemented via SmartWire-DT.



**Electronic motor protection**

With its two current ranges, the electronic motor starter can be used to protect motors from 0.06 kW to 3 kW (400 V / 50 Hz).



**Motor starters with a long service life**

The integrated hybrid switching technology not only ensures minimal wear during start-up, but also increases the contact life by a factor of 10, to approximately 30 million operations.



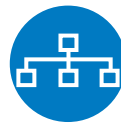
**Integrated reversing starter**

The electronic motor starter enables both clockwise and counterclockwise rotation.



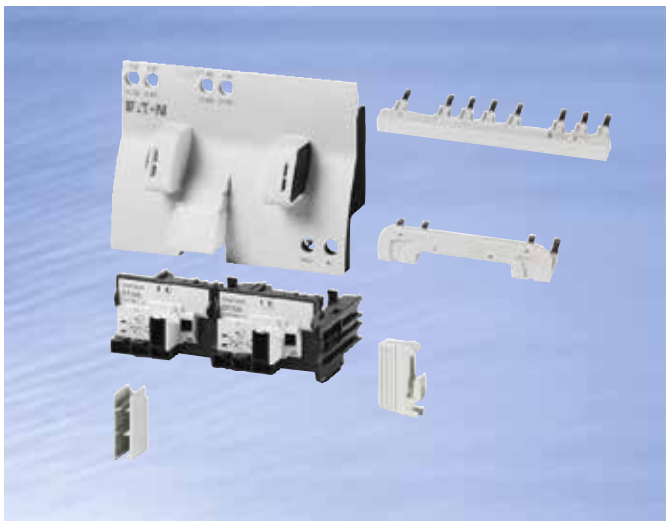
**Safe stop**

Thanks to its dual-channel design, the electronic motor starter ensures safe stops up to SIL3/PLe.



**Intelligent networking**

The SmartWire-DT interface replaces the conventional control wiring and also supplies additional information.



### Multifunctional interface

Thanks to the integrated interface of the combination plug-in technology, using the DILM(C) contactors up to 15.5 A to assemble applications such as reversing starters or star-delta combinations offers unbeatable time savings. The accessories and wiring sets of the combination plug-in technology also offer the option of motor interference suppression, customized contactor control by means of printed-board contacts, or connection of the external motor cable to the contactor via a PE connection.



### Lean solutions

#### DOL/reversing starters based on standard components

We offer DOL starters assembled from standard components in four compact frame sizes. The contactor and the circuit breaker always have the same compact width, so that no space is wasted inside the control cabinet. Our convenient MSC starters with combination plug-in technology for DOL and reversing starters are available for applications up to 15 A. The mechanical connector ensures a secure connection, while the electrical connector provides maximum safety. Additionally, our reversing starters from 16 to 32 A and DOL starters from 0.16 to 32 A can be connected by means of ready-made mounting connectors, which minimizes errors and reduces the time required for wiring.

- Up to 170 A, the contactor and the circuit breaker always have the same compact width, which makes for a particularly space-saving installation of the motor starter inside the control cabinet.
- The PKE motor-protective circuit breaker with electronic wide-range overload protection can be used to assemble compact motor starters up to 65 A.

### Tested motor starter combinations: quick selection – easy ordering

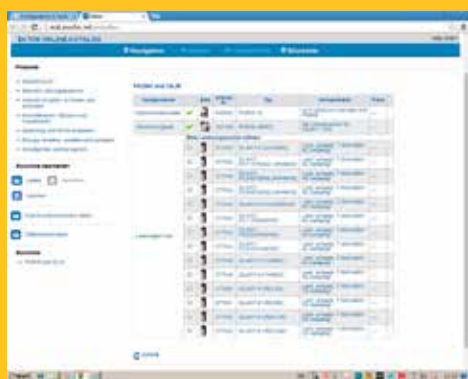
#### Enter the motor data



#### Select the motor starter



#### Select the contactor



#### Generate the order list







No matter whether you are looking to design a DOL, reversing or star-delta motor starter; whether you prefer a fused or fuseless installation; or whether you favor an electromechanical motor starter over an electronic one: The Eaton motor starter configurator guides you through the process in just a few clicks. On request, it will only display IE3-ready switchgear and combinations. In conjunction with our online catalog, it conveniently offers you a complete order list, including wiring sets, which you can then send to your distributor via email – it couldn't be easier.



# Motor starter combinations

Standard

Moeller series

	Motor data			Motor-protective circuit breaker	Contactor Type 1 coordination	Contactor Type 1 coordination	
	AC-3 380 V 400 V 415 V P kW	Rated operational current 400 V $I_e$ A	Rated short-circuit current 380-415 V $I_q$ kA				
PKZM0 ...+DILM7 to DILM15		0.06	0.21	150/50*	PKZM0-0,25	DILM7-...	DILM7-...
		0.09	0.31	150/50*	PKZM0-0,4	DILM7-...	DILM7-...
		0.12	0.41	150/50*	PKZM0-0,63	DILM7-...	DILM7-...
		0.18	0.6	150/50*	PKZM0-0,63	DILM7-...	DILM7-...
		0.25	0.8	150/50*	PKZM0-1	DILM7-...	DILM7-...
		0.37	1.1	150/50*	PKZM0-1,6	DILM7-...	DILM7-...
		0.55	1.5	150/50*	PKZM0-1,6	DILM7-...	DILM7-...
PKZM0 ...+DILM17 to DILM32		0.75	1.9	150/50*	PKZM0-2,5	DILM7-...	DILM7-...
		1.1	2.6	150/50*	PKZM0-4	DILM7-...	DILM7-...
		1.5	3.6	150/50*	PKZM0-4	DILM7-...	DILM7-...
		2.2	5	150/50*	PKZM0-6,3	DILM7-...	DILM7-...
		3	6.6	150/50*	PKZM0-10	DILM7-...	DILM17-...
		4	8.5	150	PKZM0-10	DILM9-...	DILM17-...
		5.5	11.3	50	PKZM0-12	DILM12-...	DILM17-...
		7.5	15.2	50	PKZM0-16	DILM17-...	DILM17-...
PKZM4 ...+DILM38 to DILM65		11	21.7	50	PKZM0-25	DILM25	DILM25
		15	29.3	50	PKZM0-32	DILM32-...	DILM32-...
		18.5	36	50	PKZM4-40	DILM40	DILM40
		22	41	50	PKZM4-50	DILM50	DILM50
		30	55	50	PKZM4-58	DILM65	DILM65
		34	63	50	PKZM4-63	DILM65	DILM65
		37	68	50	NZMN1-M80	DILM80	DILM80
		45	81	50	NZMN1-M100	DILM95	DILM95
NZM...+DILM72 to DILM500		55	99	50	NZMN1-M100	DILM115	DILM115
		75	134	50	NZMN2-M160	DILM150	DILM150
		90	161	50	NZMN2-M200	DILM185A	DILM185A
		110	196	50	NZMN2-M200	DILM225A	DILM225A
		132	231	50	NZMN3-MX350	DILM250	DILM250
		160	279	50	NZMN3-MX350	DILM300A	DILM300A
		200	349	50	NZMN3-MX350	DILM400	DILM400
		250	437	50	NZMN3-ME450	DILM500	DILM500

\*Type 2 coordination

	Motor data			Motor-protective circuit breaker	Contactor Type 1 coordination	Contactor Type 1 coordination
	AC-3 380 V 400 V 415 V P kW	Rated operational current 400 V $I_e$ A	Rated short-circuit current 380-415 V $I_q$ kA			
PKE ...+DILM7 to DILM12	0.06	0.21	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
	0.09	0.31	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
	0.12	0.41	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
	0.18	0.6	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
	0.25	0.8	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
	0.37	1.1	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
PKE ...+DILM17 to DILM32	0.55	1.5	100	PKE12/XTU-4	DILM7-...	DILM17-...
	0.75	1.9	100	PKE12/XTU-4	DILM7-...	DILM17-...
	1.1	2.6	100	PKE12/XTU-4	DILM7-...	DILM17-...
	1.5	3.6	100	PKE12/XTU-4	DILM7-...	DILM17-...
	2.2	5	100	PKE12/XTU-12	DILM7-...	DILM17-...
	3	6.6	100	PKE12/XTU-12	DILM7-...	DILM17-...
	4	8.5	100	PKE12/XTU-12	DILM9-...	DILM17-...
	5.5	11.3	100	PKE12/XTU-12	DILM12-...	DILM17-...
PKE 65 ...+DILM40 to DILM65	7.5	15.2	100	PKE32/XTU-32	DILM17-...	DILM17-...
	11	21.7	100	PKE32/XTU-32	DILM25	DILM25
	15	29.3	100	PKE32/XTU-32	DILM32-...	DILM32-...
	18.5	36	80	PKE65/XTUW-65	DILM40	DILM40
	22	41	80	PKE65/XTUW-65	DILM50	DILM50
	30	55	80	PKE65/XTUW-65	DILM65	DILM65
	34	63	80	PKE65/XTUW-65	DILM65	DILM65
	37	68	100	NZMH2-ME90	DILM80	DILM80
NZM...ME...+DILM80 to DILM500	45	81	100	NZMH2-ME90	DILM95	DILM95
	55	99	100	NZMH2-ME140	DILM115	DILM115
	75	134	100	NZMH2-ME140	DILM150	DILM150
	90	161	100	NZMH2-ME220	DILM185A	DILM185A
	110	196	100	NZMH2-ME220	DILM225A	DILM225A
	132	231	100	NZMH3-ME350	DILM250	DILM250
	160	279	100	NZMH3-ME350	DILM300A	DILM300A
	200	349	100	NZMH3-ME350	DILM400	DILM400
	250	437	100	NZMH3-ME450	DILM500	DILM500

Switching and operating motors



# Motor starter combinations

DOL and reversing starters (Push-in terminals)



Moeller series

Max. load rating	Rated uninterrupted current	Setting range	Motor starter	Motor starter
		Overload release	230 V 50 Hz, 240 V 60 Hz	24 V DC
AC-3 [kW]	$I_b$	$I_r$	<b>Part no.</b>	<b>Part no.</b>
380 V/400 V/415 V	A	A	Article no.	Article no.

## DOL starter – MSC-D-PI complete devices

	0.06	0.21	0.16 - 0.25	<b>MSC-D-0,25-M7(230V50HZ)-PI</b> 199561	<b>MSC-D-0,25-M7(24VDC)-PI</b> 199572
	0.09	0.31	0.25 - 0.4	<b>MSC-D-0,4-M7(230V50HZ)-PI</b> 199562	<b>MSC-D-0,4-M7(24VDC)-PI</b> 199573
	0.12	0.41 0.6	0.4 - 0.63	<b>MSC-D-0,63-M7(230V50HZ)-PI</b> 199563	<b>MSC-D-0,63-M7(24VDC)-PI</b> 199574
	0.25	0.8	0.63 - 1	<b>MSC-D-1-M7(230V50HZ)-PI</b> 199564	<b>MSC-D-1-M7(24VDC)-PI</b> 199575
	0.55	1.1 1.5	1 - 1.6	<b>MSC-D-1,6-M7(230V50HZ)-PI</b> 199565	<b>MSC-D-1,6-M7(24VDC)-PI</b> 199576
	0.75	1.9	1.6 - 2.4	<b>MSC-D-2,4-M7(230V50HZ)-PI</b> 199566	<b>MSC-D-2,4-M7(24VDC)-PI</b> 199577
	1.5	2.6 3.6	2.5 - 4	<b>MSC-D-4-M7(230V50HZ)-PI</b> 199567	<b>MSC-D-4-M7(24VDC)-PI</b> 199578
2.2	5	4 - 6.3	<b>MSC-D-6,3-M7(230V50HZ)-PI</b> 199568	<b>MSC-D-6,3-M7(24VDC)-PI</b> 199579	
	3	6.6	6.3 - 10	<b>MSC-D-10-M9(230V50HZ)-PI</b> 199569	<b>MSC-D-10-M9(24VDC)-PI</b> 199580
	4	8.5			
	5.5	11.3	8 - 12	<b>MSC-D-12-M12(230V50HZ)-PI</b> 199570	<b>MSC-D-12-M12(24VDC)-PI</b> 199581
	7.5	15.2	10 - 16	<b>MSC-D-16-M15(230V50HZ)-PI</b> 199571	<b>MSC-D-16-M15(24VDC)-PI</b> 199582
	3	11.3	6.3 - 10	<b>MSC-D-10-M11(230V50HZ)-PI</b> 199605	<b>MSC-D-10-M11(24VDC)-PI</b> 199610
	4				
	5.5	15.2	8 - 12	<b>MSC-D-12M14(230V50HZ)-PI</b> 199606	<b>MSC-D-12-M14(24VDC)-PI</b> 199611
	7.5	15.2	10 - 16	<b>MSC-D-16-M17(230V50HZ)-PI</b> 199607	<b>MSC-D-16-M17(24VDC)-PI</b> 199612
	11	21.7	20 - 25	<b>MSC-D-25-M25(230V50HZ)-PI</b> 199608	<b>MSC-D-25-M25(24VDC)-PI</b> 199613
	15	29.3	25 - 32	<b>MSC-D-32-M32(230V50HZ)-PI</b> 199609	<b>MSC-D-32-M32(24VDC)-PI</b> 199614

**Notes:** The DOL starters (complete devices) consist of a PKZM0...-PI motor-protective circuit breaker and a DILM ...-PI contactor.

## Reversing starters – MSC-R-PI complete devices

	0.06	0.21	0.16 - 0.25	<b>MSC-R-0,25-M7(230V50HZ)-PI</b> 199583	<b>MSC-R-0,25-M7(24VDC)-PI</b> 199594
	0.09	0.31	0.25 - 0.4	<b>MSC-R-0,4-M7(230V50HZ)-PI</b> 199584	<b>MSC-R-0,4-M7(24VDC)-PI</b> 199595
	0.12	0.41 0.6	0.4 - 0.63	<b>MSC-R-0,63-M7(230V50HZ)-PI</b> 199585	<b>MSC-R-0,63-M7(24VDC)-PI</b> 199596
	0.18	0.6			
	0.25	0.8	0.63 - 1	<b>MSC-R-1-M7(230V50HZ)-PI</b> 199586	<b>MSC-R-1-M7(24VDC)-PI</b> 199597
	0.37	1.1	1 - 1.6	<b>MSC-R-1,6-M7(230V50HZ)-PI</b> 199587	<b>MSC-R-1,6-M7(24VDC)-PI</b> 199598
	0.55	1.5			
0.75	1.9	1.6 - 2.5	<b>MSC-R-2,4-M7(230V50HZ)-PI</b> 199588	<b>MSC-R-2,4-M7(24VDC)-PI</b> 199599	
1.1	2.6	2.5 - 4	<b>MSC-R-4-M7(230V50HZ)-PI</b> 199589	<b>MSC-R-4-M7(24VDC)-PI</b> 199600	
1.5	3.6				
2.2	5	4 - 6.3	<b>MSC-R-6,3-M7(230V50HZ)-PI</b> 199590	<b>MSC-R-6,3-M7(24VDC)-PI</b> 199601	
4	8.5	6.3 - 10	<b>MSC-R-10-M9(230V50HZ)-PI</b> 199591	<b>MSC-R-10-M9(24VDC)-PI</b> 199602	
5.5	11.3	8 - 12	<b>MSC-R-12-M12(230V50HZ)-PI</b> 199592	<b>MSC-R-12-M12(24VDC)-PI</b> 199603	
7.5	15.2	10 - 16	<b>MSC-R-16-M15(230V50HZ)-PI</b> 199593	<b>MSC-R-16-M15(24VDC)-PI</b> 199604	

**Notes:** The DOL starters (complete devices) consist of a PKZM0 ...-PI motor-protective circuit breaker and a DILM ...-PI contactor.



Motor output AC-3 [kW]	Rated uninterrupted current $I_r$ A	Setting range Overload release $I_r$ A	Motor starter 230 V 50 Hz, 240 V 60 Hz <b>Part no.</b> Article no.	Motor starter ready for connection to SmartWire-DT 24 V DC <b>Part no.</b> Article no.
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Electronic DOL starters - MSC-DE-...-PI complete devices

	0.09 0.37	0.3 ... 1.1	0.3 - 1.2	<b>MSC-DE-1,2-M7(230V50HZ)-PI</b> 199615	<b>MSC-DEA-1,2-M7(24VDC)-PI</b> 199619
	0.37 ... 1.5	1.1 ... 3.6	1 - 4	<b>MSC-DE-4-M7(230V50HZ)-PI</b> 199616	<b>MSC-DEA-4-M7(24VDC)-PI</b> 199620
	1.5 ... 5.5	3.6 ... 11.3	3 - 12	<b>MSC-DE-12-M12(230V50HZ)-PI</b> 199617	<b>MSC-DEA-12-M12(24VDC)-PI</b> 199621
	4 ... 7.5	8.5 ... 15.2	8 ... 15.5	<b>MSC-DE-32-M15(230V50HZ)-PI</b> 199618	<b>MSC-DEA-32-M15(24VDC)-PI</b> 199622
	0.09 0.37	0.3 ... 1.1	0.3 - 1.2	<b>MSC-DE-1,2-M8(230V50HZ)-PI</b> 199623	<b>MSC-DEA-1,2-M8(24VDC)-PI</b> 199631
	0.37 ... 1.5	1.1 ... 3.6	1 - 4	<b>MSC-DE-4-M8(230V50HZ)-PI</b> 199624	<b>MSC-DEA-4-M8(24VDC)-PI</b> 199632
	1.5 ... 5.5	3.6 ... 11.3	3 - 12	<b>MSC-DE-12-M14(230V50HZ)-PI</b> 199625	<b>MSC-DEA-12-M14(24VDC)-PI</b> 199633
	4 ... 15	8.5 ... 29.3	8 - 32	<b>MSC-DE-32-M32(230V50HZ)-PI</b> 199626	<b>MSC-DEA-32-M32(24VDC)-PI</b> 199634

**Notes:** The DOL starters (complete devices) consist of a PKZM0...-PI motor-protective circuit breaker and a DILM ...-PI contactor.

Breaking capacity of the PKZM0-...-(S)PI(16/32), PKZM0-...-T-PI with type 1 and 2 coordination

Rated uninterrupted current  $I_U$   
 Rated conditional short-circuit current  $I_q$  IEC/EN 60947-4-1  
 Rated ultimate short-circuit breaking capacity  $I_{CU}$  IEC/EN 60947-2  
 Rated operational short-circuit breaking capacity  $I_{CS}$  IEC/EN 60947-2

$I_U$ A	230 V				400 V				440 V				500 V				690 V			
	$I_q$ kA	$I_{CU}$ kA	$I_{CS}$ kA	A*)	$I_q$ kA	$I_{CU}$ kA	$I_{CS}$ kA	A*)	$I_q$ kA	$I_{CU}$ kA	$I_{CS}$ kA	A*)	$I_q$ kA	$I_{CU}$ kA	$I_{CS}$ kA	A*)	$I_q$ kA	$I_{CU}$ kA	$I_{CS}$ kA	A*)
0.16 - 1	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N
1.6	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N
2.5	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	5	5	5	50
4	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	3	3	3	50
6.3	150	150	150	N	150	150	150	N	150	150	150	N	42	42	42	50	3	3	2	50
10	150	150	150	N	150	150	150	N	50	50	50	50	42	42	11	50	3	3	2	50
12	50	50	38	50	50	50	38	50	50	15	12	50	15	15	4	50	3	3	2	50
16	50	50	38	50	50	50	38	50	50	15	15	50	15	15	4	50	3	3	2	50
20	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50
25	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50
32	50	40	10	50	50	40	10	50	50	10	3	50	10	3	3	50	3	3	1	50




\*) Required back-up fuse, if the short-circuit current exceeds the conditional rated short-circuit current of the devices ( $I_{CS}$  is greater than  $I_q$ )

Switching and operating motors

# Motor starter combinations

DOL starters, reversing starters

Moeller series

				AC operation 230 V, 50 Hz		DC operation 24 V DC		
<b>Motor data</b> Rated short-circuit current: 380 - 415 V				Setting range of overload release	Part no.	Article no.	Part no.	Article no.
Type 1 coordination	Type 2 coordination							
$I_g$ kA	$I_g$ kA			$I_r$ A				
<b>MSC-D complete devices</b>								
	150	50	0.16 - 0.25		<b>MSC-D-0,25-M7(230V50HZ)</b>	281925	<b>MSC-D-0,25-M7(24VDC)</b>	283154
	150	50	0.25 - 0.4		<b>MSC-D-0,4-M7(230V50HZ)</b>	281926	<b>MSC-D-0,4-M7(24VDC)</b>	283155
	150	50	0.4 - 0.63		<b>MSC-D-0,63-M7(230V50HZ)</b>	281927	<b>MSC-D-0,63-M7(24VDC)</b>	283156
	150	50	0.63 - 1		<b>MSC-D-1-M7(230V50HZ)</b>	281929	<b>MSC-D-1-M7(24VDC)</b>	283158
	150	50	1 - 1.6		<b>MSC-D-1,6-M7(230V50HZ)</b>	283140	<b>MSC-D-1,6-M7(24VDC)</b>	283159
	150	50	1.6 - 2.5		<b>MSC-D-2,5-M7(230V50HZ)</b>	283142	<b>MSC-D-2,5-M7(24VDC)</b>	283161
	150	50	2.5 - 4		<b>MSC-D-4-M7(230V50HZ)</b>	283143	<b>MSC-D-4-M7(24VDC)</b>	283162
	150	50	4 - 6.3		<b>MSC-D-6,3-M7(230V50HZ)</b>	283145	<b>MSC-D-6,3-M7(24VDC)</b>	283164
	150	-	6.3 - 10		<b>MSC-D-10-M7(230V50HZ)</b>	283146	<b>MSC-D-10-M7(24VDC)</b>	283165
	150	-	6.3 - 10		<b>MSC-D-10-M9(230V50HZ)</b>	283147	<b>MSC-D-10-M9(24VDC)</b>	283166
	50	-	8 - 12		<b>MSC-D-12-M12(230V50HZ)</b>	283148	<b>MSC-D-12-M12(24VDC)</b>	283167
	50	-	10 - 16		<b>MSC-D-16-M15(230V50HZ)</b>	100414	<b>MSC-D-16-M15(24VDC)</b>	100415
	50	50	6.3 - 10		<b>MSC-D-10-M17(230V50HZ)</b>	101045	<b>MSC-D-10-M17(24VDC)</b>	101047
	50	50	8 - 12		<b>MSC-D-12-M17(230V50HZ)</b>	101046	<b>MSC-D-12-M17(24VDC)</b>	101048
	50	50	10 - 16		<b>MSC-D-16-M17(230V50HZ)</b>	283150	<b>MSC-D-16-M17(24VDC)</b>	283168
50	50	20 - 25		<b>MSC-D-25-M25(230V50HZ)</b>	283151	<b>MSC-D-25-M25(24VDC)</b>	283169	
50	50	25 - 32		<b>MSC-D-32-M32(230V50HZ)</b>	283152	<b>MSC-D-32-M32(24VDC)</b>	283170	
<b>MSC-R complete devices</b>								
	150	50	0.16 - 0.25		<b>MSC-R-0,25-M7(230V50HZ)</b>	283171	<b>MSC-R-0,25-M7(24VDC)</b>	283190
	150	50	0.25 - 0.4		<b>MSC-R-0,4-M7(230V50HZ)</b>	283172	<b>MSC-R-0,4-M7(24VDC)</b>	283191
	150	50	0.4 - 0.63		<b>MSC-R-0,63-M7(230V50HZ)</b>	283173	<b>MSC-R-0,63-M7(24VDC)</b>	283192
	150	50	0.63 - 1		<b>MSC-R-1-M7(230V50HZ)</b>	283175	<b>MSC-R-1-M7(24VDC)</b>	283194
	150	50	1 - 1.6		<b>MSC-R-1,6-M7(230V50HZ)</b>	283176	<b>MSC-R-1,6-M7(24VDC)</b>	283195
	150	50	1.6 - 2.5		<b>MSC-R-2,5-M7(230V50HZ)</b>	283178	<b>MSC-R-2,5-M7(24VDC)</b>	283197
	150	50	2.5 - 4		<b>MSC-R-4-M7(230V50HZ)</b>	283179	<b>MSC-R-4-M7(24VDC)</b>	283198
	150	50	4 - 6.3		<b>MSC-R-6,3-M7(230V50HZ)</b>	283181	<b>MSC-R-6,3-M7(24VDC)</b>	283200
	150	-	6.3 - 10		<b>MSC-R-10-M7(230V50HZ)</b>	283182	<b>MSC-R-10-M7(24VDC)</b>	283201
	150	-	6.3 - 10		<b>MSC-R-10-M9(230V50HZ)</b>	283183	<b>MSC-R-10-M9(24VDC)</b>	283202
	50	-	8 - 12		<b>MSC-R-12-M12(230V50HZ)</b>	283184	<b>MSC-R-12-M12(24VDC)</b>	283203
	50	50	6.3 - 10		<b>MSC-R-10-M17(230V50HZ)</b>	101049	<b>MSC-R-10-M17(24VDC)</b>	101051
	50	50	8 - 12		<b>MSC-R-12-M17(230V50HZ)</b>	101050	<b>MSC-R-12-M17(24VDC)</b>	101052
	50	50	10 - 16		<b>MSC-R-16-M17(230V50HZ)</b>	283186	<b>MSC-R-16-M17(24VDC)</b>	283204
	50	50	20 - 25		<b>MSC-R-25-M25(230V50HZ)</b>	283187	<b>MSC-R-25-M25(24VDC)</b>	283205
50	50	25 - 32		<b>MSC-R-32-M32(230V50HZ)</b>	283188	<b>MSC-R-32-M32(24VDC)</b>	283206	

	Motor data			Setting range of overload release	AC operation		DC operation	
	Rated short-circuit current: 380 - 400 V				230 V, 50 Hz		24 V DC	
	Type 1 coordination	Type 2 coordination			Part no.	Article no.	Part no.	Article no.
	$I_q$ kA	$I_q$ kA	$I_r$ A					
<b>MSC-DE complete devices with PKE</b>								
	100	-	0.3 - 1.2		<b>MSC-DE-1,2-M7(230V50HZ)</b>	121735	<b>MSC-DE-1,2-M7(24VDC)</b>	121736
	100	-	1 - 4		<b>MSC-DE-4-M7(230V50HZ)</b>	121737	<b>MSC-DE-4-M7(24VDC)</b>	121738
	100	-	3 - 12		<b>MSC-DE-12-M7(230V50HZ)</b>	121739	<b>MSC-DE-12-M7(24VDC)</b>	121740
	100	-	3 - 12		<b>MSC-DE-12-M9(230V50HZ)</b>	121741	<b>MSC-DE-12-M9(24VDC)</b>	121742
	100	-	3 - 12		<b>MSC-DE-12-M12(230V50HZ)</b>	121743	<b>MSC-DE-12-M12(24VDC)</b>	121744
	100	100	3 - 12		<b>MSC-DE-12-M17(230V50HZ)</b>	121745	<b>MSC-DE-12-M17(24VDC)</b>	121746
	100	100	8 - 32		<b>MSC-DE-32-M17(230V50HZ)</b>	121747	<b>MSC-DE-32-M17(24VDC)</b>	121748
	100	100	8 - 32		<b>MSC-DE-32-M25(230V50HZ)</b>	121749	<b>MSC-DE-32-M25(24VDC)</b>	121750
	100	100	8 - 32		<b>MSC-DE-32-M32(230V50HZ)</b>	121751	<b>MSC-DE-32-M32(24VDC)</b>	121752

### Combination motor starter, UL 60947-4-1, Type F

Maximum motor output				Setting range		Rated short-circuit breaking capacity $I_{cn}$			Incoming terminal <sup>2)</sup>	Motor-protective circuit breaker	Contactor
Three-phase current HP = PS				Overload release	Short-circuit release	240 V	480 Y 277 V	600 Y 347 V			
200 V	230 V	460 V	575 V		Instantaneous	kA	kA	kA	Part no.	Part no.	Part no.
208 V	240 V	480 V	600 V								
HP	HP	HP	HP	$I_r$ A	$I_{rm}$ A						

### PKZM0, DIL, BK modules

1)			0.1 - 0.16	2.2	50	50	50	BK25/3-PKZ0	PKZM0-0,16	DILEM...(...)	
			0.1 - 0.16	2.2	50	50	18	BK25/3-PKZ0	PKZM0-0,16	DILM7-...(...)	
			0.16 - 0.25	3.4	50	50	50	BK25/3-PKZ0	PKZM0-0,25	DILEM...(...)	
			0.16 - 0.25	3.4	50	50	18	BK25/3-PKZ0	PKZM0-0,25	DILM7-...(...)	
			0.25 - 0.4	5.6	50	50	50	BK25/3-PKZ0	PKZM0-0,4	DILEM...(...)	
			0.25 - 0.4	5.6	50	50	18	BK25/3-PKZ0	PKZM0-0,4	DILM7-...(...)	
			0.4 - 0.63	8.8	50	50	50	BK25/3-PKZ0	PKZM0-0,63	DILEM...(...)	
			0.4 - 0.63	8.8	50	50	18	BK25/3-PKZ0	PKZM0-0,63	DILM7-...(...)	
		½	½	0.63 - 1	14	50	50	50	BK25/3-PKZ0	PKZM0-1	DILEM...(...)
		½	½	0.63 - 1	14	50	50	18	BK25/3-PKZ0	PKZM0-1	DILM7-...(...)
	¾	1	1 - 1.6	22	50	50	50	BK25/3-PKZ0	PKZM0-1,6	DILEM...(...)	
	¾	1	1 - 1.6	22	50	50	18	BK25/3-PKZ0	PKZM0-1,6	DILM7-...(...)	
½	½	1	1½	1.6 - 2.5	35	50	50	50	BK25/3-PKZ0	PKZM0-2,5	DILEM...(...)
½	½	1	1½	1.6 - 2.5	35	50	50	18	BK25/3-PKZ0	PKZM0-2,5	DILM7-...(...)
1	1	2	3	2.5 - 4	56	50	50	50	BK25/3-PKZ0	PKZM0-4	DILEM...(...)
1	1	2	3	2.5 - 4	56	50	50	18	BK25/3-PKZ0	PKZM0-4	DILM7-...(...)
1½	1½	3	5	4 - 6.3	88	50	50	50	BK25/3-PKZ0	PKZM0-6,3	DILEM...(...)
1½	1½	3	5	4 - 6.3	88	65	65	18	BK25/3-PKZ0	PKZM0-6,3	DILM7-...(...)
3	3	7½	10	6.3 - 11	140	65	65	18	BK25/3-PKZ0	PKZM0-10	DILM9-...(...)
3	3	7½	-	9 - 12	168	65	65	18	BK25/3-PKZ0	PKZM0-12	DILM12-...(...)
3	5	10	-	10 - 16	224	18	18	-	BK25/3-PKZ0	PKZM0-16	DILM17-...(...)
5	5	10	-	16 - 20	280	18	18	-	BK25/3-PKZ0	PKZM0-20	DILM25-...(...)
5	7½	15	-	20 - 25	350	18	18	-	BK25/3-PKZ0	PKZM0-25	DILM25-...(...)
7½	10	20	-	25 - 32	448	18	18	-	BK25/3-PKZ0	PKZM0-32	DILM32-...(...)

### PKZM4, DILM, BK modules

3	5	10	15	10 - 16	224	65	65	30	BK50/3-PKZ4-E	PKZM4-16	DILM17-...(...)
5	7½	15	20	16 - 27	350	65	65	30	BK50/3-PKZ4-E	PKZM4-25	DILM25-...(...)
7½	10	25	30	24 - 34	448	65	65	50	BK50/3-PKZ4-E	PKZM4-32	DILM32-...(...)
10	15	30	30	32 - 40	560	65	65	50	BK50/3-PKZ4-E	PKZM4-40	DILM40(...)
10	15	30	-	40 to 52	700	65	65	-	BK50/3-PKZ4-E	PKZM4-50	DILM50(...)
15	15	40	-	50 - 56	812	65	65	-	BK50/3-PKZ4-E	PKZM4-58	DILM65(...)
15	15	40	-	52 - 58	882	65	65	-	BK50/3-PKZ4-E	PKZM4-63	DILM65(...)

### Notes




<sup>1)</sup> The motor output must be calculated on the basis of the rated current. Specified values according to NEC Table 430-150.



<sup>2)</sup> For PKZM0-... Feed-in terminal BK25/3-PKZ0-E or LSA-PKZ-E, for PKZM0-...-SPI BK25/3-PPKZ0-E, for PKZM0-...-PI LSA-PKZ0-E-PI

# Motor starter combinations



DOL starters, connection to SmartWire-DT

Moeller series

	<b>Motor data</b>		Setting range of overload release $I_r$ A 	<b>AC operation</b> 230 V, 50 Hz		<b>DC operation</b> 24 V DC	
	Rated short-circuit current: 380 - 400 V			Part no.	Article no.	Part no.	Article no.
	Type 1 coordination	Type 2 coordination					
	$I_q$ kA	$I_q$ kA					
<b>MSC-DEA complete devices with PKE, ready for SmartWire-DT connection</b>							
	100	-	0.3 - 1.2	-	-	<b>MSC-DEA-1,2-M7(24VDC)</b>	121753
	100	-	1 - 4	-	-	<b>MSC-DEA-4-M7(24VDC)</b>	121754
	100	-	3 - 12	-	-	<b>MSC-DEA-12-M7(24VDC)</b>	121755
	100	-	3 - 12	-	-	<b>MSC-DEA-12-M9(24VDC)</b>	121756
	100	-	3 - 12	-	-	<b>MSC-DEA-12-M12(24VDC)</b>	121757
	100	100	3 - 12	-	-	<b>MSC-DEA-12-M17(24VDC)</b>	121758
	100	100	8 - 32	-	-	<b>MSC-DEA-32-M17(24VDC)</b>	121759
	100	100	8 - 32	-	-	<b>MSC-DEA-32-M25(24VDC)</b>	121760
	100	100	8 - 32	-	-	<b>MSC-DEA-32-M32(24VDC)</b>	121761
















	Part no.	Article no.
<b>SmartWire-DT PKE module (motor starter combination)</b>		
For connecting MSC-DEA... PKE motor-starter combinations with PKE-XTUA... trip blocks and a rated motor power of up to 15 kW/400 V to SmartWire-DT		
  <p>For mounting on a DILM contactor with 24 V DC control voltage. One module is needed for each contactor. An additional SWD contactor module is required to control reversing starters. 1 electrical interlock for surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Selectable overload relay function (ZMR) for switching off the contactor in the event of overload. The DILM 12-XRL and PKZM0-XRM12 wiring sets may not be used. If the contactor coils have a current consumption &gt; 3 A (UL: 2 A), an additional power feed module must be used. A2 connections must not be bridged</p> <p><b>Messages</b> Switch position of contactor/PKE/1-0-A switch Motor current in % Thermal motor image in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block</p> <p><b>Commands</b> Contactor actuation Activation of the overload relay function (ZMR)</p>	<b>PKE-SWD-32</b>	126895

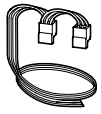
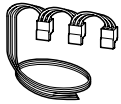
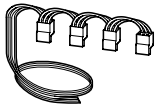
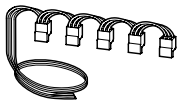






Motor data		Setting range of overload release	AC operation		DC operation			
			230 V, 50 Hz		24 V DC			
Rated short-circuit current: 380 - 415 V		I <sub>r</sub> A	I <sub>q</sub> kA	Part no.	Article no.	Part no.	Article no.	
Type 1 coordination	Type 2 coordination							
<b>PKZ and DILM complete devices on BBA for DOL starters</b>								
	100	50	0.16 - 0.25	MSC-D-0,25-M7(230V50HZ)/BBA	102737	MSC-D-0,25-M7(24VDC)/BBA	102964	
	100	50	0.25 - 0.4	MSC-D-0,4-M7(230V50HZ)/BBA	102738	MSC-D-0,4-M7(24VDC)/BBA	102965	
	100	50	0.4 - 0.63	MSC-D-0,63-M7(230V50HZ)/BBA	102739	MSC-D-0,63-M7(24VDC)/BBA	102966	
	100	50	0.63 - 1	MSC-D-1-M7(230V50HZ)/BBA	102950	MSC-D-1-M7(24VDC)/BBA	102967	
	100	50	1 - 1.6	MSC-D-1,6-M7(230V50HZ)/BBA	102951	MSC-D-1,6-M7(24VDC)/BBA	102968	
	100	50	1.6 - 2.5	MSC-D-2,5-M7(230V50HZ)/BBA	102952	MSC-D-2,5-M7(24VDC)/BBA	102969	
	100	50	2.5 - 4	MSC-D-4-M7(230V50HZ)/BBA	102953	MSC-D-4-M7(24VDC)/BBA	102970	
	100	50	4 - 6.3	MSC-D-6,3-M7(230V50HZ)/BBA	102954	MSC-D-6,3-M7(24VDC)/BBA	102971	
	100	-	6.3 - 10	MSC-D-10-M7(230V50HZ)/BBA	102955	MSC-D-10-M7(24VDC)/BBA	102972	
	100	-	6.3 - 10	MSC-D-10-M9(230V50HZ)/BBA	102956	MSC-D-10-M9(24VDC)/BBA	102973	
	100	-	8 - 12	MSC-D-12-M12(230V50HZ)/BBA	102957	MSC-D-12-M12(24VDC)/BBA	102974	
	50	-	10 - 16	MSC-D-16-M15(230V50HZ)/BBA	102958	MSC-D-16-M15(24VDC)/BBA	102975	
	100	50	6.3 - 10	MSC-D-10-M17(230V50HZ)/BBA	102959	MSC-D-10-M17(24VDC)/BBA	102976	
	100	50	8 - 12	MSC-D-12-M17(230V50HZ)/BBA	102960	MSC-D-12-M17(24VDC)/BBA	102977	
	50	50	10 - 16	MSC-D-16-M17(230V50HZ)/BBA	102961	MSC-D-16-M17(24VDC)/BBA	102978	
50	50	20 - 25	MSC-D-25-M25(230V50HZ)/BBA	102962	MSC-D-25-M25(24VDC)/BBA	102979		
50	50	25 - 32	MSC-D-32-M32(230V50HZ)/BBA	102963	MSC-D-32-M32(24VDC)/BBA	102980		
	<b>PKZ and DILM complete devices on BBA for reversing starters</b>							
	100	50	0.16 - 0.25	MSC-R-0,25-M7(230V50HZ)/BBA	102981	MSC-R-0,25-M7(24VDC)/BBA	102997	
	100	50	0.25 - 0.4	MSC-R-0,4-M7(230V50HZ)/BBA	102982	MSC-R-0,4-M7(24VDC)/BBA	102998	
	100	50	0.4 - 0.63	MSC-R-0,63-M7(230V50HZ)/BBA	102983	MSC-R-0,63-M7(24VDC)/BBA	102999	
	100	50	0.63 - 1	MSC-R-1-M7(230V50HZ)/BBA	102984	MSC-R-1-M7(24VDC)/BBA	103000	
	100	50	1 - 1.6	MSC-R-1,6-M7(230V50HZ)/BBA	102985	MSC-R-1,6-M7(24VDC)/BBA	103001	
	100	50	1.6 - 2.5	MSC-R-2,5-M7(230V50HZ)/BBA	102986	MSC-R-2,5-M7(24VDC)/BBA	103002	
	100	50	2.5 - 4	MSC-R-4-M7(230V50HZ)/BBA	102987	MSC-R-4-M7(24VDC)/BBA	103003	
	100	50	4 - 6.3	MSC-R-6,3-M7(230V50HZ)/BBA	102988	MSC-R-6,3-M7(24VDC)/BBA	103004	
	100	-	6.3 - 10	MSC-R-10-M7(230V50HZ)/BBA	102989	MSC-R-10-M7(24VDC)/BBA	103005	
	100	-	6.3 - 10	MSC-R-10-M9(230V50HZ)/BBA	102990	MSC-R-10-M9(24VDC)/BBA	103006	
	100	-	8 - 12	MSC-R-12-M12(230V50HZ)/BBA	102991	MSC-R-12-M12(24VDC)/BBA	103007	
	100	50	6.3 - 10	MSC-R-10-M17(230V50HZ)/BBA	102992	MSC-R-10-M17(24VDC)/BBA	103008	
	100	50	8 - 12	MSC-R-12-M17(230V50HZ)/BBA	102993	MSC-R-12-M17(24VDC)/BBA	103009	
	50	50	10 - 16	MSC-R-16-M17(230V50HZ)/BBA	102994	MSC-R-16-M17(24VDC)/BBA	103010	
50	50	20 - 25	MSC-R-25-M25(230V50HZ)/BBA	102995	MSC-R-25-M25(24VDC)/BBA	103011		
50	50	25 - 32	MSC-R-32-M32(230V50HZ)/BBA	102996	MSC-R-32-M32(24VDC)/BBA	103012		

Switching and operating motors



Function	Rated operational power AC-53a	Setting range Overload release	Connection system	Operating voltage 24 V DC Part no. Article no.	Operating voltage 230 V AC Part no. Article no.
<b>EMS2 electronic motor starter</b> Motor protection Switching mode: safety output stage with bypass, three-phase cut-off. Emergency stop via an additional enable terminal up to SIL3/Plc.					
<b>DOL starter</b>					
		0.06 - 0.75	0.18 - 2.4	Push-in terminals	<b>EMS2-DO-T-2,4-24VDC</b> 192391
	Emergency stop	0.06 - 1.1	0.18 - 3		<b>EMS2-DOS-T-3-24VDC</b> <sup>1)2)</sup> 192393
		0.55 - 3	1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-DO-T-9-24VDC</b> 192395
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-DOS-T-9-24VDC</b> <sup>1)2)</sup> 192397
For connection to SmartWire-DT for extended diagnostics, motor current can also be adjusted via SmartWire-DT					
		0.06 - 1.1	0.18 - 3		<b>EMS2-DO-T-3-SWD</b>  192383
	Emergency stop	0.06 - 1.1	0.18 - 3		<b>EMS2-DOS-T-3-SWD</b> <sup>1)2)</sup>  192385
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		<b>EMS2-DO-T-9-SWD</b>  192387
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-DOS-T-9-SWD</b> <sup>1)2)</sup>  192389
		0.06 - 0.75	0.18 - 2.4	Screw terminals	<b>EMS2-DO-Z-2,4-24VDC</b> 197160
	Emergency stop	0.06 - 1.1	0.18 - 3		<b>EMS2-DOS-Z-3-24VDC</b> <sup>1)2)</sup> 197162
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		<b>EMS2-DO-Z-9-24VDC</b> 197164
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-DOS-Z-9-24VDC</b> <sup>1)2)</sup> 197166
<b>Reversing starter</b>					
		0.06 - 0.75	0.18 - 2.4	Push-in terminals	<b>EMS2-RO-T-2,4-24VDC</b> 192392
	Emergency stop	0.06 - 1.1	0.18 - 3		<b>EMS2-ROS-T-3-24VDC</b> <sup>1)2)</sup> 192394
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		<b>EMS2-RO-T-9-24VDC</b> 192396
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-ROS-T-9-24VDC</b> <sup>1)2)</sup> 192398
For connection to SmartWire-DT for extended diagnostics, motor current can also be adjusted via SmartWire-DT					
		0.06 - 1.1	0.18 - 3		<b>EMS2-RO-T-3-SWD</b>  192384
	Emergency stop	0.06 - 1.1	0.18 - 3		<b>EMS2-ROS-T-3-SWD</b> <sup>1)2)</sup>  192386
		0.55 - 3	1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-RO-T-9-SWD</b>  192388
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-ROS-T-9-SWD</b> <sup>1)2)</sup>  192390
		0.06 - 0.75	0.18 - 2.4	Screw terminals	<b>EMS2-RO-Z-2,4-24VDC</b> 197161
	Emergency stop	0.06 - 1.1	0.18 - 3		<b>EMS2-ROS-Z-3-24VDC</b> <sup>1)2)</sup> 192390
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		<b>EMS2-RO-Z-9-24VDC</b> 197165
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-ROS-Z-9-24VDC</b> <sup>1)2)</sup> 197167
<b>Reversing starter with integrated short-circuit protection</b>					
		0.06 - 1.1	0.18 - 3	Screw terminals	<b>EMS2-ROSF-Z-3-24VDC</b> <sup>1)2)</sup> 192399
	Emergency stop	0.55 - 3	1.5 - 7 (AC-53a) 9 (AC-51)		<b>EMS2-ROSF-Z-9-24VDC</b> <sup>1)2)</sup> 192400
<b>Notes</b>					
1) Explosion-proof (according to ATEX 94/9/EC) II (2) G [Ex db] [Ex eb] [Ex pxb] II (2) D [Ex tb] [Ex pb]			2) EC-type examination certificate, PTB 13 ATEX 3000		

	Poles	Devices Quantity	For use with	Part no.	Article no.
<b>Mains voltage (50/60 Hz) <math>U_{LN}</math>: 200 (-10%) - 240 (+10%) V</b> $U_e$ = 1-phase / $U_2$ = 3-phase					
	3	2	EMS2-DO-Z EMS2-RO-Z	<b>EMS2-XBR-Z-2</b>	197172
			EMS2-DO-T EMS2-DO-T-SWD EMS2-RO-T EMS2-RO-T-SWD	<b>EMS2-XBR-T-2</b>	197176
		3	EMS2-DO-Z EMS2-RO-Z	<b>EMS2-XBR-Z-3</b>	197173
			EMS2-DO-T EMS2-DO-T-SWD EMS2-RO-T EMS2-RO-T-SWD	<b>EMS2-XBR-T-3</b>	197177
		4	EMS2-DO-Z EMS2-RO-Z	<b>EMS2-XBR-Z-4</b>	197174
	EMS2-DO-T EMS2-DO-T-SWD EMS2-RO-T EMS2-RO-T-SWD		<b>EMS2-XBR-T-4</b>	197178	
	5	EMS2-DO-Z EMS2-RO-Z	<b>EMS2-XBR-Z-5</b>	197175	
		EMS2-DO-T EMS2-DO-T-SWD EMS2-RO-T EMS2-RO-T-SWD	<b>EMS2-XBR-T-5</b>	197179	
	1	2	EMS2-...-T-...	<b>EMS-XBR-2</b>	171268
		3	EMS2-...-Z-...	<b>EMS-XBR-3</b>	171269
		4		<b>EMS-XBR-4</b>	171270
		5		<b>EMS-XBR-5</b>	171271
<b>Control current connectors</b> A=0.75 mm², blue, 2 m cable					
	3	2	EMS2-...-T-...	<b>EMS-XCW-2</b>	172741
		3	EMS2-...-Z-...	<b>EMS-XCW-3</b>	172742
		4		<b>EMS-XCW-4</b>	172743
		5		<b>EMS-XCW-5</b>	172744
<b>Adapter</b> Mounting rail adapter					
	3	1	EMS2-ROSF-...	<b>EMS2-XTH</b>	192401
<b>Busbar adapter</b>					
	3	1	EMS2-ROSF-...	<b>EMS2-XBB-60</b>	192408

Switching and  
operating motors

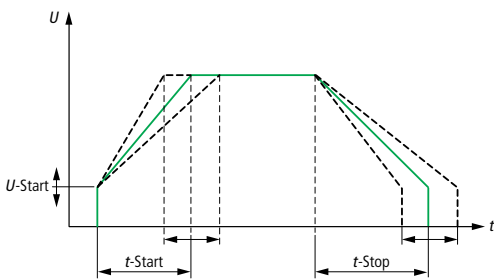


**DS7**

**S811+**

# DS7 and S811+ soft starters

## Soft starting for any application



Soft starters enable the drive to be optimally adapted to the application in question, and stop functions and the starting voltage can also be configured.

Soft starting is the modern alternative to star-delta starters. Electronic soft starters meet customer requirements for smooth torque increases and targeted current reduction during the start-up phase. During the start-up phase, they control the power supply of a three-phase motor in such a way that it adapts to the load behavior of the machine. As a result, the mechanical equipment is accelerated gently, which has positive effects on the operating characteristics and work processes while avoiding any negative impact.

With the DS7 up to 200 A and the S811+ up to 850 A, we offer two separate soft starter series. The DS7 is the ideal choice for standard applications, while the S811+ series offers maximum functionality.



### DS7 soft starter – soft start, strong torque

Soft starters have now become a viable alternative to star-delta starters. The DS7 replaces the mechanical contactor and also adds a soft start function. Our patented technology ensures exceptionally smooth motor run-ups at higher torques than alternative solutions are able to deliver. Extended maintenance intervals and reduced operating costs are welcome side effects of this technology. The compact DS7 soft starter has been conceived for standard applications such as pumps, fans and small conveyor belts.



### S811+ soft starter – a powerful yet compact device

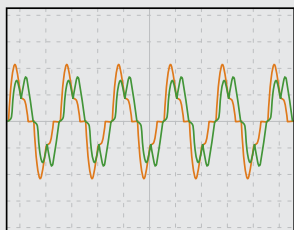
Thanks to the combination of three-phase control, internal bypass and comprehensive monitoring and protection features, the S811+ ensures smooth starts and safe continuous operation of three-phase motors, even in applications with high load torques. The devices can be connected by means of both in-line and delta connections. Using a digital operating and display unit, the soft starters of the S811+ series can be adapted to both simple and more demanding applications.

Consisting of only five sizes with rated currents from 37 A to 850 A and mains voltages from 200 V to 690 V, the S811+ is one of the world's smallest, most compact soft starters.

### Application examples

- Three-phase inductive loads
- Silent and smooth motor start in transportation and conveyor systems
- Smooth pump start reduces the load on the entire system (water hammer)
- Contactless switching of pumps in the harsh environments of chemical and tank facilities
- In fan drive applications, soft starting reduces wear on the V belts

### Current flow during the uncontrolled phase



- Standard control options:
- Symmetrical control with high DC components
- New process from Eaton:
- Asymmetrical control without any DC components

### Asymmetrical control: it doesn't get any smoother than this

The special control mode (asymmetrical ignition control) of the soft start function avoids the DC components that normally occur when using two-phase soft starters (technology patented by Eaton). This suppresses the formation of an elliptical rotating field, which would lead to irregular acceleration of the motor and unnecessarily prolong the ramp-up time. The true running characteristics of the DS7 are thus comparable with those of a three-phase soft starter.

### DS7 soft starters with SmartWire-DT – direct access to all parameters

Direct control access to all parameters of SmartWire-DT equipped soft starters for maximum ease of operation. Users are able to read and overwrite the potentiometer settings and to directly retrieve status, error and diagnostic messages, which ensures maximum data transparency. And thanks to the plug-in technology, which also includes the power supply, connecting the soft starter is fast and error-free.

The benefits at a glance:

- Reduction of the I/O level
- Plug-in control wiring avoids wiring errors
- Integrated solution that doesn't require any additional options

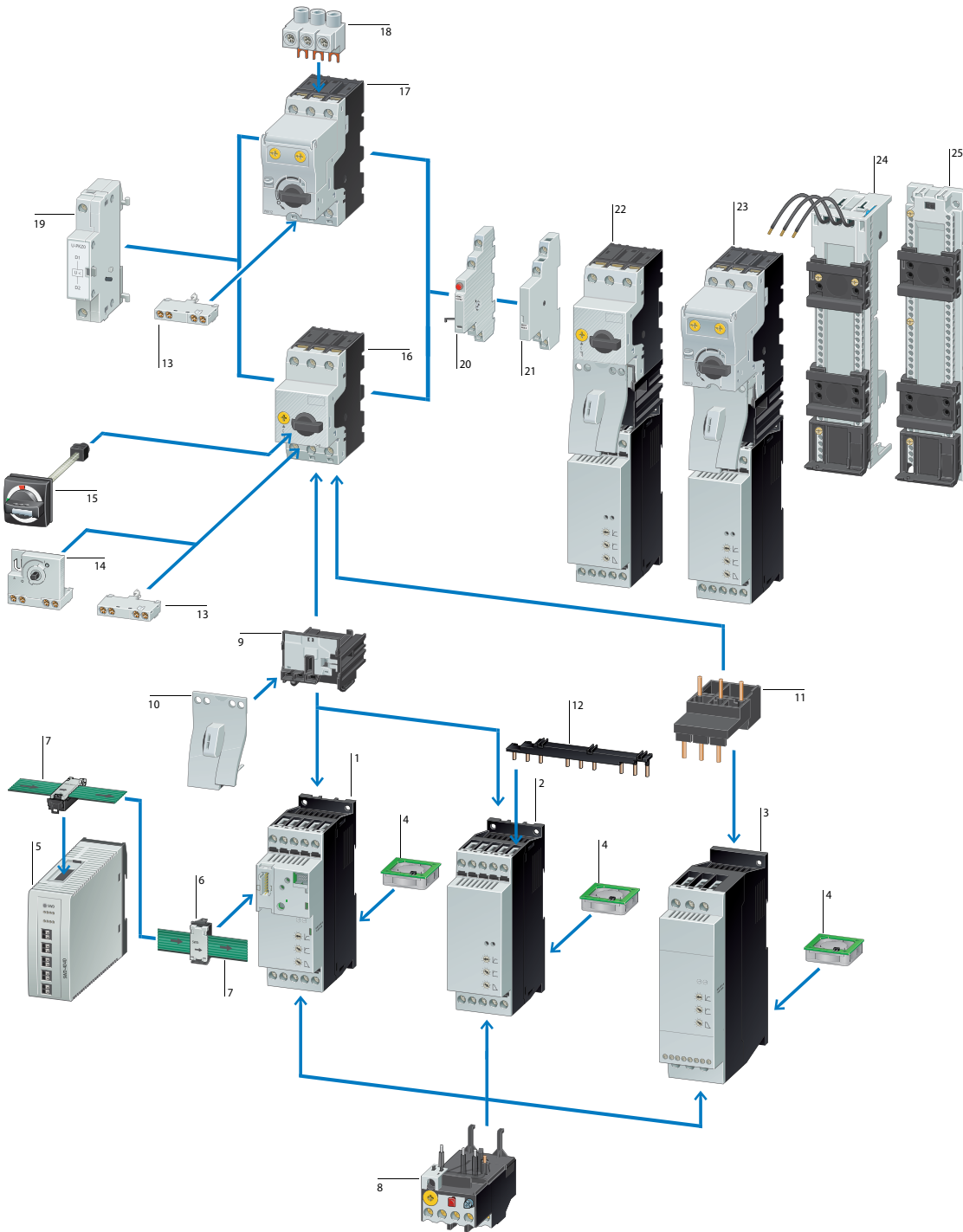




# Soft starters

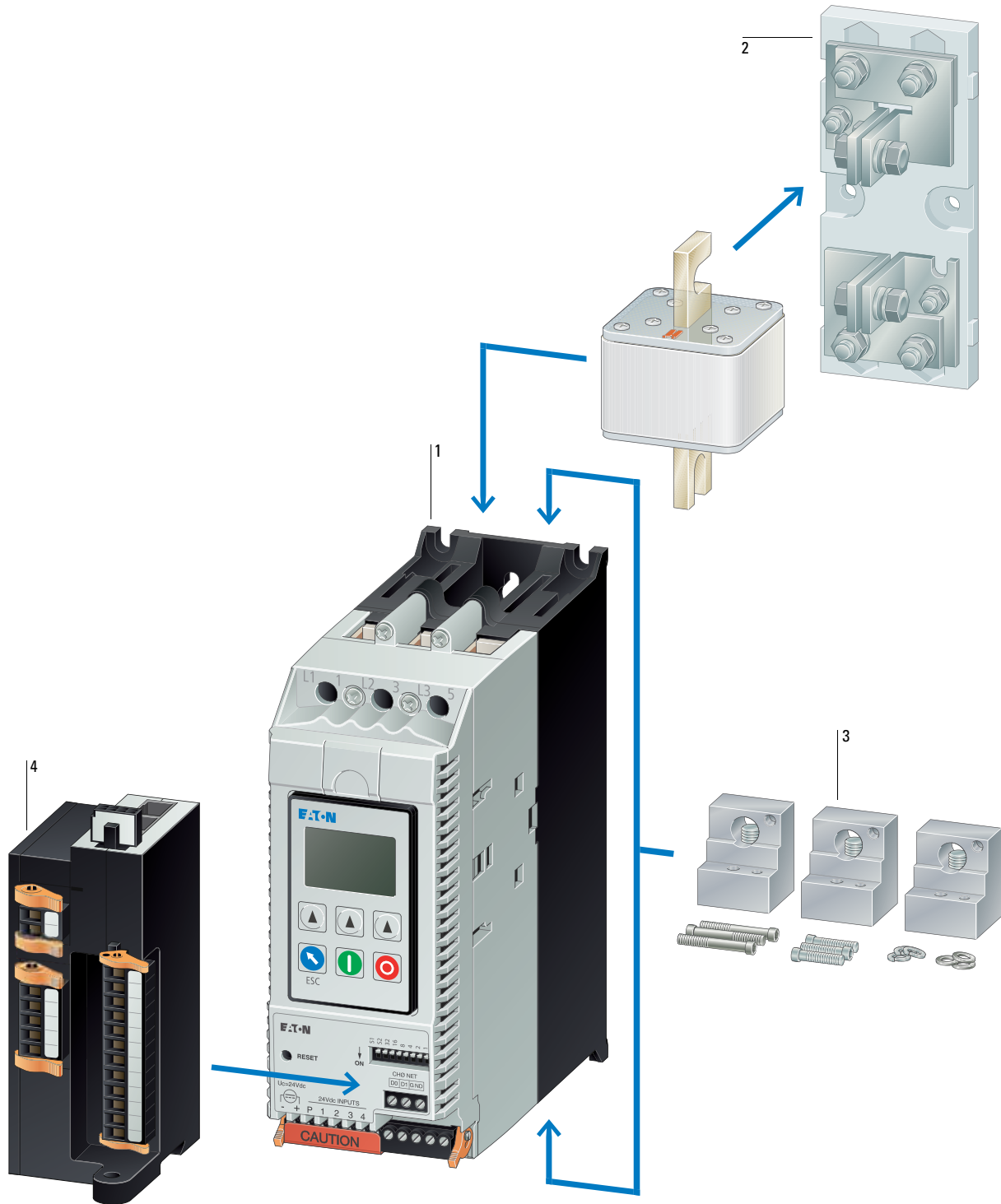
DS7 system overview < 32 A

Moeller series




- |       |   |    |   |
|-------|---|----|---|
| 1     | Soft starter DS7 with SmartWire-DT                                      | 14 | Early-make auxiliary contacts           |
| 2     | DS7 soft starter in frame size 1 for assigned motor currents up to 12 A | 15 | Door-coupling handle                    |
| 3     | DS7 soft starter in frame size 2 for assigned motor currents up to 32 A | 16 | PKZM0 motor-protective circuit breakers |
| 4     | Device fan (DS7-FAN-32)   | 17 | PKE motor-protective circuit breaker    |
| 5     | SmartWire-DT gateway  | 18 | Incoming terminal                       |
| 6     | SmartWire-DT device plug  | 19 | Voltage release                         |
| 7     | SmartWire-DT ribbon cable   | 20 | Trip indicators                         |
| 8     | Motor-protection relays   | 21 | Standard auxiliary contacts             |
| 9, 10 | Wiring set PKZM0-XDM, with combination plug-in technology               | 22 | Motor-starter combination with PKZ      |
| 11    | PKZM0-XM wiring set   | 23 | Motor-starter combination with PKE      |
| 12    | Three-phase busbar link   | 24 | Busbar adapter                          |
| 13    | Standard auxiliary contacts   | 25 | DIN-rail adapter                        |





- 1 S811+ soft starter
- 2 Fuses and fuse bases
- 3 Terminals
- 4 Fieldbus interface



Switching and operating motors

Rated operational current of the device (AC-53) $I_b$ A	Assigned motor rating At 400 V, 50 Hz		Part no.	Article no.	Part no.	Article no.
	P kW	At 460 V, 60 Hz P HP				
			$U_c$ 24 V AC/DC $U_s$ 24 V AC/DC Standard temperature range		$U_c$ 24 V AC/DC $U_s$ 24 V AC/DC Expanded temperature down to -40 °C	
<b>Soft starters</b>						
Soft starters for three-phase loads Mains voltage (50/60 Hz) $U_{LN}$ 200 - 480 V AC						
4	1.5	2	DS7-340SX004N0-N	134847	DS7-340SX004N0-L	171740
7	3	5	DS7-340SX007N0-N	134849	DS7-340SX007N0-L	171741
9	4	5	DS7-340SX009N0-N	134910	DS7-340SX009N0-L	171742
12	5.5	10	DS7-340SX012N0-N	134911	DS7-340SX012N0-L	171743
16	7.5	10	DS7-340SX016N0-N	134912	DS7-340SX016N0-L	171744
24	11	15	DS7-340SX024N0-N	134913	DS7-340SX024N0-L	171745
32	15	25	DS7-340SX032N0-N	134914	DS7-340SX032N0-L	171746
41	22	30	DS7-340SX041N0-N	134916	DS7-340SX041N0-L	171747
55	30	40	DS7-340SX055N0-N	134917	DS7-340SX055N0-L	171748
70	37	50	DS7-340SX070N0-N	134918	DS7-340SX070N0-L	171749
81	45	60	DS7-340SX081N0-N	134919	DS7-340SX081N0-L	171750
100	55	75	DS7-340SX100N0-N	134920	DS7-340SX100N0-L	171751
135	75	100	DS7-340SX135N0-N	134921	DS7-340SX135N0-L	171752
160	90	125	DS7-340SX160N0-N	134922	DS7-340SX160N0-L	171753
200	110	150	DS7-340SX200N0-N	134923	DS7-340SX200N0-L	171754
			$U_c$ 110 - 230 V AC $U_s$ 110 - 230 V AC		$U_c$ 24 V DC $U_s$ 24 V DC	
4	1.5	2	DS7-342SX004N0-N	134925	DS7-34DSX004N0-D	134943
7	3	5	DS7-342SX007N0-N	134927	DS7-34DSX007N0-D	134945
9	4	5	DS7-342SX009N0-N	134928	DS7-34DSX009N0-D	134946
12	5.5	10	DS7-342SX012N0-N	134929	DS7-34DSX012N0-D	134947
16	7.5	10	DS7-342SX016N0-N	134930	DS7-34DSX016N0-D	134948
24	11	15	DS7-342SX024N0-N	134931	DS7-34DSX024N0-D	134949
32	15	25	DS7-342SX032N0-N	134932	DS7-34DSX032N0-D	134950
41	22	30	DS7-342SX041N0-N	134934	DS7-34DSX041N0-D	134952
55	30	40	DS7-342SX055N0-N	134935	DS7-34DSX055N0-D	134953
70	37	50	DS7-342SX070N0-N	134936	DS7-34DSX070N0-D	134954
81	45	60	DS7-342SX081N0-N	134937	DS7-34DSX081N0-D	134955
100	55	75	DS7-342SX100N0-N	134938	DS7-34DSX100N0-D	134956
135	75	100	DS7-342SX135N0-N	134939	DS7-34DSX135N0-D	134957
160	90	125	DS7-342SX160N0-N	134940	DS7-34DSX160N0-D	134958
200	110	150	DS7-342SX200N0-N	134941	DS7-34DSX200N0-D	134959

### Notes

DS7 frame sizes



For use with		Part no.	Article no.
<b>Devices fans</b>			
Device fans for increasing the load cycle (more starts per hour/higher or longer starting current)			
Flush-mounted fans 	DS7-34...SX004... DS7-34...SX007... DS7-34...SX009... DS7-34...SX012... DS7-34...SX016... DS7-34...SX024... DS7-34...SX032...	<b>DS7-FAN-032</b>	135553
Bottom fan 	DS7-34...SX041... DS7-34...SX055... DS7-34...SX070... DS7-34...SX081... DS7-34...SX100...  DS7-34...SX135... DS7-34...SX160... DS7-34...SX200...	<b>DS7-FAN-100</b>  <b>DS7-FAN-200</b>	169021  169022

Frame size	Rated operational current	Assigned motor rating				Part no.	Article no.
	AC-53	At 230 V, 50 Hz kW	At 230 V, 60 Hz HP	At 400 V, 50 Hz kW	At 460 V, 60 Hz HP		
	$I_e$ A						

<b>S811+ soft starter</b>							
Soft starters for three-phase loads with control panel							
Mains voltage (50/60 Hz) $U_{IN}$ : 200 - 600 V AC							
In-line/delta configuration							
Supply voltage $U_c$ : 24 V DC							
Control voltage $U_c$ : 24 V DC							
With integrated bypass contacts							
Terminal blocks are required for connecting the frame sizes T, U, V -> accessories							
N	37	7.5	10	18.5	25	<b>S811+N37P3S</b>	168977
	66	18.5	20	30	50	<b>S811+N66P3S</b>	168979
R	105	30	40	55	75	<b>S811+R10P3S</b>	168981
	135	37	50	75	100	<b>S811+R13P3S</b>	168983
T	180	55	60	90	150	<b>S811+T18P3S</b>	168985
	240	75	75	132	200	<b>S811+T24P3S</b>	168988
	304	90	100	160	250	<b>S811+T30P3S</b>	168991
U	361	110	125	200	300	<b>S811+U36P3S</b>	169872
	420	132	150	200	350	<b>S811+U42P3S</b>	169873
V	361	110	125	200	300	<b>S811+V36P3S</b>	168994
	420	132	150	200	350	<b>S811+V42P3S</b>	168997
	500	160	200	250	400	<b>S811+V50P3S</b>	169000
	650	200	250	315	500	<b>S811+V65P3S</b>	169003
	720	250	-	400	600	<b>S811+V72P3S</b>	169006
	850	-	-	450	600	<b>S811+V85P3S</b>	169009
	1000	-	-	560	750	<b>S811+V10P3S</b>	169012

Switching and operating motors

### Notes

S811+ frame sizes



S811+, N

S811+, R

S811+, T

S811+, U

S811+, V



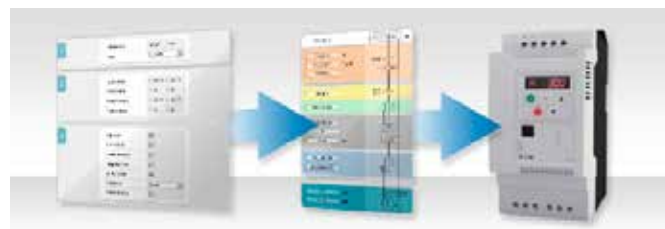
# PowerXL – the right drive technology for every application



Download the catalog:  
[Eaton.com/catalog](http://Eaton.com/catalog)

Our efficient drive solutions are as diverse as the requirements of our customers – from starting motors in simple machines to controlling the speed of complex applications and heavy loads.

The two product families PowerXL and 9000X\* cover every application, from speed starters to water-cooled variable frequency drives. The latest additions to the PowerXL family are the DB1 and DM1 variable frequency drives.



\*For further information on the 9000X variable frequency drives, please refer to the relevant product catalog.

## PowerXL selection aid Simple project planning and engineering

Thanks to this online selection aid, planning is easy, enabling you to select the right drive for your application, as well as the associated switchgear, protective devices, chokes and filters, in each case with reference to the relevant part numbers.

[Eaton.com/tools](http://Eaton.com/tools)

 Get more information

## PowerXL DE1/DE11 variable speed starter



The PowerXL DE1/DE11 variable speed starter provides ease of use and maximum reliability while offering adjustable motor speed and improved energy efficiency. These Eaton products thus close the gap between conventional motor starters and variable speed drives, combining the advantages of both in a single device. In addition to the standard features, the DE11 version also comes with CANopen, plug-in control terminals and a configurable output relay.



### Power range:

- 0.25 ... 2.2 kW (U<sub>e</sub>: 1~ 230 V, U<sub>2</sub>: 3~ 230 V)
- 0.37 ... 7.5 kW (U<sub>e</sub>: 3~ 400 V, U<sub>2</sub>: 3~ 400 V)

### Features:

- Space-saving overall width of 45 mm (frame size 1)
- Out-of-box commissioning without any configuration
- No special drive technology knowledge required
- Can be configured with a screwdriver via the optional DXE-EXT-SET module
- Trip-free design for maximum machine availability
- Suitable for ambient temperatures up to 60 °C
- International standards (CE, UL, cUL, cTick, RoHS)
- DE11: CANopen, plug-in control terminals, configurable output relay
- DE1: Modbus RTU integrated
- Optional communication modules: PROFINET, EtherNet/IP and SmartWire-DT

## Commissioning

### Easy handling, just like a motor starter

The DE1 variable speed starter does not require any specialized knowledge of drive technology – neither during installation nor commissioning. The handling of the compact variable speed starter is as convenient and simple as that of a motor starter.

You only need to take the device out of the box, wire it like a motor starter, and the DE1 variable speed starter is ready for operation. It couldn't be easier. In addition, out-of-the-box commissioning minimizes the likelihood of installation errors and thus reduces the amount of work and the associated costs compared to previous solutions.



1 Snap the speed starter onto the top-hat rail.



2 Connect the main circuits.



3 Connect the control current.



4 Switch on the device. The motor will run with variable speed.

## Configuration by means of a screwdriver

### DXE-EXT-SET plug-in configuration module

In addition to out-of-the-box commissioning, which does not require any prior configuration, you can use the optional DXE-EXT-SET plug-in configuration module to individually adjust the most important parameters (such as the ramp time or the motor protection and control terminal functions) to the needs of your application – simply by using a screwdriver.





# PowerXL DC1 variable frequency drive – compact machinery drive



The compact PowerXL variable frequency drive is particularly suitable for basic pump, fan and conveyor belt systems. The device is very quick and easy to configure and commission and thus generates measurable cost savings.

### Power range:

- 0.37 ... 0.55 kW (Ue: 1~ 115 V, U2: 1~ 115 V)
- 0.37 ... 1.1 kW (Ue: 1~ 115 V, U2: 3~ 230 V)
- 0.37 ... 1.1 kW (Ue: 1~ 230 V, U2: 1~ 230 V)
- 0.37 ... 4 kW (Ue: 1~ 230 V, U2: 3~ 230 V)
- 0.37 ... 11 kW (Ue: 3~ 230 V, U2: 3~ 230 V)
- 0.75 ... 22 kW (Ue: 3~ 400 V, U2: 3~ 400 V)

### Features:

- Fast commissioning thanks to 14 basic parameters
- High overload resistance: 150 % for 60 seconds, 175 % for two seconds.

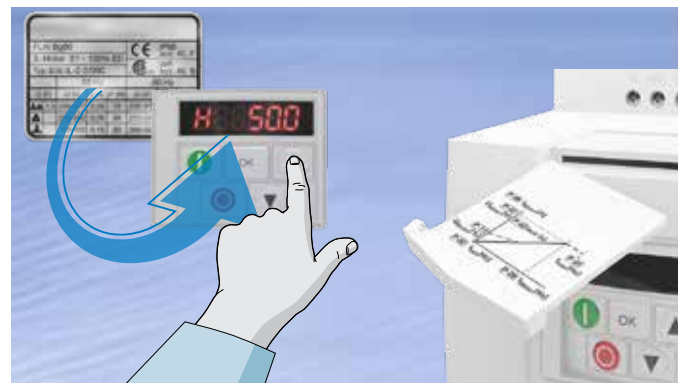


- Ambient temperatures of up to 50 °C without derating
- Integrated Modbus RTU and CANopen
- Optional communication modules: PROFINET, EtherNet/IP and SmartWire-DT
- Degree of protection: IP20 and IP66
- Integrated EMC filter
- Integrated braking transistor
- Integrated PI controller
- V/f control, sensorless vector control, PM motors, BLDC motors, SynRel motors
- Voltage boost
- DC brake
- Removable control terminal block
- International standards (CE, UL, cUL, c-Tick, RoHS, EAC, UkrSEPRO)



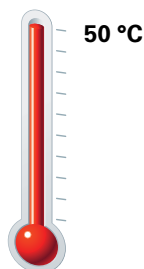
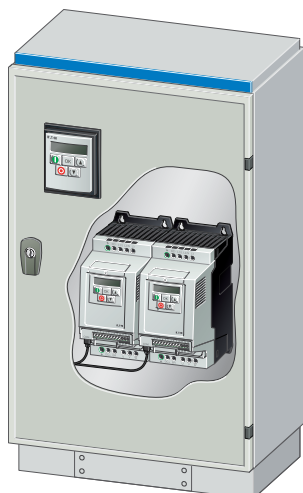
### Simply copy the configuration via the COM stick

Using the communication stick, you can easily and quickly transfer parameters from your laptop to the PowerXL drives via Bluetooth. And you can just as easily copy parameter sets from one variable frequency drive to another.



### Optimized configuration

The DC1 and DA1 series can be conveniently configured using the input keys. For the DE1, an optional plug-in configuration module is also available. Using the 14 basic parameters, the main data of all devices (such as the motor current, ramp times and the input and output functions) can be quickly and easily adjusted, and applications can be rapidly put into operation. The factory settings of the 14 basic parameters for all DE1, DC1, DA1, DB1 and Rapid Link products enable direct commissioning of the application without any additional configuration changes. The integrated info card further supports quick and easy wiring and commissioning.



### No derating at 50 °C

All IP20 devices from the DE1, DC1 and DA1 series support ambient temperatures of up to 50 °C without derating, i.e. the devices can also be operated at their rated current under these conditions. In addition, the devices can be mounted side-by-side to reduce the amount of space required inside the control cabinet.

The benefits at a glance:

- Optimized control cabinet design
- Cost savings, as no additional ventilation/cooling is needed

# PowerXL DA1 variable frequency drive – advanced machinery drive



The PowerXL DA1 is a variable frequency drive for the machine building sector. It offers multiple communication protocols, can be tailored to your specific needs thanks to the integrated function block editor (PLC), and features a powerful vector mode for highly dynamic applications.

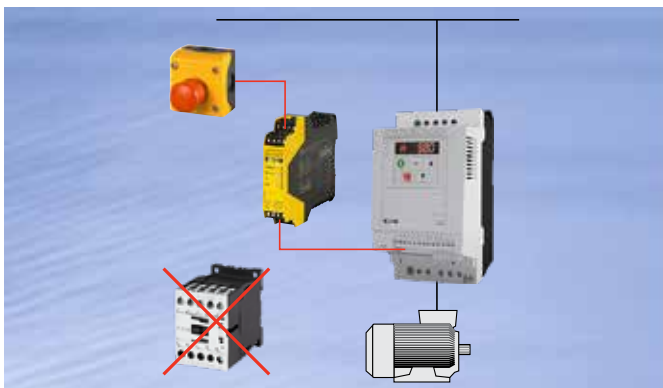
## Power range:

- 0.75 ... 2.2 kW (Ue: 1~ 230 V, U2: 3~ 230 V)
- 0.75 ... 75 kW (Ue: 3~ 230 V, U2: 3~ 230 V)
- 0.75 ... 250 kW (Ue: 3~ 400 V, U2: 3~ 400 V)
- 0.75 ... 110 kW (Ue: 3~ 575 V, U2: 3~ 575 V)

## Features:

- High overload resistance: 150 % for 60 seconds, 200 % for four seconds.
- Modbus RTU and CANopen integrated
- Ambient temperatures of up to 50 °C without derating
- Integrated EMC filter

- Integrated braking transistor
- Various I/O expansions
- V/f control, sensorless and closed-loop vector control, PM motors, BLDC motors, SynRel motors
- Optional fieldbus interfaces
- STO (safe torque off) SIL 2/PL d
- Optional high-resolution OLED display
- International standards (CE, UL, cUL, c-Tick, RoHS, EAC, UkrSEPRO, DNV)



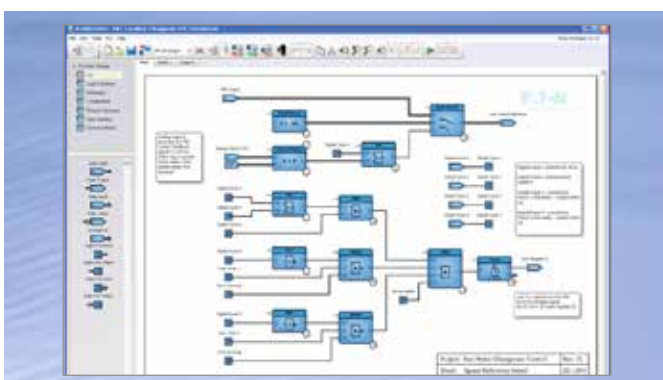
## Built-in STO (safe torque off) safety function

With its safe torque off (STO) function, the DA1 drive meets the basic requirements for built-in safety. This ensures that the motor remains torque-free and prevents unintentional start-up, so that there is no need for any additional mains contactor.



## Maximum flexibility when it comes to communication

The DE1 series comes with Modbus RTU as the standard integrated communication protocol. In addition, the DC1, DB1 and DA1 series also feature the CANopen protocol. All devices of the DE1, DC1 and DA1 series can be expanded by means of PROFIBUS, EtherNet/IP and SmartWire-DT modules. Via PROFIBUS and SmartWire-DT, you can control, configure and diagnose the DE1, DC1 and DA1 variable frequency drives based on the cyclic and acyclic services in the Profidrive profile. The DA1 series comes with an expansion slot for plug-in modules for PROFIBUS, PROFIBUS, EtherNet/IP, EtherCAT, DeviceNet or Modbus/TCP communication. Function modules are available for connecting the DE1, DC1 and DA1 devices to a PLC or an HMI.



## Function block editor – programming made easy

Using the function block editor, you can create your own logical links for the DA1, such as time dependencies within the drive, thus enabling you to generate your own applications. This makes it possible to adapt the drives to any application, cutting down on additional hardware costs in the process.

# PowerXL DM1 and DG1 universal variably frequency drives



The DM1 universal variable frequency drives are part of our next-generation PowerXL series. They have been specifically designed for today's demanding applications: Thanks to their energy saving algorithm, high short-circuit rating and rugged design, they offer increased efficiency, safety and reliability.



The DG1 universal variable frequency drives are part of our next-generation PowerXL series. They are specifically designed for modern, demanding applications: Thanks to their patented energy-saving algorithm, high short-circuit ratings and rugged design, they offer increased efficiency, safety and reliability, with additional circuit-board protection (conformal coated) for aggressive environments.

### Power range:

- 0.37 - 1.1 kW (115 V)
- 0.55 - 15 kW (230 V)
- 0.75 - 22 kW (400 V)
- 5 - 25 HP (575 V)

### Features:

- The integrated web server makes it possible to configure and operate the device without the need to install any additional software.
- The DM1 can also communicate with PowerXpert inControl via Bluetooth, without the need to open the control panel.
- IP20 degree of protection, with optional IP21/NEMA1 kit.

### Power range:

- 0.75 - 90 kW (230 V)
- 0.75 - 630 kW (400 V)
- 1 - 800 HP (575 V)

### Features:

- 19 setting parameters, including language and time
- Plain text menus and displays
- Best in class communication on board: Modbus RTU & TCP, BACnet MSTP, EtherNet/IP
- Optional Profinet & Profibus, CANopen, SmartWire-DT interfaces
- Degree of protection: FS0: IP20, FS1-6: IP21 & 54, FS7-8: IP00



### Comprehensive functionality

The standard version of the DM1 Pro and the DG1 series cover the power ranges up to 22 kW and 630 kW, respectively. They offer multiple functions, including Modbus RTU, Modbus TCP, Ethernet IP and Bacnet MSTP protocols, an integrated EMC filter (C2 for public grids) and a braking transistor.



### Energy saving function



The DM1's active energy control function minimizes energy losses through a patented process that dynamically adjusts the V/f curve to optimize efficiency. Compared to other out-of-the-box solutions, this enables energy savings of 2-10 %.

### Energy cost calculator

The integrated energy cost calculator facilitates a direct comparison to conventional contactor-controlled systems. Once the energy costs of the local utility have been entered, it becomes immediately apparent how much money the use of the DM1/DG1 has already saved. This makes it possible to keep operating costs (OPEX) under control at all times.



### Multi-pump drives

For water/wastewater applications, different modes are available to control and regulate systems consisting of several pumps. Since the DM1 and the DG1 come with a built-in PID controller for level and pressure control, there is no need for any external controller. They can both be used to control one or more master or back-up drives, while a real-time clock is also available for runtime compensation of all pumps. This level of versatility not only reduces equipment costs but also increases system availability and efficiency.

### PowerXpert inControl

The DM1 and the DG1 are also suitable for use in extreme weather conditions. They are heat-resistant up to 50 °C and come with a special cold weather mode that allows them to operate at temperatures as low as -30 °C without the need for any external heating systems. As such, the devices are the perfect choice for outdoor applications involving extremely low temperatures.

### Fire mode

If used for fire protection in buildings or sensitive structures such as tunnels, the DM1 and the DG1 can be operated in fire mode. In this mode, internal safety features that would normally shut down the device are disabled to ensure that fire pumps and smoke ventilation systems remain operational. The fire mode can be configured using a comprehensive range of options, including fixed setpoints, switchable setpoint inputs and fail-safe activation.

### Manual/automatic operation

Operators can switch between manual and automatic operation by means of a control command or via the keypad, enabling them to intervene in the control system at any time.





The DB1 PowerXL brings together all the functions of the established DC1 series while conforming to the smallest IEC-compatible size. Thanks to cold plate technology, this powerful device is the ideal solution for customers who want to integrate frequency drives into existing systems that lack the space for heat sinks or proper ventilation.



### Power range:

- 0.37 ... 1.5 kW (Ue: 1~ 230 V, U2: 3~ 230 V)
- 0.75 ... 4 kW (Ue: 3~ 400 V, U2: 3~ 400 V)

### Features:

- Optimal integration into existing housings
- 40 % smaller footprint than a comparable drive with active cooling

- Heat dissipation via the housing material
- Removable control module
- High-efficiency motor control (for IE4 motors)
- Modbus RTU and CANopen on board
- International standards (IEC, cUL, RoHs)

## Cold plate technology

### What is it all about?

The DB1 is a cold plate frequency drive that functions without a heat sink. But how does the technology work? It's simple. The cooling of the electronics is handled by the materials in the enclosure itself. This passive cooling effect is achieved, for example, via the installation plate, the casting parts or the housing directly. A system-specific and therefore flexible integration based on customer needs is thus possible.

### What are the advantages of this technology?

By eliminating the heat sink, the devices can be installed even in confined spaces that lack sufficient ventilation. Cabinets or enclosures can be sealed off without any problems, as the materials they contain will themselves conduct the heat away from the device. This makes the devices suitable for use in harsh and demanding environments, including high temperatures or humidity.

## The advantages at a glance

### Compact frequency controls

At a height of merely 74 mm (frame size 1), the DB1 is a variable frequency drive in the smallest IEC-compatible class. This compact size is the result of eliminating the need for any display, keypad or heat sink. As such, the DB1 takes up 40 % less space than a comparable frequency drive with active cooling.

### A wide range of applications

The Cold Plate unit consists of a power module and a detachable control module. The control module contains several I/O interfaces, as well as ports for CANopen and Modbus-RTU communications. In addition to the COM interface (RJ45), the Modbus protocol is served by data cables that are routed via two control signal terminals. Eaton's Push-in technology simplifies the wiring of the terminals and also saves time during installation.



*Compact installation of the DB1 in motors, pumps and compressors.*

*As the DB1 is fully compatible with our external keypads, no integrated display or keypad are required.*

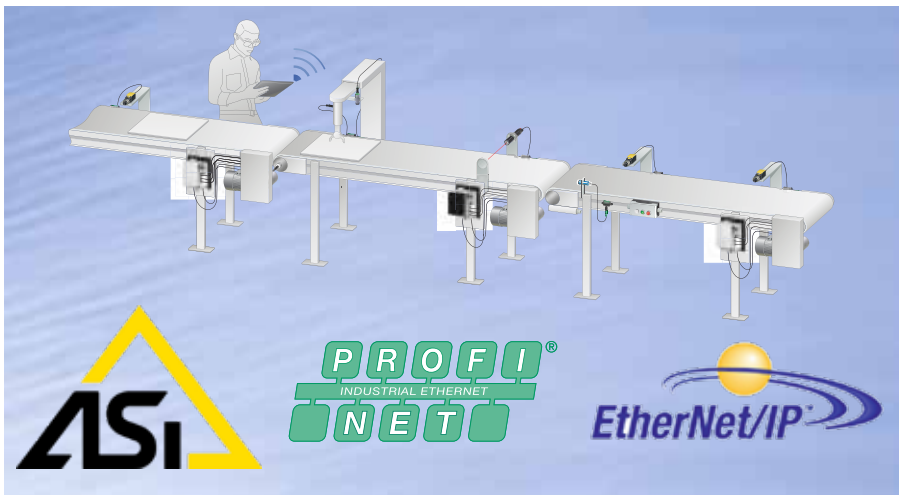
# PowerXL Rapid Link 5 – decentralized electronic drive system



Whether it's baggage handling systems at airports, parcel distribution systems or production logistics: Rapid Link 5 offers the right solution for a wide range of material handling applications. Rapid Link 5, the latest addition to the PowerXL™ family, takes the success of this series (which was first launched in 2004) to the next level by enabling integration into modern Industrial Internet of Things (IIoT) applications.

## System features

- Switching, control and protection of 3 AC 400/480 V motors
- Communication via AS-Interface, PROFINET and EtherNet/IP
- The motor starters and variable frequency drives have the same footprint across the entire power range.
- Quick and error-free installation with plug-in connections
- Diagnostic LEDs for fast fault localization
- Same commissioning tools for RAMO5 and RASP5: drivesConnect configuration software for PC, drivesConnect mobile app, OLED keypad, communication/copy stick.
- Integrated manual/automatic mode for easy handling during commissioning and in the event of a fault
- Identical footprint for all types and performances classes
- Sensor inputs for signal transmission via fieldbus or for direct signal processing in the device
- Rapid stop: direct processing of sensor signals within the device without any PLC programming
- Different control voltages for external electromagnetic motor brakes
- Optional integrated switch-disconnector with padlock for interlocking
- Rugged design with IP65/NEMA12 protection for use in harsh environments



## Wide range of fieldbus systems

Rapid Link 5 forms an integrated system and covers the AS-Interface, Profinet and Ethernet/IP fieldbus systems. Integration into IIoT solutions is therefore possible without any problems.

The high level of data transparency down to the device level allows for the implementation of remote maintenance and comprehensive power management.



## Flexible mounting options

The power supply and the motor connection can be implemented from the right, left or bottom, thanks to the rotatable device base. The installation of the Rapid Link 5 system is flexible and saves space, for optimal alignment with the requirements of the application at hand.



## PowerXL RASP5 variable frequency drives



### Power range:

- 0.75 kW/1.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 2.4 A
- 1.5 kW/2.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 4.3 A
- 2.2 kW/3.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 5.6 A
- 4.0 kW/5.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 8.6 A

### Features:

- A single size covers the entire performance range from 0.75 kW to 4 kW
- For operating standard asynchronous motors, high-efficiency permanent magnet motors, synchronous reluctance motors as well as brushless DC motors

- V/f, smart vector and sensorless vector control
- Integrated EMC filter for motor cable lengths up to 25 m
- Integrated braking resistor for dynamic or lifting applications
- Built-in STO (safe torque off) safety function with SIL3/PL e
- Approvals: CE, cUL



## RAMO5 electronic motor starter



### Power range:

- 0.09 ... 3.0 kW Ue: 3 AC 400 V, 50 Hz Ie: 6.6 A
- 0.125...4.0 HP Ue: 3 AC 480 V, 60 Hz Ie: 6.6 A

### Features:

- DOL and reversing starter
- Programmable motor protection from 90 W to 3.0 kW (400 V) with only one device
- Service life of more than 10 million cycles
- Approvals: CE, cUL, CCC

## Configuration tools

Thanks to the uniform PowerXL tools, the devices can be conveniently and easily configured and diagnosed: via the OLED keypad, the drivesConnect configuration software or a communication stick in combination with the drivesConnect mobile APP.



## Eaton's drivesConnect mobile App

Our drivesConnect app turns any smartphone or tablet into a human-machine interface, for easy configuration, control and monitoring.

Download the software and the drivesConnect app  
[Eaton.com/drivesConnect](http://Eaton.com/drivesConnect)

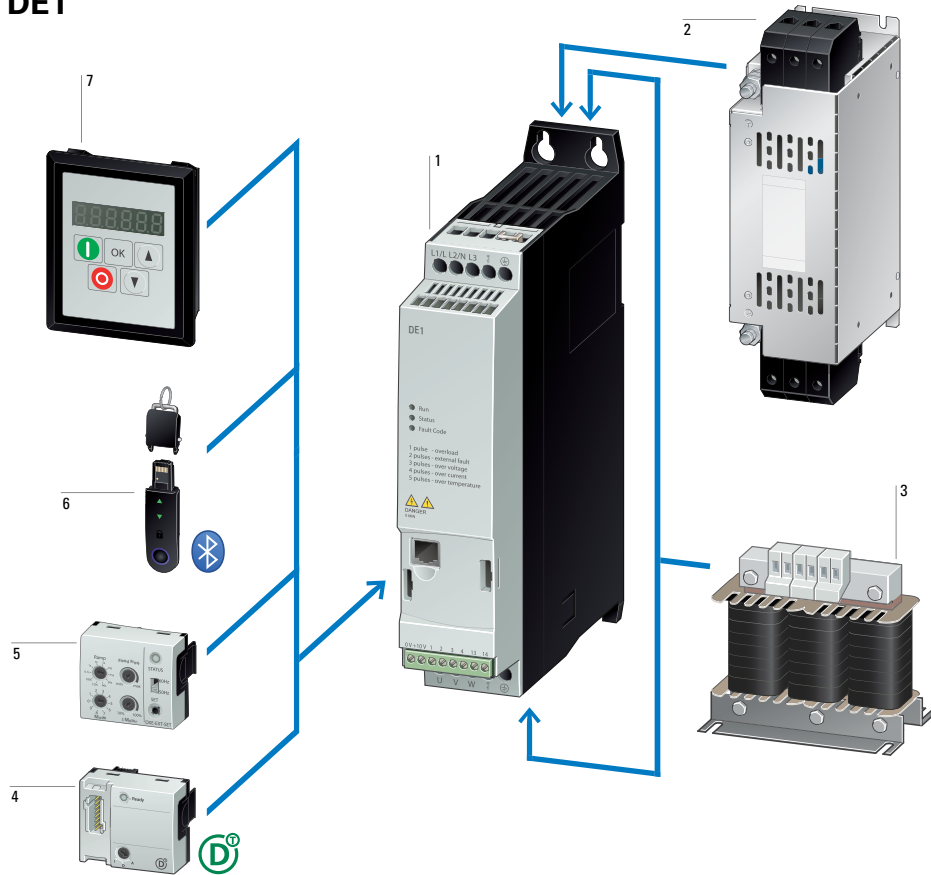


# PowerXL DE1 variable speed starters and DC1 variable frequency drives

System overview

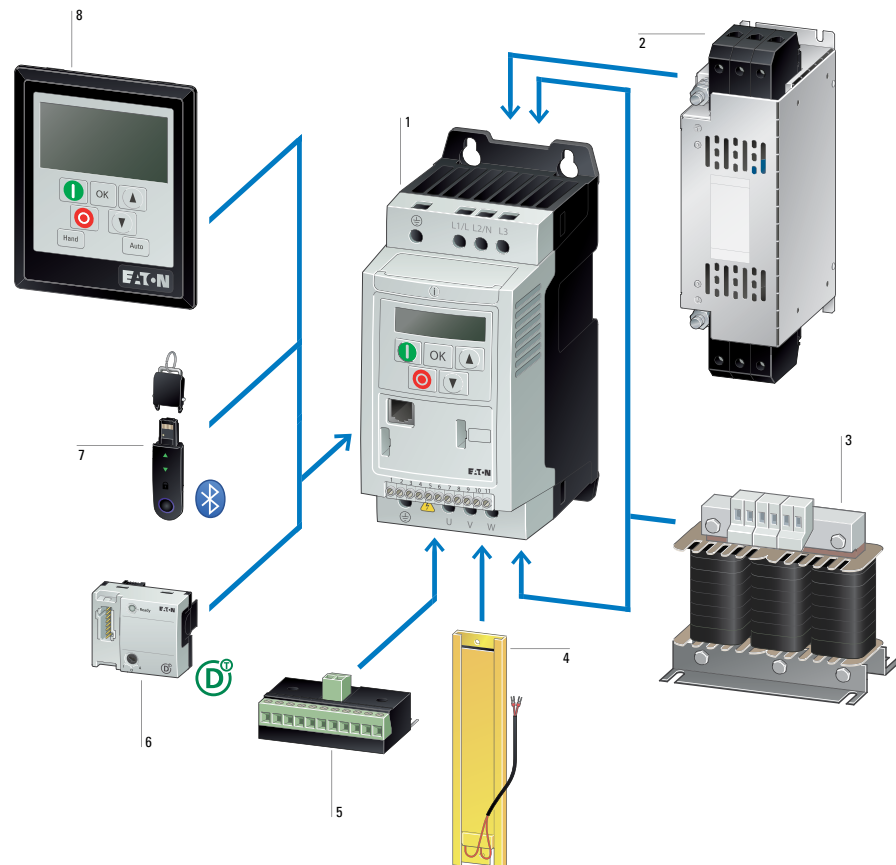
Moeller series

## DE1



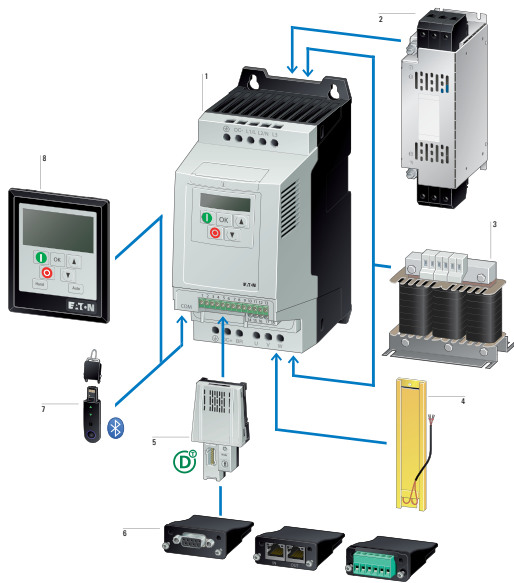
- 1 DE1 variable speed starter
- 2 Radio interference filter
- 3 Line choke, motor choke, sine filter
- 4 SmartWire-DT module
- 5 Configuration module
- 6 Memory and Bluetooth communication stick
- 7 External control unit

## DC1



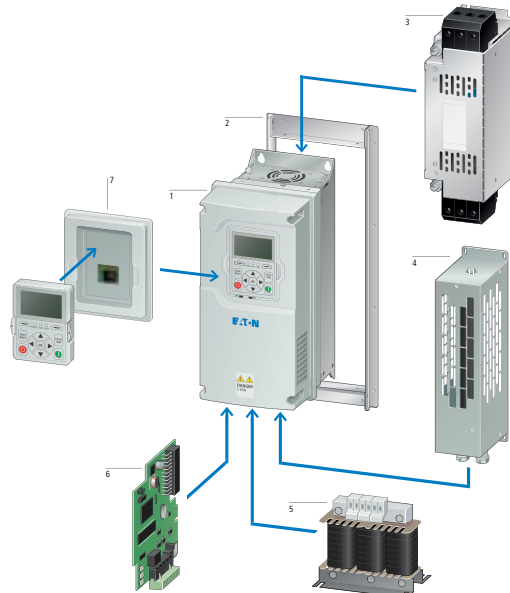
- 1 DC1 variable frequency drive
- 2 Radio interference filter
- 3 Line choke, motor choke, sine filter
- 4 Brake resistor
- 5 Expansion modules
- 6 SmartWire-DT module
- 7 Memory and Bluetooth communication stick
- 8 External control unit

## DA1



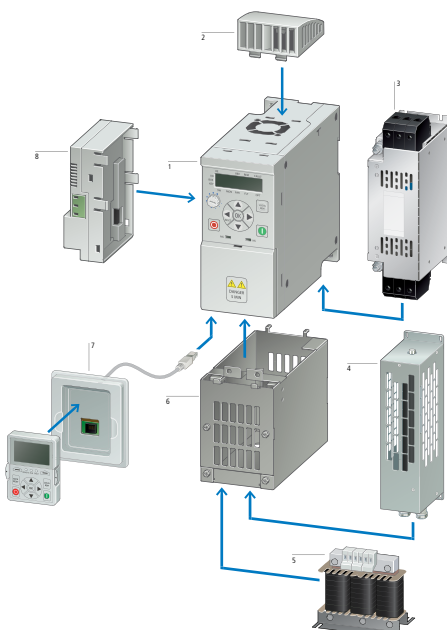
- 1 DA1 variable frequency drive
- 2 Radio interference filter
- 3 Line choke, motor choke, sine filter
- 4 Brake resistor
- 5 SmartWire-DT module
- 6 Communication modules, expansion modules
- 7 Memory and Bluetooth communication stick
- 8 External control unit

## DG1



- 1 DG1 variable frequency drive
- 2 Mounting frame for through-hole mounting
- 3 Radio interference filter
- 4 Brake resistor
- 5 Line choke, motor choke, sine filter
- 6 Communication modules, expansion modules
- 7 Mounting frame for control unit

## DM1/DM1 Pro



- 1 DM1/DM1 Pro
- 2 + 6 NEMA1/IP21 kits DXM-ACC...
- 3 EMC filters DX-EMC...
- 4 Brake resistors XC-BR...
- 5 Mains and motor chokes DX-LN... and DX-LM...
- 7 Remote keypad kit DXG-KEY-RMTKIT
- 8 Network interfaces DXM-NET...

# PowerXL variable speed starters

DE1/DE11, for three-phase motors, 230 V/400 V, IP20

Moeller series

Rated operational current <sup>1)</sup> $I_e$ A	Assigned motor rating <sup>1), 2), 3)</sup>		Radio interference filter	Frame size	Degree of protection	Part no.	Article no.
	P kW	P HP					
<b>Mains voltage (50/60 Hz) <math>U_{LN}</math>: 200 (-10%) - 240 (+10%) V</b> $U_e = 1\text{-phase} / U_2 = 3\text{-phase}$							
1.4	0.25	0.33	✓	FS1	IP20/NEMA 0	<b>DE1-121D4FN-N20N</b>	174327
2.3	0.37	0.5	✓			<b>DE1-122D3FN-N20N</b>	174328
2.7	0.55	0.5	✓			<b>DE1-122D7FN-N20N</b>	174329
4.3	0.75	1	✓			<b>DE1-124D3FN-N20N</b>	174330
7	1.5	2	✓			<b>DE1-127D0FN-N20N</b>	174331
9.6	2.2	3	✓	FS2		<b>DE1-129D6FN-N20N</b>	174332
<b>Mains voltage (50/60 Hz) <math>U_{LN}</math>: 380 (-10%) - 480 (+10%) V</b> $U_e = 3\text{-phase} / U_2 = 3\text{-phase}$							
1.3	0.37	0.5	✓	FS1	IP20/NEMA 0	<b>DE1-341D3FN-N20N</b>	174333
2.1	0.75	1	✓			<b>DE1-342D1FN-N20N</b>	174334
3.6	1.5	2	✓			<b>DE1-343D6FN-N20N</b>	174335
5	2.2	3	✓	FS2	IP20/NEMA 0	<b>DE1-345D0FN-N20N</b>	174336
6.6	3	3	✓			<b>DE1-346D6FN-N20N</b>	174337
8.5	4	5	✓			<b>DE1-348D5FN-N20N</b>	174338
11.3	5.5	7.5	✓			<b>DE1-34011FN-N20N</b>	174339
16	7.5	10	✓			<b>DE1-34016FN-N20N</b>	174340
<b>Mains voltage (50/60 Hz) <math>U_{LN}</math>: 200 (-10%) - 240 (+10%) V</b> $U_e = 1\text{-phase} / U_2 = 3\text{-phase}$							
1.4	0.25	0.33	✓	FS1	IP20/NEMA 0	<b>DE11-121D4FN-N20N<sup>4)</sup></b>	180650
2.3	0.37	0.5	✓			<b>DE11-122D3FN-N20N<sup>4)</sup></b>	180651
2.7	0.55	0.5	✓			<b>DE11-122D7FN-N20N<sup>4)</sup></b>	180652
4.3	0.75	1	✓			<b>DE11-124D3FN-N20N<sup>4)</sup></b>	180653
7	1.5	2	✓			<b>DE11-127D0FN-N20N<sup>4)</sup></b>	180654
9.6	2.2	3	✓	FS2		<b>DE11-129D6FN-N20N<sup>4)</sup></b>	180655
<b>Mains voltage (50/60 Hz) <math>U_{LN}</math>: 380 (-10%) - 480 (+10%) V</b> $U_e = 3\text{-phase} / U_2 = 3\text{-phase}$							
1.3	0.37	0.5	✓	FS1	IP20/NEMA 0	<b>DE11-341D3FN-N20N<sup>4)</sup></b>	180662
2.1	0.75	1	✓			<b>DE11-342D1FN-N20N<sup>4)</sup></b>	180663
3.6	1.5	2	✓			<b>DE11-343D6FN-N20N<sup>4)</sup></b>	180664
5	2.2	3	✓	FS2	IP20/NEMA 0	<b>DE11-345D0FN-N20N<sup>4)</sup></b>	180665
6.6	3	3	✓			<b>DE11-346D6FN-N20N<sup>4)</sup></b>	180666
8.5	4	5	✓			<b>DE11-348D5FN-N20N<sup>4)</sup></b>	180667
11.3	5.5	7.5	✓			<b>DE11-34011FN-N20N<sup>4)</sup></b>	180668
16	7.5	10	✓			<b>DE11-34016FN-N20N<sup>4)</sup></b>	180669

## Notes

- <sup>1)</sup> Overload cycle: 150 % for 60 s every 600 s
- <sup>2)</sup> DE1/DE11-12...: at 230 V, 50 Hz/at 220 - 240 V, 60 Hz  
DE1/DE11-34...: at 400 V, 50 Hz/at 440 - 480 V, 60 Hz
- <sup>3)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz
- <sup>4)</sup> The DE11 offers additional features compared to the DE1: CANopen, plug-in control terminals, a configurable output relay



DE1/DE11, FS1



DE1/DE11, FS2

Input/output voltage [V]	Assigned motor rating <sup>1), 2), 3)</sup>		Input phases	Output phases	Rated operational current <sup>1)</sup>	FS	Part no. Article no. IP20 / NEMA 0	Part no. Article no. IP66 / NEMA 4x	Part no. Article no. IP66 / NEMA 4x local control		
	[kW]	[HP]									
115	0.37	0.5	1	1	7	1	DC1-S17D0NN-A20CE1 186073				
	0.37	0.5		3	2.3	1	DC1-1D2D3NN-A20CE1 185765	DC1-1D2D3NN-A66OE1 199393	DC1-1D2D3NN-A6SOE1 199394		
	0.55	0.75		1	10.5	2	DC1-S1011NB-A20CE1 186076				
	0.75	1		3	4.3	1	DC1-1D4D3NN-A20CE1 185768	DC1-1D4D3NN-A66OE1 199395	DC1-1D4D3NN-A6SOE1 199396		
	1.1	1.5		3	2.3	2	DC1-1D5D8NB-A20CE1 185771	DC1-1D5D8NB-A66OE1 199397	DC1-1D5D8NB-A6SOE1 199398		
230	0.37	0.5	1	3	2.3	1	DC1-122D3FN-A20CE1 185803	DC1-122D3FN-A66OE1 199399	DC1-122D3FN-A6SOE1 199400		
	0.75	1			4.3	1	DC1-124D3FN-A20CE1 185806	DC1-124D3FN-A66OE1 199401	DC1-124D3FN-A6SOE1 199402		
	1.5	2			7	2	DC1-127D0FN-A20CE1 185809	DC1-127D0FN-A66OE1 199403	DC1-127D0FN-A6SOE1 199404		
	0.37	0.5			3	3	2.3	1	DC1-1D2D3NN-A20CE1 185765	DC1-1D2D3NN-A66OE1 199393	DC1-1D2D3NN-A6SOE1 199394
	0.75	1					4.3	1	DC1-1D4D3NN-A20CE1 185768	DC1-1D4D3NN-A66OE1 199395	DC1-1D4D3NN-A6SOE1 199396
	1.1	1.5					2.3	2	DC1-1D5D8NB-A20CE1 185771	DC1-1D5D8NB-A66OE1 199397	DC1-1D5D8NB-A6SOE1 199398
	1.5	2					7	2	DC1-127D0FB-A20CE1 185812	DC1-127D0FB-A66OE1 199405	DC1-127D0FB-A6SOE1 199406
	2.2	3					10.5	2	DC1-12011FB-A20CE1 185815	DC1-12011FB-A66OE1 199407	DC1-12011FB-A6SOE1 199408
	4.0	2.3					2.3	3	DC1-12015NB-A20CE1 185800	DC1-12015FB-A66OE1 199409	DC1-12015FB-A6SOE1 199410
	0.37	2.3					3	3	1	1	DC1-322D3NN-A20CE1 185818
	0.75	2.3	1	1					DC1-324D3NN-A20CE1 185821	DC1-324D3FN-A66OE1 199413	DC1-324D3FN-A6SOE1 199414
	1.5	2.3	1	1					DC1-327D0NN-A20CE1 185827	DC1-327D0FN-A66OE1 199415	DC1-327D0FN-A6SOE1 199416
	1.5	2.3	2	2					DC1-327D0FB-A20CE1 185836	DC1-327D0FB-A66OE1 199417	DC1-327D0FB-A6SOE1 199418
	2.2	2.3	2	2	DC1-32011FB-A20CE1 185839	DC1-32011FB-A66OE1 199419			DC1-32011FB-A6SOE1 199420		
	4.0	2.3	3	3	DC1-32018FB-A20CE1 185842	DC1-32018FB-A66OE1 199421			DC1-32018FB-A6SOE1 199422		
	5.5	2.3	3	3	DC1-32024FB-A20CE1 185774	DC1-32024FB-A66OE1 199423			DC1-32024FB-A6SOE1 199424		
	7.5	2.3	4	4	DC1-32030FB-A20CE1 185775	DC1-32030FB-A66OE1 199425			DC1-32030FB-A6SOE1 199426		
	11.0	2.3	4	4	DC1-32046FB-A20CE1 185776	DC1-32046FB-A66OE1 199427			DC1-32046FB-A6SOE1 199428		
	400	0.75	1	3	3	2.2			1	DC1-342D2FN-A20CE1 185743	DC1-342D2FN-A66OE1 199429
		1.5	2		3	4.1	1	DC1-344D1FN-A20CE1 185746	DC1-344D1FN-A66OE1 199431	DC1-344D1FN-A6SOE1 199432	
1.5		2	3		4.1	1	DC1-344D1FB-A20CE1 185749	DC1-344D1FB-A66OE1 199433	DC1-344D1FB-A6SOE1 199434		
2.2		3	3		5.8	2	DC1-345D8FB-A20CE1 185752	DC1-345D8FB-A66OE1 199435	DC1-345D8FB-A6SOE1 199436		
4		5	3		9.5	2	DC1-349D5FB-A20CE1 185755	DC1-349D5FB-A66OE1 199437	DC1-349D5FB-A6SOE1 199438		
5.5		7.5	3		14	3	DC1-34014FB-A20CE1 185758	DC1-34014FB-A66OE1 199439	DC1-34014FB-A6SOE1 199440		
7.5		10	3		18	3	DC1-34018FB-A20CE1 185761	DC1-34018FB-A66OE1 199441	DC1-34018FB-A6SOE1 199442		
11		15	3		24	3	DC1-34024FB-A20CE1 185764	DC1-34024FB-A66OE1 199443	DC1-34024FB-A6SOE1 199444		
15		20	3		30	4	DC1-34030FB-A20CE1 185780	DC1-34030FB-A66OE1 199445	DC1-34030FB-A6SOE1 199446		
18.5		25	3		39	4	DC1-34039FB-A20CE1 185781	DC1-34039FB-A66OE1 199447	DC1-34039FB-A6SOE1 199448		
22		30	3		46	4	DC1-34046FB-A20CE1 185782	DC1-34046FB-A66OE1 199449	DC1-34046FB-A6SOE1 199450		

**Notes:** <sup>1)</sup> Overload cycle: 150 % for 60 s every 600 s

<sup>2)</sup> DC1-S1... & DC1-1D...: at 115 V, 50 Hz/at 110-120 V, 60 Hz DC1-S2...; DC1-12... & DC1-32...: at 230 V, 50 Hz/at 220-240 V, 60 Hz DC1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

<sup>3)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz



# PowerXL variable frequency drives

DA1, for three-phase motors, 230 V/400 V, IP55/IP66

Moeller series

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1), 2), 3)</sup>		Input phases	Output phases	Frame size	Part no. Article no. IP20 / NEMA 0	Part no. Article no. IP55 / NEMA 12	Part no. Article no. IP66 / NEMA 4x	Part no. Article no. IP66 / NEMA 4x local control
	[kW]	[HP]							
<b>U<sub>s</sub> 230 V AC, 3-phase / U<sub>2</sub> 230 V AC, 3-phase, with EMC filter</b> Mains voltage (50/60 Hz) U <sub>LN</sub> : 200 (-15%) - 240 (+10%) V									
4.3	0.75	1	1	3	2	DA1-124D3FB-A20C 169078		DA1-124D3FB-B66C 169347	DA1-124D3FB-B6SC 169348
7	1.5	2	1	3	2	DA1-127D0FB-A20C 169081		DA1-127D0FB-B66C 169349	DA1-127D0FB-B6SC 169350
10.5	2.2	3	1	3	2	DA1-12011FB-A20C 169084		DA1-12011FB-B66C 169351	DA1-12011FB-B6SC 169352
<b>U<sub>s</sub> 400 V AC, 3-phase / U<sub>2</sub> 400 V AC, 3-phase, with EMC filter</b> Mains voltage (50/60 Hz) U <sub>LN</sub> : 380 (-15%) - 500 (+10%) V									
2.2	0.75	1	3	3	2	DA1-342D2FB-A20C 169117		DA1-342D2FB-B66C 169378	DA1-342D2FB-B6SC 169379
4.1	1.5	2			2	DA1-344D1FB-A20C 169120		DA1-344D1FB-B66C 169380	DA1-344D1FB-B6SC 169381
5.8	2.2	3			2	DA1-345D8FB-A20C 169051		DA1-345D8FB-B66C 169382	DA1-345D8FB-B6SC 169383
9.5	4	5			2	DA1-349D5FB-A20C 169054		DA1-349D5FB-B66C 169384	DA1-349D5FB-B6SC 169385
14	5.5	7.5			3	DA1-34014FB-A20C 169057		DA1-34014FB-B66C 169386	DA1-34014FB-B6SC 169387
18	7.5	10			3	DA1-34018FB-A20C 169060		DA1-34018FB-B66C 169388	DA1-34018FB-B6SC 169389
24	11	15			3	DA1-34024FB-A20C 169063			
24	11	15			4		DA1-34024FB-B55C 169390		
30	15	20			4	DA1-34030FB-B20C 197493		DA1-34030FB-B55C 169391	
39	18.5	25			4	DA1-34039FB-B20C 197494		DA1-34039FB-B55C 169392	
46	22	30			4	DA1-34046FB-B20C 197495		DA1-34046FB-B55C 169393	
61	30	40			5	DA1-34061FB-B20C 197496		DA1-34061FB-B55C 169394	
72	37	50			5	DA1-34072FB-B20C 197497		DA1-34072FB-B55C 169395	
90	45	60			6		DA1-34090FB-B55C 169397		
110	55	75			6		DA1-34110FB-B55C 169399		
150	75	125			6		DA1-34150FB-B55C 169401		
180	90	150			6		DA1-34180FB-B55C 169403		
202	110	200			7		DA1-34202FB-B55C 169405		
240	132	200			7		DA1-34240FB-B55C 169407		
302	160	250			7		DA1-34302FB-B55C 169217		
370	200	300	8		DA1-34370FB-B20C 169219				
450	250	350	8		DA1-34450FB-B20C 169221				

**Notes:** <sup>1)</sup> Overload cycle: 150 % for 60 s every 600 s

<sup>2)</sup> DA1-12...: at 230 V, 50 Hz/at 220-240 V, 60 Hz

DA1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

<sup>3)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1), 2), 3)</sup>		Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1), 2), 3)</sup>		Features			Frame size	Degree of protection	Part no.	Article no.
	$I_n = 150\%$	$I_n = 110\%$		$I_n = 150\%$	$I_n = 110\%$	Radio interference filter	Brake chopper	7-segment display				
$I_e$ A	kW	HP	$I_e$ A	kW	HP							
<b><math>U_e</math> 230 V AC, 3-phase / <math>U_2</math> 230 V AC, 3-phase, with EMC filter</b>												
Mains voltage (50/60 Hz) $U_{LN}$ : 200 (-15%) - 240 (+10%) V												
1.6	0.25	0.25	3	0.55	0.5	✓	✓		FS1	IP20/NEMA0	<b>DM1-321D6EB-N20B-EM</b>	3-5017-005A
3	0.55	0.5	4.8	1.1	1	✓	✓				<b>DM1-323D0EB-N20B-EM</b>	3-5017-006A
4.8	1.1	1	7.8	1.5	2	✓	✓				<b>DM1-324D8EB-N20B-EM</b>	3-5017-007A
7.8	1.5	2	11	2.2	3	✓	✓				<b>DM1-327D8EB-N20B-EM</b>	3-5017-008A
11	2.2	3	17.5	4	5	✓	✓		FS2		<b>DM1-32011EB-N20B-EM</b>	3-5019-003A
17.5	4	5	25	5.5	7.5	✓	✓				<b>DM1-32017EB-N20B-EM</b>	3-5019-004A
25	5.5	7.5	32	7.5	10	✓	✓		FS3		<b>DM1-32025EB-N20B-EM</b>	3-5021-002A
32	7.5	10	48	11	15	✓	✓		FS4		<b>DM1-32032EB-N20B-EM</b>	3-5023-003A
48	11	15	61	15	20	✓	✓				<b>DM1-32048EB-N20B-EM</b>	3-5023-004A
<b><math>U_e</math> 400 V AC, 3-phase / <math>U_2</math> 400 V AC, 3-phase, with EMC filter</b>												
Mains voltage (50/60Hz) $U_{LN}$ : 380 (-15%) - 500 (+10%) V												
2.2	0.55	0.5	2.2	0.75	1	✓	✓		FS1	IP20/NEMA0	<b>DM1-341D5EB-N20B-EM</b>	3-5025-005A
3.3	0.75	1	4.3	1.5	2	✓	✓				<b>DM1-342D2EB-N20B-EM</b>	3-5025-006A
4.3	1.5	2	5.6	2.2	3	✓	✓				<b>DM1-344D3EB-N20B-EM</b>	3-5025-007A
5.6	2.2	3	7.6	3	5	✓	✓				<b>DM1-345D6EB-N20B-EM</b>	3-5025-008A
7.6	3	5	12	5.5	7.5	✓	✓		FS2		<b>DM1-347D6EB-N20B-EM</b>	3-5027-004A
12	5.5	7.5	16	7.5	10	✓	✓				<b>DM1-34012EB-N20B-EM</b>	3-5027-005A
16	7.5	10	23	11	15	✓	✓				<b>DM1-34016EB-N20B-EM</b>	3-5027-006A
23	11	15	31	15	20	✓	✓		FS3		<b>DM1-34023EB-N20B-EM</b>	3-5029-002A
31	15	20	38	18.5	25	✓	✓		FS4		<b>DM1-34031EB-N20B-EM</b>	3-5031-003A
38	18.5	25	46	22	30	✓	✓			<b>DM1-34038EB-N20B-EM</b>	3-5031-004A	
<b><math>U_e</math> 115 V AC, 1-phase / <math>U_2</math> 230 V AC, 3-phase, with EMC filter</b>												
Mains voltage (50/60Hz) $U_{LN}$ : 100 (-15%) - 120 (+10%) V												
1.6	0.18	0.25	3	0.37	0.5	✓	✓	✓	FS1	IP20/NEMA0	<b>DM1-111D6EB-S20S-EM</b>	3-5041-003A
3	0.37	0.5	4.8	0.55	1	✓	✓	✓			<b>DM1-113D0EB-S20S-EM</b>	3-5041-004A
4.8	0.55	1	6.9	0.75	1.5	✓	✓	✓	FS2		<b>DM1-114D8EB-S20S-EM</b>	3-5043-003A
6.9	0.75	1.5	7.8	1.1	2	✓	✓	✓			<b>DM1-116D9EB-S20S-EM</b>	3-5043-004A
<b><math>U_e</math> 230 V AC, 1-phase / <math>U_2</math> 230 V AC, 3-phase, with EMC filter</b>												
Mains voltage (50/60Hz) $U_{LN}$ : 200 (-15%) - 240 (+10%) V												
1.6	0.25	0.25	3	0.55	0.5	✓	✓	✓	FS1	IP20/NEMA0	<b>DM1-121D6EB-S20S-EM</b>	3-5045-004A
3	0.55	0.5	4.8	1.1	1	✓	✓	✓			<b>DM1-123D0EB-S20S-EM</b>	3-5045-005A
4.8	1.1	1	7.8	1.5	2	✓	✓	✓			<b>DM1-124D8EB-S20S-EM</b>	3-5045-006A
7.8	1.5	2	11	2.2	3	✓	✓	✓	FS2		<b>DM1-127D8EB-S20S-EM</b>	3-5047-003A
11	2.2	3	17.5	4	5	✓	✓	✓			<b>DM1-12011EB-S20S-EM</b>	3-5047-004A
17.5	4	5	25	5.5	7.5	✓	✓	✓	FS3		<b>DM1-12017EB-S20S-EM</b>	3-5049-002A

Notes: <sup>1)</sup> Overload cycle: 150 % for 60 s every 600 s

<sup>2)</sup> DA1-12...: at 230 V, 50 Hz/at 220-240 V, 60 Hz  
DA1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

<sup>3)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz

# PowerXL variable frequency drives

DM1, for three-phase motors, 230 V/400 V/575 V, IP20

Moeller series

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1), 2), 3)</sup>		Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1), 2), 3)</sup>		Features	Frame size	Degree of protection	Part no.	Article no.
	$I_n = 150\%$	$I_n = 110\%$		$I_n = 110\%$	$I_n = 110\%$					
$I_e$ A	kW	HP	$I_e$ A	kW	HP	Radio interference filter Brake chopper 7-segment display				
<b><math>U_e</math> 230 V AC, 3-phase / <math>U_2</math> 230 V AC, 3-phase, with EMC filter</b> Mains voltage (50/60 Hz) $U_{LN}$ : 200 (-15%) - 240 (+10%) V										
1.6	0.25	0.25	3	0.55	0.5	✓ ✓ ✓	FS1	IP20/NEMA0	<b>DM1-321D6EB-S20S-EM</b>	3-5001-005A
3	0.55	0.5	4.8	1.1	1	✓ ✓ ✓			<b>DM1-323D0EB-S20S-EM</b>	3-5001-006A
4.8	1.1	1	7.8	1.5	2	✓ ✓ ✓			<b>DM1-324D8EB-S20S-EM</b>	3-5001-007A
7.8	1.5	2	11	2.2	3	✓ ✓ ✓			<b>DM1-327D8EB-S20S-EM</b>	3-5001-008A
11	2.2	3	17.5	4	5	✓ ✓ ✓	FS2		<b>DM1-32011EB-S20S-EM</b>	3-5003-003A
17.5	4	5	25	5.5	7.5	✓ ✓ ✓			<b>DM1-32017EB-S20S-EM</b>	3-5003-004A
25	5.5	7.5	32	7.5	10	✓ ✓ ✓	FS2		<b>DM1-32025EB-S20S-EM</b>	3-5005-002A
32	7.5	10	48	11	15	✓ ✓ ✓	FS4		<b>DM1-32032EB-S20S-EM</b>	3-5007-003A
48	11	15	61	15	20	✓ ✓ ✓			<b>DM1-32048EB-S20S-EM</b>	3-5007-004A
<b><math>U_e</math> 400 V AC, 3-phase / <math>U_2</math> 400 V AC, 3-phase, with EMC filter</b> Mains voltage (50/60 Hz) $U_{LN}$ : 380 (-15%) - 500 (+10%) V										
1.5	0.55	0.5	2.2	0.75	1	✓ ✓ ✓	FS1	IP20/NEMA0	<b>DM1-341D5EB-S20S-EM</b>	3-5009-005A
2.2	0.75	1	4.3	1.5	2	✓ ✓ ✓			<b>DM1-342D2EB-S20S-EM</b>	3-5009-006A
4.3	1.5	2	5.6	2.2	3	✓ ✓ ✓			<b>DM1-344D3EB-S20S-EM</b>	3-5009-007A
5.6	2.2	3	7.6	3	5	✓ ✓ ✓			<b>DM1-345D6EB-S20S-EM</b>	3-5009-008A
7.6	3	5	12	5.5	7.5	✓ ✓ ✓	FS2		<b>DM1-347D6EB-S20S-EM</b>	3-5011-004A
12	5.5	7.5	16	7.5	10	✓ ✓ ✓			<b>DM1-34012EB-S20S-EM</b>	3-5011-005A
16	7.5	10	23	11	15	✓ ✓ ✓			<b>DM1-34016EB-S20S-EM</b>	3-5011-006A
23	11	15	31	15	20	✓ ✓ ✓	FS3		<b>DM1-34023EB-S20S-EM</b>	3-5013-002A
31	15	20	38	18.5	25	✓ ✓ ✓	FS4		<b>DM1-34031EB-S20S-EM</b>	3-5015-003A
38	18.5	25	46	22	30	✓ ✓ ✓			<b>DM1-34038EB-S20S-EM</b>	3-5015-004A
<b><math>U_e</math> 575 V AC, 3-phase / <math>U_2</math> 575 V AC, 3-phase, with EMC filter</b> Mains voltage (50/60 Hz) $U_{LN}$ : 525 (-15%) - 600 (+10%) V										
4.5	2.2	3	7.5	4	5	✓ ✓ ✓	FS2	IP20/NEMA0	<b>DM1-354D5EB-S20S-EM</b>	3-5060-004A
7.5	4	5	10	5.5	7.5	✓ ✓ ✓			<b>DM1-357D5EB-S20S-EM</b>	3-5060-005A
10	5.5	7.5	13.5	7.5	10	✓ ✓ ✓			<b>DM1-35010EB-S20S-EM</b>	3-5060-006A
13.5	7.5	10	18	11	15	✓ ✓ ✓	FS3		<b>DM1-35013EB-S20S-EM</b>	3-5061-002A
18	11	15	22	15	20	✓ ✓ ✓	FS4		<b>DM1-35018EB-S20S-EM</b>	3-5062-003A
22	15	20	27	18.5	25	✓ ✓ ✓			<b>DM1-35022EB-S20S-EM</b>	3-5062-004A

**Notes:** <sup>1)</sup> Overload cycle: 150 % for 60 s every 600 s

<sup>2)</sup> DA1-12...: at 230 V, 50 Hz/at 220-240 V, 60 Hz  
 DA1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

<sup>3)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1),2),3)</sup>		Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1),2),3)</sup>		Features					Frame size	Degree of protection	Part no.	Article no.	
	$I_H = 150\%$	$I_H = 150\%$		$I_L = 110\%$	$I_L = 110\%$	$I_L = 110\%$	Radio interference filter	Brake chopper	DC link choke	Multiline graphic display					Additional PCB protection
$I_e$ A	P kW	P HP	$I_e$ A	P kW	P HP	✓	✓	-	✓	✓					
<b>Mains voltage (50/60 Hz) <math>U_N</math>: 380 (-15%) - 500 (+10%) V</b>															
$U_e = 3\text{-phase} / U_2 = 3\text{-phase}$															
2.2	0.75	1	3.3	1.1	1.5	✓	✓	-	✓	✓	FS0	IP20	<b>DG1-342D2EB-C20C</b>	9702-0200	
3.3	1.1	1.5	4.3	1.5	2	✓	✓	-	✓	✓			<b>DG1-343D3EB-C20C</b>	9702-0201	
4.3	1.5	2	5.6	2.2	3	✓	✓	-	✓	✓			<b>DG1-344D3EB-C20C</b>	9702-0202	
5.6	2.2	3	7.6	3	5	✓	✓	-	✓	✓			<b>DG1-345D6EB-C20C</b>	9702-0203	
2.2	0.75	1	3.3	1.1	1.5	✓	✓	-	✓	✓	FS1	IP21/ NEMA1	<b>DG1-342D2FB-C21C</b>	9702-1002-00P	
3.3	1.1	1.5	4.3	1.5	2	✓	✓	✓	✓	✓			<b>DG1-343D3FB-C21C</b>	9702-1004-00P	
4.3	1.5	2	5.6	2.2	3	✓	✓	✓	✓	✓			<b>DG1-344D3FB-C21C</b>	9702-1006-00P	
5.6	2.2	3	7.6	3	5	✓	✓	✓	✓	✓			<b>DG1-345D6FB-C21C</b>	9702-1008-00P	
7.6	3	5	9	4	5	✓	✓	✓	✓	✓			<b>DG1-347D6FB-C21C</b>	9702-1001-00P	
9	4	5	12	5.5	7.5	✓	✓	✓	✓	✓			<b>DG1-349D0FB-C21C</b>	9702-1011-00P	
12	5.5	7.5	16	7.5	10	✓	✓	✓	✓	✓	FS2		<b>DG1-34012FB-C21C</b>	9702-2002-00P	
16	7.5	10	23	11	15	✓	✓	✓	✓	✓		<b>DG1-34016FB-C21C</b>	9702-2004-00P		
23	11	15	31	15	20	✓	✓	✓	✓	✓		<b>DG1-34023FB-C21C</b>	9702-2001-00P		
31	15	20	38	18.5	25	✓	✓	✓	✓	✓	FS3	<b>DG1-34031FB-C21C</b>	9702-3002-00P		
38	18.5	25	46	22	30	✓	✓	✓	✓	✓		<b>DG1-34038FB-C21C</b>	9702-3004-00P		
46	22	30	61	30	40	✓	✓	✓	✓	✓		<b>DG1-34046FB-C21C</b>	9702-3001-00P		
61	30	40	72	37	50	✓	✓	✓	✓	✓	FS4	<b>DG1-34061FB-C21C</b>	9702-4002-00P		
72	37	50	87	45	60	✓	✓	✓	✓	✓		<b>DG1-34072FB-C21C</b>	9702-4006-00P		
87	45	60	105	55	75	✓	✓	✓	✓	✓		<b>DG1-34087FB-C21C</b>	9702-4010-00P		
105	55	75	140	75	100	✓	✓	✓	✓	✓	FS5	<b>DG1-34105FB-C21C</b>	9702-5002-00P		
140	75	100	170	90	125	✓	✓	✓	✓	✓		<b>DG1-34140FB-C21C</b>	9702-5006-00P		
170	90	125	205	110	150	✓	✓	✓	✓	✓		<b>DG1-34170FB-C21C</b>	9702-5010-00P		
205	110	150	261	132	200	✓	✓	✓	✓	✓	FS6	<b>DG1-34205FB-C21C</b>	9702-6001-00P		
245	132	200	310	160	250	✓	✓	✓	✓	✓		<b>DG1-34245FB-C21C</b>	9702-6005-00P		
310	160	250	385	200	300	✓	✓	✓	✓	✓	FS7	IP00	<b>DG1-34310FB-C21C</b>	3-4917-102A	
385	200	300	460	250	350	✓	✓	✓	✓	✓			<b>DG1-34385FB-C21C</b>	3-4917-104A	
460	250	350	520	250	450	✓	✓	✓	✓	✓			<b>DG1-34460FB-C21C</b>	3-4917-106A	

Notes: <sup>1)</sup> Overload cycle for 60 s every 600 s,

<sup>2)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz

<sup>3)</sup> DG1-34...: at 400 V, 50 Hz/at 480 V, 60 Hz

<b>Mains voltage (50/60Hz) <math>U_N</math>: 380 (-15%) - 500 (+10%) V, without brake chopper</b>															
$U_e = 3\text{-phase} / U_2 = 3\text{-phase}$															
$I_e$ A	P kW	P HP	$I_e$ A	P kW	P HP	✓	-	✓	✓	✓					
61	30	40	72	37	50	✓	-	✓	✓	✓	FS4	IP21/ NEMA1	<b>DG1-34061FN-C21C</b>	9702-4004-00P	
72	37	50	87	45	60	✓	-	✓	✓	✓			<b>DG1-34072FN-C21C</b>	9702-4008-00P	
87	45	60	105	55	75	✓	-	✓	✓	✓			<b>DG1-34087FN-C21C</b>	9702-4001-00P	
105	55	75	140	75	100	✓	-	✓	✓	✓	FS5	<b>DG1-34105FN-C21C</b>	9702-5004-00P		
140	75	100	170	90	125	✓	-	✓	✓	✓		<b>DG1-34140FN-C21C</b>	9702-5008-00P		
170	90	125	205	110	150	✓	-	✓	✓	✓		<b>DG1-34170FN-C21C</b>	9702-5001-00P		
205	110	150	261	132	200	✓	-	✓	✓	✓	FS6	<b>DG1-34205FN-C21C</b>	9702-6003-00P		
245	132	200	310	160	250	✓	-	✓	✓	✓		<b>DG1-34245FN-C21C</b>	9702-6007-00P		
310	160	250	385	200	300	✓	-	✓	✓	✓	FS7	IP00	<b>DG1-34310FN-C21C</b>	3-4917-101A	
385	200	300	460	250	350	✓	-	✓	✓	✓			<b>DG1-34385FN-C21C</b>	3-4917-103A	
460	250	350	520	250	450	✓	-	✓	✓	✓			<b>DG1-34460FN-C21C</b>	3-4917-105A	

# PowerXL cold plate unit

DB1 for three-phase motors, 230 V/400 V, IP20

Moeller series

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>1), 2), 3)</sup>		Radio interference filter	Brake chopper	Frame size	Degree of protection	Part no.	Article no.	
	I <sub>e</sub> A	P kW							P HP
<b>Mains voltage (50/60 Hz) U<sub>LN</sub> 110 (-10%) - 115 (+10%) V</b> U <sub>e</sub> = 1-phase / U <sub>2</sub> = 3-phase									
3.2	0.75	1.00	✓	-	FS1	IP20/NEMA 0	<b>DB1-1D3D2FN-N2CC</b>	199347	
<b>Mains voltage (50/60 Hz) U<sub>LN</sub> 110 (-10%) - 240 (+10%) V</b> U <sub>e</sub> = 1-phase / U <sub>2</sub> = 3-phase									
4.3	0.75	1.00	✓	-	FS1C	IP20/NEMA 0	<b>DB1-1M4D3FN-N2CC-PFC</b>	199738	
<b>Mains voltage (50/60 Hz) U<sub>LN</sub> 200 (-10%) - 240 (+10%) V</b> U <sub>e</sub> = 1-phase / U <sub>2</sub> = 3-phase									
2.3	0.37	0.50	✓	-	FS1	IP20/NEMA 0	<b>DB1-122D3FN-N2CC</b>	197193	
4.3	0.75	1	✓	-			<b>DB1-124D3FN-N2CC</b>	197194	
7	1.5	2	✓	-			FS1B	<b>DB1-127D0FN-N2CC</b>	197195
7	1.5	2	✓	-			FS1C	<b>DB1-127D0FN-N2CC-PFC</b>	199739
<b>Mains voltage (50/60 Hz) U<sub>LN</sub> 200 (-10%) - 240 (+10%) V</b> U <sub>e</sub> = 3-phase / U <sub>2</sub> = 3-phase									
2.3	0.37	0.50	✓	-	FS1	IP20/NEMA 0	<b>DB1-322D3FN-N2CC</b>	199735	
4.3	0.75	1	✓	-			<b>DB1-324D3FN-N2CC</b>	199736	
7	1.5	2	✓	-			<b>DB1-327D0FN-N2CC</b>	199737	
<b>Mains voltage (50/60 Hz) U<sub>LN</sub> 380 (-10%) - 480 (+10%) V</b> U <sub>e</sub> = 3-phase / U <sub>2</sub> = 3-phase									
2.2	0.75	1	✓	-	FS1	IP20/NEMA 0	<b>DB1-342D2FN-N2CC</b>	197196	
4.1	1.5	2	✓	-			<b>DB1-344D1FN-N2CC</b>	197197	
4.1	1.5	2	✓	-	FS2	IP20/NEMA 0	<b>DB1-344D1FB-N2CC</b>	197564	
5.8	2.2	3	✓	-			<b>DB1-345D8FB-N2CC</b>	197565	
9.5	4	5	✓	-			<b>DB1-349D5FB-N2CC</b>	197566	

**Notes:** <sup>1)</sup> Overload cycle for 60 s every 600 s

- <sup>2)</sup> DB1-1D...: at 115 V, 50 Hz/at 110 – 120 V, 60 Hz  
 DB1-1M...: at 115 – 230 V, 50 Hz/at 110 – 240 V, 60 Hz  
 DB1-12... & DB1-32...: at 230 V, 50 Hz/at 220 – 240 V, 60 Hz  
 DB1-34...: at 400 V, 50 Hz/at 440 – 480 V, 60 Hz

<sup>3)</sup> For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800-1 at 60 Hz



DB1, FS1



DB1, FS2



Moeller series

AS-Interface profile: S7.4 for 31 stations

RAMO5 motor starter

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>2,3)</sup>		Control voltage External brake <sup>4)</sup>	Inputs/ outputs		DOL starter		Reversing starter		
	P kW	P HP		(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Without repair switch	With repair switch	Without repair switch	With repair switch
I <sub>a</sub> A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.	
6.6	0.09-3	0.125-4	-	2	0	RAMO5-D200A31-4120S1 199060	RAMO5-D200A31-412RS1 199069	RAMO5-W200A31-4120S1 199080	RAMO5-W200A31-412RS1 199099	
					1			RAMO5-W210A31-4120S1 199084	RAMO5-W210A31-412RS1 199103	
				180/207 V DC	2	0	RAMO5-D201A31-4120S1 199061	RAMO5-D201A31-412RS1 199070	RAMO5-W201A31-4120S1 199081	RAMO5-W201A31-412RS1 199100
					2	1			RAMO5-W211A31-4120S1 199085	RAMO5-W211A31-412RS1 199104
				230/277 V DC	2	0	RAMO5-D202A31-4120S1 199062	RAMO5-D202A31-412RS1 199071	RAMO5-W202A31-4120S1 199082	RAMO5-W202A31-412RS1 199101
					2	1			RAMO5-W212A31-4120S1 199086	RAMO5-W212A31-412RS1 199105
			400/480 V AC	2	0	RAMO5-D204A31-4120S1 199063	RAMO5-D204A31-412RS1 199072	RAMO5-W204A31-4120S1 199083	RAMO5-W204A31-412RS1 199102	
				2	1			RAMO5-W214A31-4120S1 199087	RAMO5-W214A31-412RS1 199106	

RASP5 variable frequency drive

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>2,3)</sup>		Control voltage External brake <sup>4)</sup>	Inputs/ outputs		Without integrated brake resistor		With integrated brake resistor	
	P kW	P HP		(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Without repair switch	With repair switch	Without repair switch
I <sub>a</sub> A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
2.4	0.75	1	-	4	0	RASP5-2400A31-412000S1 198728	RASP5-2400A31-412R000S1 198744	RASP5-2400A31-4120100S1 198732	RASP5-2400A31-412R100S1 198748
					0	RASP5-2401A31-412000S1 198729	RASP5-2401A31-412R000S1 198745	RASP5-2401A31-4120100S1 198733	RASP5-2401A31-412R100S1 198749
				4	0	RASP5-2402A31-412000S1 198730	RASP5-2402A31-412R000S1 198746	RASP5-2402A31-4120100S1 198734	RASP5-2402A31-412R100S1 198750
					0	RASP5-2404A31-412000S1 198731	RASP5-2404A31-412R000S1 198747	RASP5-2404A31-4120100S1 198735	RASP5-2404A31-412R100S1 198751
4.3	1.5	2	-	4	0	RASP5-4400A31-412000S1 198764	RASP5-4400A31-412R000S1 198780	RASP5-4400A31-4120100S1 198768	RASP5-4400A31-412R100S1 198784
					0	RASP5-4401A31-412000S1 198765	RASP5-4401A31-412R000S1 198781	RASP5-4401A31-4120100S1 198769	RASP5-4401A31-412R100S1 198785
				4	0	RASP5-4402A31-412000S1 198766	RASP5-4402A31-412R000S1 198782	RASP5-4402A31-4120100S1 198770	RASP5-4402A31-412R100S1 198786
					0	RASP5-4404A31-412000S1 198767	RASP5-4404A31-412R000S1 198783	RASP5-4404A31-4120100S1 198771	RASP5-4404A31-412R100S1 198787
5.6	2.2	3	-	4	0	RASP5-5400A31-412000S1 198800	RASP5-5400A31-412R000S1 198816	RASP5-5400A31-4120100S1 198804	RASP5-5400A31-412R100S1 198820
					0	RASP5-5401A31-412000S1 198801	RASP5-5401A31-412R000S1 198817	RASP5-5401A31-4120100S1 198805	RASP5-5401A31-412R100S1 198821
				4	0	RASP5-5402A31-412000S1 198802	RASP5-5402A31-412R000S1 198818	RASP5-5402A31-4120100S1 198806	RASP5-5402A31-412R100S1 198822
					0	RASP5-5404A31-412000S1 198803	RASP5-5404A31-412R000S1 198819	RASP5-5404A31-4120100S1 198807	RASP5-5404A31-412R100S1 198823
8.5	4	5	-	4	0	RASP5-8400A31-412000S1 198836	RASP5-8400A31-412R001S1 198852	RASP5-8400A31-4120101S1 198840	RASP5-8400A31-412R101S1 198856
					0	RASP5-8401A31-412000S1 198837	RASP5-8401A31-412R001S1 198853	RASP5-8401A31-4120101S1 198841	RASP5-8401A31-412R101S1 198857
				4	0	RASP5-8402A31-412000S1 198838	RASP5-8402A31-412R001S1 198854	RASP5-8402A31-4120101S1 198842	RASP5-8402A31-412R101S1 198858
					0	RASP5-8404A31-412000S1 198839	RASP5-8404A31-412R001S1 198855	RASP5-8404A31-4120101S1 198843	RASP5-8404A31-412R101S1 198859

Notes

- 1) Adjustable from 0.3 - 6.6
- 2) For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz
- 3) At 400 V, 50 Hz  
at 440-480 V, 60 Hz
- 4) For controlling motors with mechanical brakes
- 5) Operation with external 24 V DC supply

Switching and operating motors

Profinet

RAMO5 motor starter

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>2),3)</sup>		Control voltage External brake <sup>4)</sup>	Inputs/ outputs		DOL starter		Reversing starter	
	P kW	P HP		Sensor input	Actuator output <sup>5)</sup>	Without repair switch	With repair switch	Without repair switch	With repair switch
I <sub>e</sub> A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
6.6	0.09-3	0.125-4	-	4	2	RAMO5-D420PNT-4120S1 199125	RAMO5-D420PNT-412RS1 199129	RAMO5-W420PNT-4120S1 199133	RAMO5-W420PNT-412RS1 199137
			180/207 V DC	4	2	RAMO5-D421PNT-4120S1 199126	RAMO5-D421PNT-412RS1 199130	RAMO5-W421PNT-4120S1 199134	RAMO5-W421PNT-412RS1 199138
			230/277 V DC	4	2	RAMO5-D422PNT-4120S1 199127	RAMO5-D422PNT-412RS1 199131	RAMO5-W422PNT-4120S1 199135	RAMO5-W422PNT-412RS1 199139
			400/480 V AC	4	2	RAMO5-D424PNT-4120S1 199128	RAMO5-D424PNT-412RS1 199132	RAMO5-W424PNT-4120S1 199136	RAMO5-W424PNT-412RS1 199140

RASP5 variable frequency drive

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>2),3)</sup>		Control voltage External brake <sup>4)</sup>	Inputs/ outputs		Without integrated brake resistor		With integrated brake resistor	
	P kW	P HP		Sensor input	Actuator output <sup>5)</sup>	Without repair switch	With repair switch	Without repair switch	With repair switch
I <sub>e</sub> A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
2.4	0.75	1	-	4	2	RASP5-2420PNT-412000S1 198932	RASP5-2420PNT-412R000S1 198948	RASP5-2420PNT-4120100S1 198936	RASP5-2420PNT-412R100S1 198952
			180/207 V DC	4	2	RASP5-2421PNT-412000S1 198933	RASP5-2421PNT-412R000S1 198949	RASP5-2421PNT-4120100S1 198937	RASP5-2420PNT-412R100S1 198953
			230/277 V DC	4	2	RASP5-2422PNT-412000S1 198934	RASP5-2422PNT-412R000S1 198950	RASP5-2422PNT-4120100S1 198938	RASP5-2421PNT-412R100S1 198954
			400/480 V AC	4	2	RASP5-2424PNT-412000S1 198935	RASP5-2424PNT-412R000S1 198951	RASP5-2424PNT-4120100S1 198939	RASP5-2422PNT-412R100S1 198955
4.3	1.5	2	-	4	2	RASP5-4420PNT-412000S1 198964	RASP5-4420PNT-412R000S1 198980	RASP5-4420PNT-4120100S1 198968	RASP5-2424PNT-412R100S1 198984
			180/207 V DC	4	2	RASP5-4421PNT-412000S1 198965	RASP5-4421PNT-412R000S1 198981	RASP5-4421PNT-4120100S1 198969	RASP5-4420PNT-412R100S1 198985
			230/277 V DC	4	2	RASP5-4422PNT-412000S1 198966	RASP5-4422PNT-412R000S1 198982	RASP5-4422PNT-4120100S1 198970	RASP5-4421PNT-412R100S1 198986
			400/480 V AC	4	2	RASP5-4424PNT-412000S1 198967	RASP5-4424PNT-412R000S1 198983	RASP5-4424PNT-4120100S1 198971	RASP5-4422PNT-412R100S1 198987
5.6	2.2	3	-	4	2	RASP5-5420PNT-412000S1 198996	RASP5-5420PNT-412R000S1 199012	RASP5-5420PNT-4120100S1 199000	RASP5-4424PNT-412R100S1 199016
			180/207 V DC	4	2	RASP5-5421PNT-412000S1 198997	RASP5-5421PNT-412R000S1 199013	RASP5-5421PNT-4120100S1 199001	RASP5-5420PNT-412R100S1 199017
			230/277 V DC	4	2	RASP5-5422PNT-412000S1 198998	RASP5-5422PNT-412R000S1 199014	RASP5-5422PNT-4120100S1 199002	RASP5-5421PNT-412R100S1 199018
			400/480 V AC	4	2	RASP5-5424PNT-412000S1 198999	RASP5-5424PNT-412R000S1 199015	RASP5-5424PNT-4120100S1 199003	RASP5-5422PNT-412R100S1 199019
8.5	4	5	-	4	2	RASP5-8420PNT-412000S1 199028	RASP5-8420PNT-412R001S1 199044	RASP5-8420PNT-4120101S1 199032	RASP5-8420PNT-412R101S1 199048
			180/207 V DC	4	2	RASP5-8421PNT-412000S1 199029	RASP5-8421PNT-412R001S1 199045	RASP5-8421PNT-4120101S1 199033	RASP5-8421PNT-412R101S1 199049
			230/277 V DC	4	2	RASP5-8422PNT-412000S1 199030	RASP5-8422PNT-412R001S1 199046	RASP5-8422PNT-4120101S1 199034	RASP5-8422PNT-412R101S1 199050
			400/480 V AC	4	2	RASP5-8424PNT-412000S1 199031	RASP5-8424PNT-412R001S1 199047	RASP5-8424PNT-4120101S1 199035	RASP5-8424PNT-412R101S1 199051

Notes

- 1) Rated operational current at a switching frequency of 6 kHz and an ambient temperature of +40 °C
- 2) For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min<sup>-1</sup> at 50 Hz or 1800 min<sup>-1</sup> at 60 Hz
- 3) At 400 V, 50 Hz at 440-480 V, 60 Hz
- 4) For controlling motors with mechanical brakes
- 5) Integrated brake chopper with resistor for dynamic braking

Moeller series

EtherNet/IP

RAMO5 motor starter

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>2),3)</sup>		Control voltage External brake <sup>4)</sup>	Inputs/ outputs		DOL starter		Reversing starter	
	P kW	P HP		Without repair switch	With repair switch	Without repair switch	With repair switch		
I <sub>e</sub> A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
6.6	0.09-3	0.125-4	-	4	2		<b>RAMO5-D420EIP-412RS1</b> 199117		<b>RAMO5-W420PNT-412RS1</b> 199121
			180/207 V DC	4	2		<b>RAMO5-D421PNT-412RS1</b> 199118		<b>RAMO5-W421PNT-412RS1</b> 199122
			230/277 V DC	4	2		<b>RAMO5-D422PNT-412RS1</b> 199119		<b>RAMO5-W422PNT-412RS1</b> 199123
			400/480 V AC	4	2		<b>RAMO5-D424PNT-412RS1</b> 199120		<b>RAMO5-W424PNT-412RS1</b> 199124

RASP5 variable frequency drive

Rated operational current <sup>1)</sup>	Assigned motor rating <sup>2),3)</sup>		Control voltage External brake <sup>4)</sup>	Inputs/ outputs		Without integrated brake resistor		With integrated brake resistor	
	P kW	P HP		Without repair switch	With repair switch	Without repair switch	With repair switch		
I <sub>e</sub> A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output <sup>5)</sup>	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
2.4	0.75	1	-	4	2		<b>RASP5-2420EIP-412R000S1</b> 198868		<b>RASP5-2420EIP-412R100S1</b> 198872
			180/207 V DC	4	2		<b>RASP5-2421EIP-412R000S1</b> 198869		<b>RASP5-2421EIP-412R100S1</b> 198873
			230/277 V DC	4	2		<b>RASP5-2422EIP-412R000S1</b> 198870		<b>RASP5-2422EIP-412R100S1</b> 198874
			400/480 V AC	4	2		<b>RASP5-2424EIP-412R000S1</b> 198871		<b>RASP5-2424EIP-412R100S1</b> 198875
4.3	1.5	2	-	4	2		<b>RASP5-4420EIP-412R000S1</b> 198884		<b>RASP5-4420EIP-412R100S1</b> 198888
			180/207 V DC	4	2		<b>RASP5-4421EIP-412R000S1</b> 198885		<b>RASP5-4421EIP-412R100S1</b> 198889
			230/277 V DC	4	2		<b>RASP5-4422EIP-412R000S1</b> 198886		<b>RASP5-4422EIP-412R100S1</b> 198890
			400/480 V AC	4	2		<b>RASP5-4424EIP-412R000S1</b> 198887		<b>RASP5-4424EIP-412R100S1</b> 198891
5.6	2.2	3	-	4	2		<b>RASP5-5420EIP-412R000S1</b> 198900		<b>RASP5-5420EIP-412R100S1</b> 198904
			180/207 V DC	4	2		<b>RASP5-5421EIP-412R000S1</b> 198901		<b>RASP5-5421EIP-412R100S1</b> 198905
			230/277 V DC	4	2		<b>RASP5-5422EIP-412R000S1</b> 198902		<b>RASP5-5422EIP-412R100S1</b> 198906
			400/480 V AC	4	2		<b>RASP5-5424EIP-412R000S1</b> 198903		<b>RASP5-5424EIP-412R100S1</b> 198907
8.5	4	5	-	4	2		<b>RASP5-8420EIP-412R001S1</b> 198916		<b>RASP5-8420EIP-412R101S1</b> 198920
			180/207 V DC	4	2		<b>RASP5-8421EIP-412R001S1</b> 198917		<b>RASP5-8421EIP-412R101S1</b> 198921
			230/277 V DC	4	2		<b>RASP5-8422EIP-412R001S1</b> 198918		<b>RASP5-8422EIP-412R101S1</b> 198922
			400/480 V AC	4	2		<b>RASP5-8424EIP-412R001S1</b> 198919		<b>RASP5-8424EIP-412R101S1</b> 198923

Notes

- 1) Rated operational current at a switching frequency of 6 kHz and an ambient temperature of +40 °C
- 2) For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min-1 at 50 Hz or 1800 min-1 at 60 Hz
- 3) At 400 V, 50 Hz  
at 440-480 V, 60 Hz
- 4) For controlling motors with mechanical brakes
- 5) Integrated brake chopper with resistor for dynamic braking











Switching and operating motors

	Description	For use with	Part no.	Article no.
<b>External control unit</b>				
	7-digit display IP54 at the front With approx. 3 m long, pluggable connection cable (RJ45, 8-pin)	DE1, DE11, DC1, DB1, DA1	<b>DX-KEY-LED2</b>	186946
	OLED display IP54 at the front Multi-language With approx. 3 m long, pluggable connection cable (RJ45, 8-pin)	DC1, DB1, DA1, RAM05, RASP5	<b>DX-KEY-OLED</b>	169133
	LCD display IP54 at the front Multi-language	DG1	<b>DXG-KEY-LCD</b>	730-32047-00P
	Mounting frame With approx. 0.5 m long, pluggable connection cable	DG1, DM1	<b>DXG-KEY-RMTKIT</b>	730-32033-00P
	Mounting frame		<b>DXG-KEY-HOLDER</b>	730-32032-00P
	Cover for RJ45 interface		<b>DXG-KEY-N12PLUG</b>	730-32038-00P
<b>Configuration module</b>				
<b>Plug-in module (front)</b>				
	With selector switch for ramp time and operating mode With potentiometer for motor protection and fixed speed	DE1, DE11	<b>DXE-EXT-SET</b>	174621
<b>Expansion modules</b>				
<b>Output expansion</b>				
	2 relay outputs (N/O, 250 V AC/220 V DC, max. 1 A) 1 analog output (0 - +10 V, max. 20 mA) For connection to the DC1 control signal terminals	DC1	<b>DXG-EXT-2R01A0</b>	169030
	2 relay outputs (N/O, 250 V AC/220 V DC, max. 1 A) For connection to the DC1 control signal terminals	DC1	<b>DXC-EXT-2R0</b>	169031
	Plug-in module with pluggable terminal strip, 5-pole 3 relay outputs (N/O, 250 V AC, max. 6 A/ 30 V DC, max. 5 A)	DA1	<b>DXA-EXT-3R0</b>	169121
	3 relay outputs	DG1	<b>DXG-EXT-3R0</b>	744-A2614-00P
<b>Input/output expansion</b>				
	Plug-in module with pluggable terminal strip, 6-pole 3 digital inputs (+24 V) 1 relay output (N/O, 250 V AC, max. 6 A/ 30 V DC, max. 5 A)	DA1	<b>DXA-EXT-3DI1R0</b>	169036
	3 digital inputs 3 digital outputs 1 thermistor input	DG1	<b>DXG-EXT-3DI3DO1T</b>	744-A2612-00P
	1 analog input 2 analog outputs	DG1	<b>DXG-EXT-1AI2A0</b>	744-A2613-00P

	Description	For use with	Part no.	Article no.
<b>Expansion modules</b>				
<b>Input expansion</b>				
	3 PT100 inputs	DG1	<b>DXG-EXT-THER1</b>	744-A2615-00P
	3 relay outputs	DG1	<b>DXG-EXT-3R0</b>	744-A2614-00P
	3 digital inputs, 3 digital outputs, 1 thermistor input	DG1	<b>DXG-EXT-3DI3DO1T</b>	744-A2612-00P
	1 analog input, 2 analog outputs	DG1	<b>DXG-EXT-1AI2AO</b>	744-A2613-00P
	240 V AC input (galvanically isolated) For 6 digital inputs	DG1	<b>DXG-EXT-6DI</b>	744-A2616-00P
<b>Encoder module</b>				
	Plug-in module with pluggable terminal strip, 5-pole 2 channels max. 500 kHz 5 V TTL, A & B, /A & /B, 5 V DC, max. 200 mA 24 V HTL, A & B, /A & /B, 24 V DC, external power supply required, max. 30 V DC	DA1	<b>DXA-EXT-ENCOD</b>	169035
<b>Coupling module</b>				
	115 V AC input (galvanically isolated) For 4 digital inputs For connection to the DC1 control signal terminals	DC1	<b>DXC-EXT-IO110</b>	169032
	230 V AC input (galvanically isolated) For 4 digital inputs For connection to the DC1 control signal terminals	DC1	<b>DXC-EXT-IO230</b>	169033
<b>Fieldbus module</b>				
	PROFIBUS-DP SUB-D socket, 9-pole	DA1	<b>DX-NET-PROFIBUS</b>	169124
	PROFINET 2 x RJ45, 8-pole Plug-in module	DA1	<b>DX-NET-PROFINET-2</b>	169125
	Modbus-TCP 2 x RJ45, 8-pole	DA1	<b>DX-NET-MOVBUSTCP-2</b>	169126
	EtherNet/IP 2 x RJ45, 8-pole	DA1	<b>DX-NET-ETHERNET-2</b>	169122
	EtherCAT 2 x RJ45, 8-pole	DA1	<b>DX-NET-ETHERCAT-2</b>	169127
	DeviceNet	DA1	<b>DX-NET-DEVICENET</b>	169123
	PROFINET 2 x RJ45, 8-pole Plug-in module (front)	DE1, DE11, DC1 (IP20)	<b>DX-NET-PROFINET2-2</b>	184947
	EtherNet/IP 2 x RJ45, 8-pole Plug-in module (front)	DE1, DE11, DC1 (IP20)	<b>DX-NET-ETHERNET2-2</b>	184969
<b>DM1 network interfaces</b>				
	PROFIBUS-DP SUB-D socket, 9-pole	DG1	<b>DXG-NET-PROFIBUS</b>	744-A2617-00P
	Interface converter from 9-pole SUB-D connector to 3-pole control terminals	DXG-NET-PROFIBUS	<b>DXG-MNT-PROFIBUS</b>	744-A2618-00P
<b>Network interfaces</b>				
	DG1/DH1 networking: DEVICENET	DG1	<b>DXG-NET-DEVICENET</b>	744-F0117-00P
	DG1/DH1 networking: SWD-IP20	DG1, DM1	<b>DXG-NET-SWD-IP20</b>	744-F0190-00P
	DG1/DH1 networking: SWD-IP54	DG1	<b>DXG-NET-SWD-IP54</b>	744-F0191-00P
	DG1/DH1 networking: PROFINET	DG1	<b>DXG-NET-PROFINET</b>	400003
<b>DM1 Pro network interfaces</b>				
	DM1 Profibus option with clip-on housing	DM1	<b>DXM-NET-PROFIBUS</b>	3-5039-001A
	DM1 CANopen option with clip-on housing	DM1	<b>DXM-NET-CANOPEN</b>	3-5040-001A
	DM1 Profinet option with clip-on housing	DM1	<b>DXM-NET-PROFINET</b>	400004

Switching and operating motors



	Description	For use with	Part no.	Article no.	
<b>SmartWire-DT modules</b>					
	Plug-in module with slot for SWD4-8SF2-5 external device plug 	DA1 (IP20, IP55)	<b>DX-NET-SWD1</b>	169129	
	Plug-in module (at the front) with slot for SWD4-8SF2-5 external device plug 	DE1, DE11, DC1 (IP20)	<b>DX-NET-SWD3</b>	169131	
<b>PC communication</b>					
<b>Memory and Bluetooth communication stick</b>					
	For storage, copy and/or transfer of parameters via Bluetooth to a PC using the drivesConnect software or mobile app, with two function keys for uploading and downloading parameters from the memory using a Bluetooth dongle.	DE1, DE11, DC1, DB1, DA1, RAM05, RASP5	<b>DX-COM-STICK3-KIT</b>	197586	
<b>Interface converters</b>					
	USB/RS485 interface converter with connection cable, RJ45, 8-pole Galvanically isolated	DE1, DE11, DC1, DB1, DA1, RAM05, RASP5	<b>DX-CBL-PC-3M0</b>	744-A306-00P	
	RJ45/USB, with CD	DG1, DH1, DM1	<b>DXG-CBL-PCCABLE</b>	730-32037-00P	
<b>License key for activating the function block editor in the drivesConnect software</b>					
	USB memory stick	DA1	<b>DX-COM-SOFT</b>	169136	
<b>Connecting cable</b>					
	Patch cable with RJ45 plugs, 8-pole	Length: 0.5 m	DE1, DE11, DC1, DB1, DA1	<b>DX-CBL-RJ45-0M5</b>	169137
		Length: 1 m		<b>DX-CBL-RJ45-1M0</b>	169138
		Length: 3 m		<b>DX-CBL-RJ45-3M0</b>	169139
	Patch cable with RJ45 plugs, 8-pole	Length: 1 m	DG1, DM1	<b>DXG-CBL-1M0</b>	730-32034-00P
		Length: 3 m		<b>DXG-CBL-3M0</b>	730-32035-00P

	Description	For use with	Part no.	Article no.
<b>Bus terminating resistor</b>				
	RJ45 8-pole Connection to CANopen® (PIN 1/2, 124 Ω) or Modbus-RTU (PIN 7/8, 120 Ω)	easyNet DX-SPL-RJ45-2SL-1PL	<b>EASY-NT-R</b>	256281
<b>PC communication</b>				
<b>Splitter</b>				
	RJ45, 8-pole, 3 sockets For CANopen® and Modbus RTU	DX-CBL-RJ45...	<b>DX-SPL-RJ45-3SL</b>	169141
	RJ45, 8-pole, 2 sockets/1 plug with approx. 10 cm long cable For CANopen® and Modbus RTU	DE1, DE11, DC1, DA1	<b>DX-SPL-RJ45-2SL1PL</b>	169142
<b>Battery</b>				
	Battery for real-time clock	DG1	<b>DXG-ACC-RTBATT</b>	730-32039-00P
<b>Mounting accessories</b>				
<b>Mounting frame for through-hole mounting of the power section outside the control cabinet</b>				
	Frame parts and mounting screws	DG1 (frame size FS1)	<b>DXG-ACC-FR1N12FK</b>	730-32022-00P
		DG1 (frame size FS2)	<b>DXG-ACC-FR2N12FK</b>	730-32023-00P
		DG1 (frame size FS3)	<b>DXG-ACC-FR3N12FK</b>	730-32024-00P
		DG1 (frame size FS4)	<b>DXG-ACC-FR4N12FK</b>	730-32025-00P
		DG1 (frame size FS5)	<b>DXG-ACC-FR5N12FK</b>	730-32026-00P
		DG1 (frame size FS6)	<b>DXG-ACC-FR6N12FK</b>	744-A3845-00P
<b>Mounting kit for increasing the degree of protection from IP21/NEMA 1 to IP54/NEMA 12</b>				
	Enclosure cover with seals and auxiliary fan	DG1-34... (frame size FS1, 400/480 V)	<b>DXG-ACC-4FR1N12KIT</b>	730-32029-00P
		DG1 (frame size FS2)	<b>DXG-ACC-FR2N12KIT</b>	730-32030-00P
		DG1-32... (frame size FS1, 230 V)	<b>DXG-ACC-2FR1N12KIT</b>	744-A2815-00P
<b>IP21 / NEMA1 kit DM1</b>				
	DM1 FR1 NEMA 1 kit	DM1	<b>DXM-ACC-FR1N1KIT</b>	3-5033-001A
	DM1 FR2 NEMA 1 kit	DM1	<b>DXM-ACC-FR1N2KIT</b>	3-5034-001A
	DM1 FR3 NEMA 1 kit	DM1	<b>DXM-ACC-FR1N3KIT</b>	3-5035-001A
	DM1 FR4 NEMA 1 kit	DM1	<b>DXM-ACC-FR1N4KIT</b>	3-5036-001A
<b>IP21 / NEMA1 kit DM1 100 kA UL plenum rating</b>				
	DM1 frame size 1, flame retardant NEMA 1 kit	DM1	<b>DXM-ACC-FR1NPKIT</b>	3-5056-001A
	DM1 frame size 2, flame retardant NEMA 1 kit	DM1	<b>DXM-ACC-FR2NPKIT</b>	3-5057-001A
	DM1 frame size 3, flame retardant NEMA 1 kit	DM1	<b>DXM-ACC-FR3NPKIT</b>	3-5058-001A
	DM1 frame size 4, flame retardant NEMA 1 kit	DM1	<b>DXM-ACC-FR4NPKIT</b>	3-5059-001A

Switching and operating motors

## Safe switching and isolation



### T rotary cam switches

- Main switches
- Maintenance / manual override switches
- Control switches
- Outputs up to 132 kW
- Non-standard options available

Page 6/66 ff.



### P switch-disconnectors

- IP65
- Main switches
- Maintenance/repair switches
- Safety switches
- Outputs up to 110 kW

Page 6/66 ff.



### Dumeco switch-disconnectors and QSA switch-disconnectors fuses

- Switch-disconnectors up to 3150 A



Get more information



### P, N switch-disconnectors

- Four type sizes up to 1600 A
- 3 and 4 poles
- Wide range of installation and actuation options

Page 6/4 ff.



### INX switch-disconnectors

- Disconnectors up to 6300 A



Get more information

## Line and residual-current protection



### FAZ miniature circuit breakers

- Only 80 mm tall
- Can be installed/removed without dismantling the busbars
- Switching capacity up to 25 kA

Page 6/24 ff.



### RCDs

- RCCBs, RCBOs & RCD Blocks
- Type A, F & B
- Digital devices with residual current indicator & trip warning

Page 6/25 ff.



### Hydraulic-magnetic circuit breakers

- 0.1 to 63 A
- 1 to 4 poles
- Up to 22 x I<sub>n</sub> of the inrush current
- No derating required in case of temperature variations

Page 6/20 ff.

## Electronic protection



### PXS24 circuit breakers for 24 V DC

- Modular system
- For protection of long cables
- With active current limitation
- Integrated inputs/outputs
- Load switching

- Direct connection of up to three loads
- Sequence control – simple linking of channels
- Quick and easy wiring via Push-in terminals and busbars

Page 6/42 ff.

## System protection



### NZM circuit breakers with electromagnetic release

- NZM1 to NZM3
- Up to 500 A and 690 V AC
- Simple and efficient

Page 6/4 ff.



### NZM circuit breakers with electromagnetic release

- NZM2 to NZM4
- Up to 1600 A and 690 V AC
- LSIG protection
- Integrated test function

Page 6/4 ff.



### NZM circuit breaker with electromagnetic release and energy measurement module

- Class 1 to IEC 61557-12
- Can measure current, voltage, power, energy and much more
- Remaining service life indicator
- Maintenance mode
- Zone-selective interlocking
- Test function

Page 6/4 ff.



### NZM circuit breakers + residual-current protection module

- Up to 250 A
- Pulse-current sensitive/ AC/DC sensitive
- Rated residual current I<sub>Δn</sub>=0.003 A ... 3.0 A



See online catalog



### IZM circuit breakers

- IZMX circuit breakers up to 6300 A



Get more information

## Enclosures and Busbar-Systems



### Ci-K enclosures (IP65)

- Reliable protection of all types of distributed switching and automation devices
- Rugged and highly resistant to chemicals
- Glass-fiber reinforced polycarbonate
- Customized labeling
- Total insulation
- Metric cable entry knockouts

Page 6/73



### CS enclosures

- Degree of protection: IP66 / IK09
- High-quality sheet steel
- UL/CSA approval, NemaType 1, 4, 12
- Sizes from 250 x 200 x 150 mm to 1200 x 1200 x 250 mm
- Standardized locking system

Page 6/80 ff.



### Sasy 60i

- Flat busbars with or busbars with double-T cross-section
- Innovative device adapters and NH fuse switch-disconnectors
- Modular system covers
- No drilling needed to establish electrical contacts (up to 1600 A)

Page 6/44 ff.



### Ci enclosures

- Six types of protection: against dust, moisture, water, corrosive substances, mechanical damage, extreme short circuits
- Cover-lifting mechanism with overpressure compensation



See online catalog

## Bussmann series fuses



### D & DO fuse links and fuse bases

- 400 and 500 V AC
- 2 to 100 Ampere
- Sizes: DI to DIV, D01 to D03
- IEC 60269 and VDE 0636
- Comprehensive portfolio of bases and accessories

Page 6/50 ff.



### Cylindrical fuse links and fuse bases

- 400, 500 and 690 V AC
- 0.25 to 125 Ampere
- Sizes: 10 x 38, 14 x 51 and 22 x 58 mm
- IEC 60269
- Comprehensive portfolio of fuse holders

Page 6/50 ff.



### UL branch circuit and supplementary fuse links

- up to 600 V AC/600 V DC
- Up to 1200 A
- CE, UL and CSA certified
- Comprehensive portfolio of fuse holders and fuse blocks

Page 6/50 ff.



### High-speed square-body fuse links

- 690 and 1250 V AC
- 10 to 7500 Ampere
- Sizes: 000 to 5 IEC 60269-4, DIN 43653 and 43620
- UL and CSA certified

Page 6/50 ff.



### High-speed, British Standard fuse links

- 240 and 690 V AC
- 6 to 710 Ampere
- BS88 Part 4 and IEC 60269-4



## Flexible voltage adjustment



### Single-phase and three-phase transformers

- Control transformers
- Isolation transformers
- Safety transformers
- Multi-winding transformers

Page 6/74 ff.

## Ensuring power quality



### Single-phase UPSs

- Outputs of 500 VA to 20 kVA
- Compact protection against power issues
- Multiple communication options
- Up to 3 kVA Plug & play
- Hot-swappable batteries

Page 6/88 ff.



### Three-phase UPSs

- Outputs of 8 kVA to 1200 kVA
- Maximum efficiency
- Multiple communication options
- Paralleling possible thanks to HotSync technology
- Eaton ABM technology for battery management

Page 6/88 ff.



### Software + accessories

- Free shutdown and management software
- Orderly shutdown – also for VMware systems
- Management of large numbers of UPSs
- Intelligent power distribution

Page 6/88 ff.



# Circuit protection for machines and systems

## 1 Energy distribution

Reliable operation, additional safety functions and accurate process data are the hallmarks of our digital circuit breakers. All devices up to the air circuit breakers up to 6300 A rely on the same measurement and communication technology, thereby facilitating the design of energy management systems according to ISO 50001, from simple connections all the way to complete sub-distribution boards.

## 2 Main switches for machines

Thanks to the multiple mounting options, including flexible options for rear or side operation, the switches can be used as versatile and space-saving main switches for machines while also meeting the special requirements for export to North America. The accessories are fully compatible, which simplifies the changeover to digital circuit breakers. Integrated energy measurement with category 1 accuracy as per IEC 61557-12 is also available.

## 3 Motor protection

Variations in motor current over time are an important indicator for the planning of predictive maintenance. The digital PKE and NZM PXR circuit breakers are not only able to record and communicate current values, but also to capture a digital motor image, diagnostic data, and much more. And all that across the entire power range and without the need for any additional sensors.

## 4 Protection of variable frequency drives

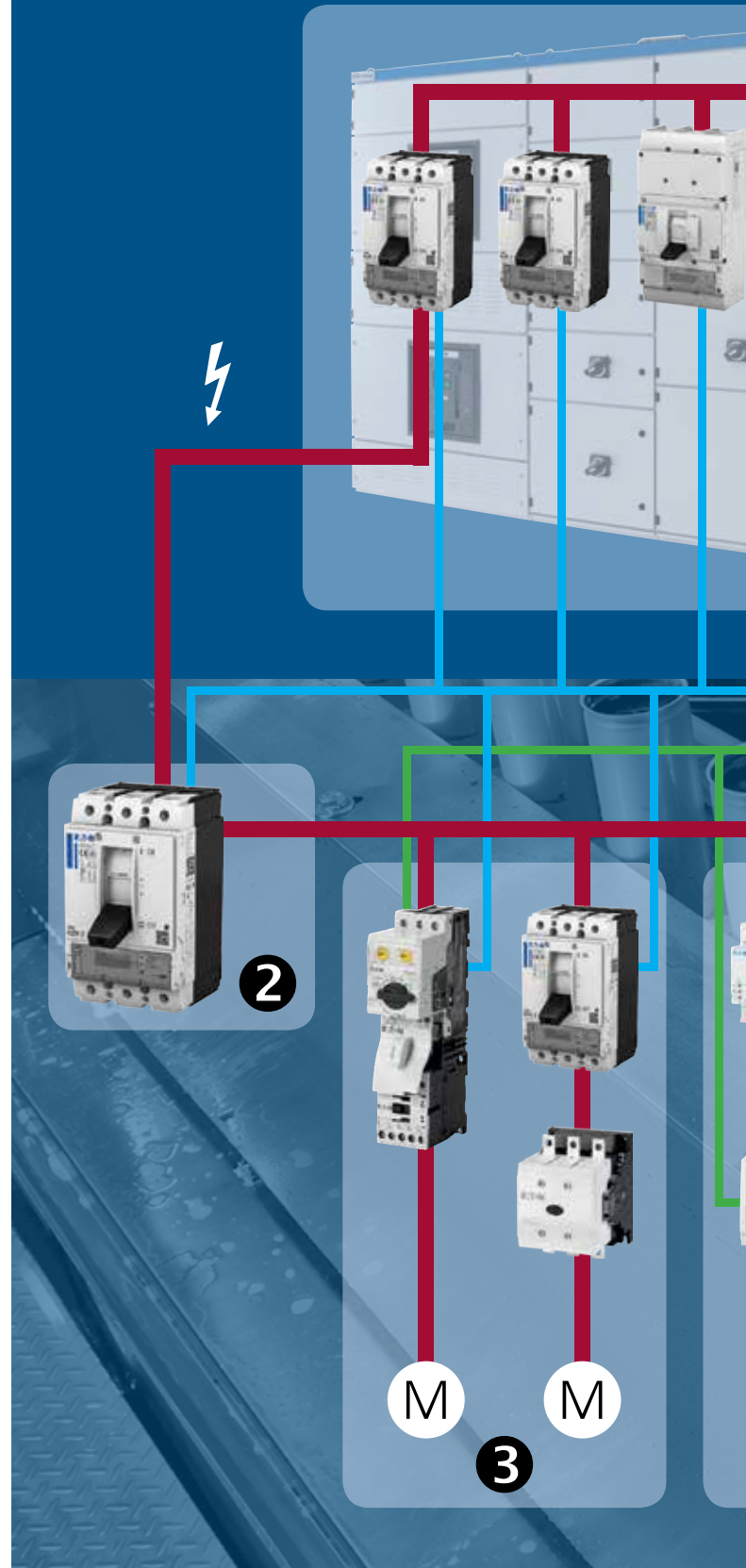
Leakage currents and harmonics pose a special challenge when it comes to the protection of variable frequency drives. Our digital, all-current sensitive RCDs prevent nuisance tripping and will always switch off if the maximum thresholds are exceeded. In addition, warning signals can be read off the device itself or transmitted digitally. We also offer a wide range of fuses for the protection of variable frequency drives. This option is particularly well suited for applications intended for the North American market, in order to achieve a high short-circuit rating for your control cabinets.

## 5 Protection of electrical loads and people

Whether you need fuses or circuit breakers, you will always find the ideal solution for protecting cables and installations in our portfolio. Plus, our SmartWire DT connection technology makes it possible to quickly and easily determine the circuit breaker status. The PKE circuit breaker supplies information on load currents, breaker values and early warning alerts and thus provides for early detection of anomalies and critical issues.

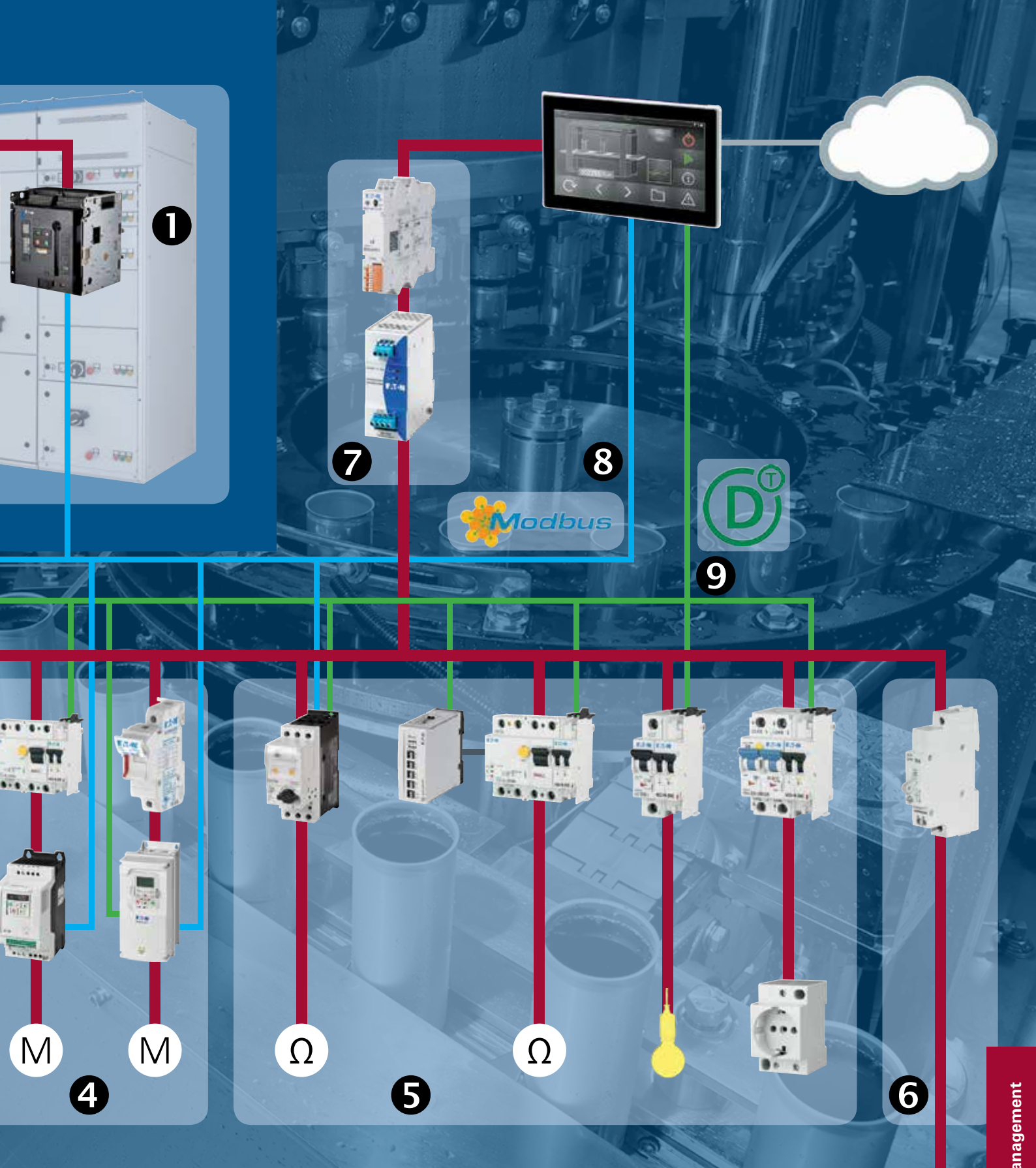
## 6 + 7 Protection of 24 V DC control circuits and long cables

Our fuses, PXS24 electronic circuit breakers and hydraulic-magnetic circuit breakers offer optimum protection for 24 V DC control circuits. They can quickly detect overloads and will only disconnect the power supply of those parts of the machine that are malfunctioning. The machine remains in a controllable state, so that an orderly shutdown is possible. Moreover, the PXS24 electronic breaker can also be integrated into the control system and operated either via a control panel or remotely.



We also offer fuses, electronic and hydraulic-magnetic circuit breakers for tailor-made line protection of long cables to mitigate the effects of capacitive circuits or current spikes when starting motors, which might otherwise lead to nuisance tripping.





**8 Modbus RTU**

All operating data and measurements can be read out via the integrated Modbus RTU, and in the case of certain functions they can also be written. Our digital circuit breakers and variable frequency drives come with a wide range of fieldbus and industrial Ethernet interfaces.

**9 SmartWire-DT connection technology**

SmartWire-DT can be implemented quickly and is particularly effective when it comes to contact status and warning signals or the collection of current values, for example from a PKE circuit breaker.



## NZM circuit breakers up to 1600 A – Four sizes and various versions are available



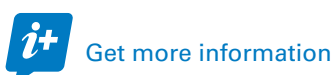
For the latest catalog, please visit  
[Eaton.com/digitalnzm](http://Eaton.com/digitalnzm)

Our NZM series of circuit breakers covers rated currents from 20 A to 1600 A – with only four sizes. The wide range of applications covers all industrial requirements, from power distribution and system protection to main switches for machinery.

Our new digital NZM, an electronic circuit breaker from the PXR family, stands out in particular:

- Thanks to the use of proven technology and extended protection functions, these new circuit breakers achieve a significantly higher level of machine safety during operation and maintenance.
- The remaining service life indicator and the associated prevention of unplanned shutdowns significantly improve machine availability.
- Highly accurate class 1 measurements can be used to verify the energy efficiency of the system.

The NZM accessories can also be used for the PXR family, as they have the same dimensions and are 100 % compatible.







## Power Xpert Release – our next generation electronic overcurrent release is now also available for the NZM

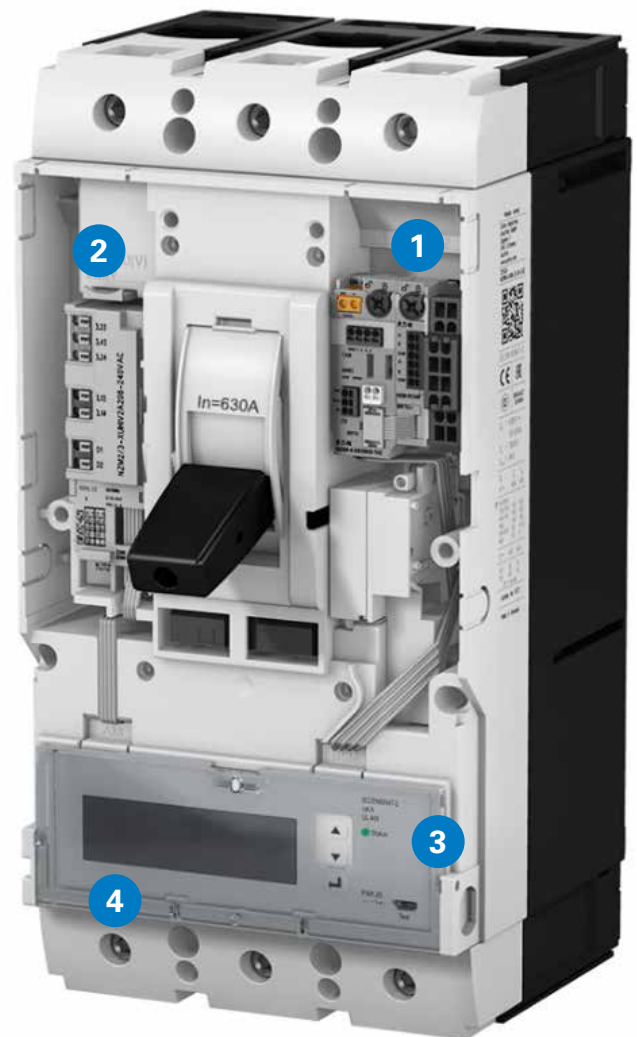
**The Power Xpert Release – PXR for short – is our new trip unit platform. We have already successfully introduced this technology in our IZMX series of air circuit breakers. Achieving time savings for users and covering the broadest possible range of applications – these were the goals we had in mind when developing the Power Xpert Release platform.**

- 1 The uniform design and user-friendly navigation menu of the PXR will simplify your everyday work. With the PXR, communication is also as simple as can be: Modules for various bus systems are available, offering high-performance connections in line with the respective system requirements. And the integrated Modbus RTU connection also saves space during installation.
- 2 Relays integrated in the voltage release enable the control of associated components and the indication of operating states, for example through alarm notifications, alongside the control of remote operators and motor-starter combinations – and much more.
- 3 The USB interface allows for easy connection to a PC to change the settings, conduct analyses or activate one of the extensive test functions, including continuity tests of current transformers and testing of the entire measurement and protection protocols and all connected components. This also simplifies access to the information generated by the switchgear, which can also be saved and printed, making it the fastest and most convenient way to continuously improve your control and maintenance systems. All sensitive data are password-protected to prevent unauthorized access.

The Rogowski coil transformer supports ISO 50001 energy management with class 1 accuracy in accordance with IEC 60557-12.

- 4 The high-resolution display facilitates the retrieval of information, enables intuitive operation and allows for quick configuration of the PXR25. You can enter the required settings via the display, with the option of choosing between protection settings and soft (additional) settings. The settings of PXR switches can also be easily adjusted using the Power Xpert Protection Manager (PXPM)\* software for PC. With the PXR20 version, you can adjust the protection settings via the rotary heads on the circuit breaker itself, while the soft settings can be adjusted using the PXPM software.

\* Software available for download at [www.eaton.com/PXPM](http://www.eaton.com/PXPM)



Power management



### **Improved life-cycle management thanks to digital circuit protection**

What is life-cycle management and what are the benefits for users? Our white paper explains the different Eaton solutions as well as their benefits and advantages.

Download your free copy at [www.eaton.com](http://www.eaton.com)

### **Zone selectivity and ARMS maintenance mode**

#### **Precise disconnection of upstream faults and protection against arc faults**



#### **Zone-selective interlocking**

Zone selectivity is the next stage in the evolution of time selectivity. In contrast to time selectivity, any faults will be switched off instantaneously and at any point in the network. This ensures that the energy being generated ( $I^2t$ ) – and thus the thermal and dynamic system load – is kept to a minimum. For this purpose, the circuit breakers are connected to a signal cable. In the event of a fault, the signal cable ensures that only the circuit breaker located directly upstream of the fault (i.e. the circuit breaker feeding into the short circuit) will switch off immediately. Any parts of the system that are not malfunctioning will remain operational, to minimize downtime as much as possible.

#### **ARMS = Arcflash Reduction Maintenance System**

Our circuit breakers can be optionally equipped with our new, patented Arcflash Reduction Maintenance System. In the event of an arc fault, this system ensures an immediate and accelerated shutdown, at a speed that beats even that of a non-delayed short-circuit release.

This feature can either be activated directly on the circuit breaker or via an external switch, for example once maintenance workers are about to enter a hazardous area. No special wiring is required.



#### **Greater safety for work on live equipment**

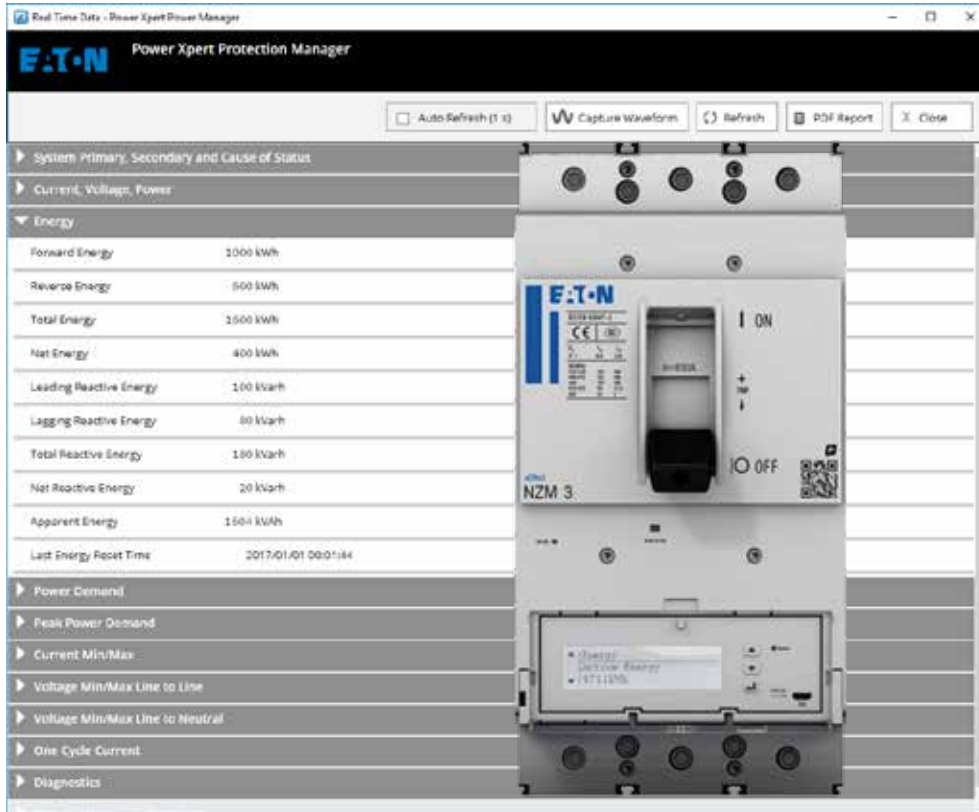
For us at Eaton, safety is a top priority, which is why we offer additional safety functions that go well beyond those required by the applicable standards. Our white paper explains the benefits for you.

Download your free copy at [www.eaton.com](http://www.eaton.com)



**Greater efficiency thanks to ISO 50001**

The international EN ISO 50001 standard was developed to facilitate the implementation of in-house energy management systems. The standard is aimed at reducing energy costs, energy consumption and CO2 emissions through appropriate measures. Implementing a proper energy management system not only saves resources, but also ensures cost transparency and savings, for both large corporations and small and medium-sized companies alike. In Germany, energy-intensive companies whose consumption exceeds 10 GWh or whose electricity costs account for more than 14 % of value added can benefit from enormous cost reductions in the form of lower energy taxes under the Renewable Energy Sources Act.



**The importance of accurate metrics and analytics**

Prerequisites for introducing an energy management system in accordance with ISO 50001 are accurate energy metrics, the identification of the main energy consumers and a full analysis of the company's energy costs, based on which specific measures for greater energy efficiency can then be derived.

**Power Xpert Protection Manager**

With the new PXPM software, we have developed a universal program that allows you to easily manage all Eaton PXR devices. Manual identification is no longer necessary, as the program automatically adapts to the connected devices. Guided and drop-down menus simplify the configuration process, while all data readings are clearly displayed via a single screen. The PXPM software speaks your language: We provide you with a wide range of language packs, and the system can either recognize the language of your computer automatically, or you

can set it manually. A comprehensive selection of additional options allows you to adapt the settings to your application:

- The protection function and the tripping characteristics can be viewed, adjusted and controlled via the display
- The comprehensive test function allows you to check all measuring and tripping functions of your device
- The trip actuator can be checked by optionally tripping the device during testing
- The transformer coil can be tested via continuity measurement

These are just a few examples of the software's capabilities.

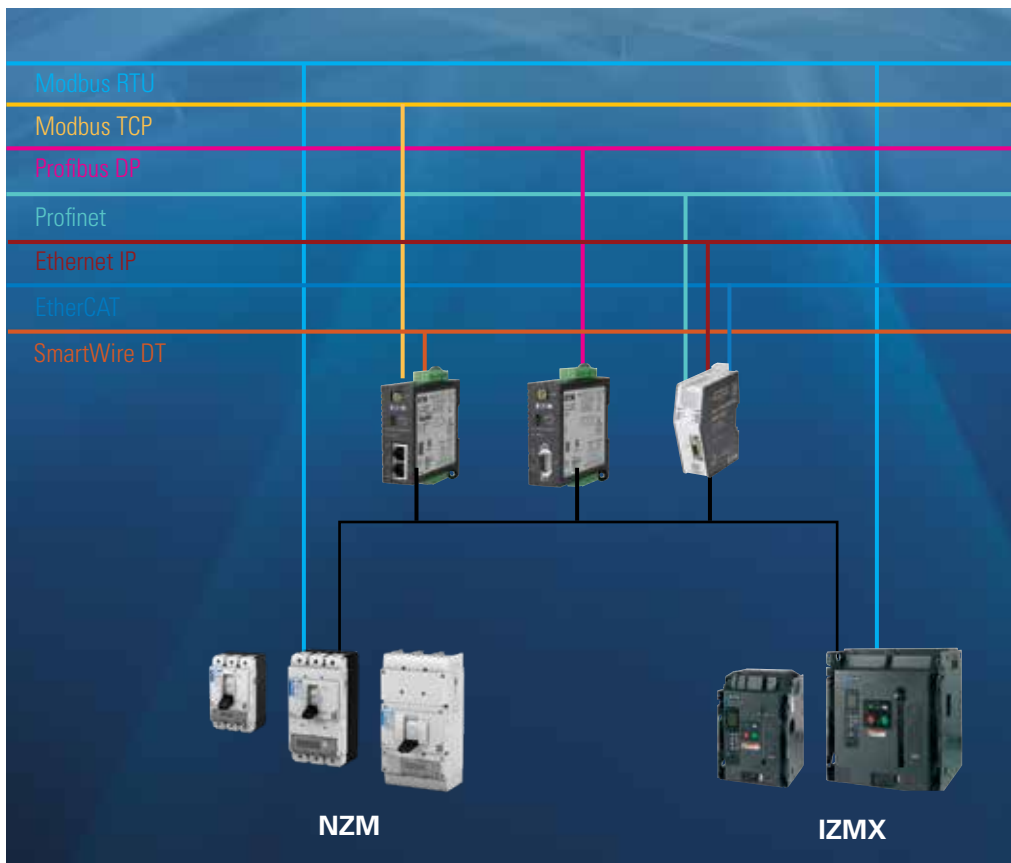


**xSpider**

xSpider is our new planning and calculation software for low-voltage networks, supporting you in the selection and optimal configuration of your switchgear and protective devices. The option to select circuit breakers based on the network diagram, and to examine the tripping characteristics directly, allows for a quick assessment of the selectivity and the required back-up fuse. The integrated ArcRisk module, which is currently unique on the market, enables a quick and clear assessment of the arc-fault risk in low-voltage switchgear assemblies.

[www.eaton.com](http://www.eaton.com)



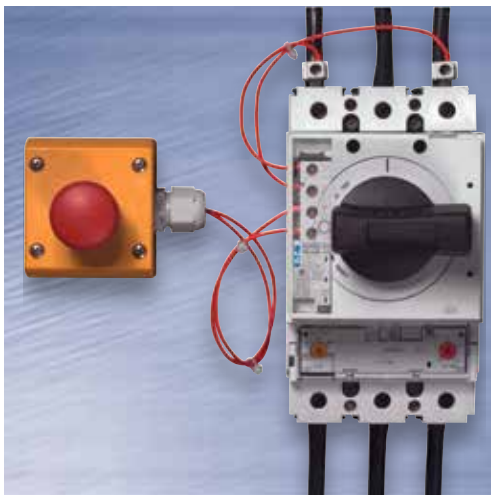


### Integrated communication

Our PXR circuit breakers and measurement and communication modules enable reliable and efficient data collection. We offer a wide range of communication options to provide users with measurements in the required form and data format. The data can then be transferred to other communication platforms via various interfaces and gateways, as required.

### Flexible integration into machinery

The complete range of NZM accessories can also be used with our new PXR circuit breakers.



### Rear actuator

In applications up to a rated current of 300 A where space is limited, the rear actuator can be used to quickly implement a compact main switch operated by means of a rugged rotary handle. All NZM1 and NZM2 circuit breakers and switch-disconnectors can be combined with a rear actuator.

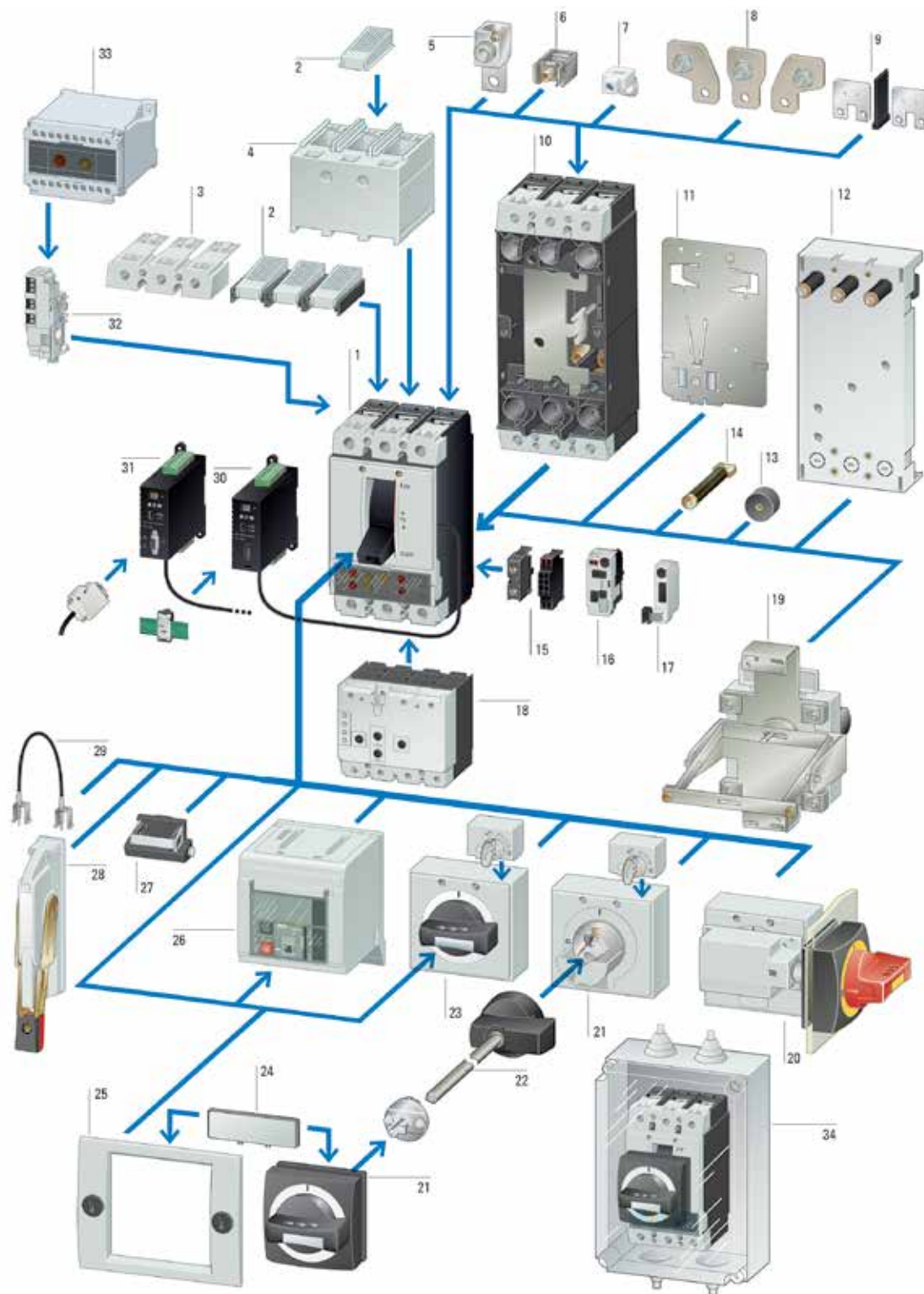
### Use as a main switch

If an undervoltage release with two integrated early-make auxiliary contacts is used, all main and auxiliary circuits are de-energized when the breaker is switched off. This enables the easy and cost-effective implementation of main switch applications with emergency-stop function up to 1600 A in accordance with IEC 60204-1 and VDE 0113 Part 1.



### Sidewall actuator

For applications up to 1600 A, the sidewall actuator can be used to operate the breaker from either the left- or right-hand side. With the optional addition of a mounting bracket, the space inside the control panel can be optimally used. This means that the mounting plate in the machine control system can be used for other control elements.















- |                                  |   |  |  |
|----------------------------------|---|--|--|
| 1 NZM base unit                  | 12 Busbar adapter                                   | 21 Door-coupling rotary handle           | 30 SmartWire-DT communication module                           |
| 2 IP2X finger guard              | 13 Spacer   | 22 Shaft extension                       | 31 Profibus DP communication module                            |
| 3 Removable terminal cover       | 14 Connection at rear                               | 23 Rotary handle                         | 32 Communication module for Ethernet-based protocols           |
| 4 Terminal cover                 | 15 Auxiliary contacts                               | 24 External warning plate/ marking plate | 33 Voltage release, early-make auxiliary contact, relay module |
| 5 Tunnel terminals               | 16 BSM interface module                             | 25 Bezel                                 | 34 Delay unit, capacitor unit                                  |
| 6 Box terminals                  | 17 Integrated Modbus RTU communication module       | 26 Remote operator                       | 35 Ci insulated enclosures                                     |
| 7 Control circuit terminal       | 18 Residual-current release                         | 27 Toggle-lever interlock device         |  |
| 8 Connection expansion           | 19 Rear actuator                                    | 28 Side-lever handle                     |  |
| 9 Link set                       | 20 Main-switch rotary handle for side-wall mounting | 29 Mechanical interlock                  |  |
| 10 Plug-in and withdrawable unit |   |  |  |
| 11 Adapter plate                 |   |  |  |

# NZM circuit breakers, switch-disconnectors

3-pole circuit breakers

Moeller series

	Rated current = rated uninterrupted current $I_n = I_u$ A	Settings range		Switching capacity: 400/415 V 50/60 Hz		Switching capacity: 400/415 V 50/60 Hz		
		Overload release $I_r$ A	Short-circuit release		Type	Article no.	Part no.	Article no.
			Instantaneous $I_i = I_n \times \dots$	Delayed $I_{sd} = I_r \times \dots$				
<b>System and line protection: thermo-magnetic release</b>								
Fixed installation, box terminal				<b>Basic switching capacity: 25 kA</b>		<b>Normal switching capacity: 50 kA</b>		
	20	15 - 20	350 A fixed	-	NZMB1-A20	280987	NZMN1-A20	281231
	25	20 - 25	350 A fixed	-	NZMB1-A25	280988	NZMN1-A25	281232
	32	25 - 32	350 A fixed	-	NZMB1-A32	280989	NZMN1-A32	281233
	40	32 - 40	8 - 10	-	NZMB1-A40	259075	NZMN1-A40	259081
	50	40 - 50	6 - 10	-	NZMB1-A50	259076	NZMN1-A50	259082
	63	50 - 63	6 - 10	-	NZMB1-A63	259077	NZMN1-A63	259083
	80	63 - 80	6 - 10	-	NZMB1-A80	259078	NZMN1-A80	259084
	100	80 - 100	6 - 10	-	NZMB1-A100	259079	NZMN1-A100	259085
	125	100 - 125	6 - 10	-	NZMB1-A125	259080	NZMN1-A125	259086
	160	125 - 160	1280 A fixed	-	NZMB1-A160	281230	NZMN1-A160	281234
Fixed installation, screw connection								
	160	125 - 160	6 - 10	-	NZMB2-A160	259088	NZMN2-A160	259092
	200	160 - 200	6 - 10	-	NZMB2-A200	259089	NZMN2-A200	259093
	250	200 - 250	6 - 10	-	NZMB2-A250	259090	NZMN2-A250	259094
	300	240 - 300	5 - 8.3	-	NZMB2-A300	107518	NZMN2-A300	107580
	320	250 - 320	6 - 10	-	-	-	NZMN3-A320	109669
	400	320 - 400	6 - 10	-	-	-	NZMN3-A400	109670
	500	400 - 500	6 - 10	-	-	-	NZMN3-A500	109671
<b>System, line, selective and generator protection: electronic release</b>								
Fixed installation, screw connection				<b>Normal switching capacity: 50 kA</b>		<b>High breaking capacity: 150 kA</b>		
	100	40 - 100	2 - 18	2 - 10	NZMN2-VX100	191628	NZMH2-VX100	191678
	160	64 - 160	2 - 18	2 - 10	NZMN2-VX160	191629	NZMH2-VX160	191679
	250	100 - 250	2 - 12	2 - 10	NZMN2-VX250	191630	NZMH2-VX250	191680
	250	100 - 250	2 - 18	2 - 10	NZMN3-VX250	191602	NZMH3-VX250	191349
	400	160 - 400	2 - 12	2 - 10	NZMN3-VX400	191603	NZMH3-VX400	191350
	630	252 - 630	2 - 8	1.5 - 7	NZMN3-VX630	191604	NZMH3-VX630	191351
<b>System, line, selective and generator protection: electronic release with class 1 energy measurement according to IEC 61557-12</b>								
Fixed installation, screw connection				<b>Normal switching capacity: 50 kA</b>		<b>High breaking capacity: 150 kA</b>		
	100	40 - 100	2 - 18	2 - 10	NZMN2-PX100	192239	NZMH2-PX100	192041
	160	64 - 160	2 - 18	2 - 10	NZMN2-PX160	192240	NZMH2-PX160	192042
	250	100 - 250	2 - 12	2 - 10	NZMN2-PX250	192241	NZMH2-PX250	192043
	250	100 - 250	2 - 18	2 - 10	NZMN3-PX250	192354	NZMH3-PX250	192360
	400	160 - 400	2 - 12	2 - 10	NZMN3-PX400	192355	NZMH3-PX400	192361
	630	252 - 630	2 - 8	1.5 - 7	NZMN3-PX630	192356	NZMH3-PX630	192362






Rated current = rated uninterrupted current $I_n = I_u$ A	Settings range		Motor rating AC-3 50/60 Hz  380 V 400 V P kW	Rated operational-current: AC-3 50/60 Hz 400 V $I_o$ A	Switching capacity: 400/415 V 50/60 Hz		Switching capacity: 400/415 V 50/60 Hz		
	Overload release	Short-circuit release Instantaneous $I_i = I_n \times \dots$			Part no.	Article no.	Part no.	Article no.	
<b>Motor protection: thermo-magnetic release</b>									
Trip class 10 A									
Fixed installation, box terminal with phase-failure sensitivity					<b>Basic switching capacity: 25 kA</b>		<b>Normal switching capacity: 50 kA</b>		
	40	32 - 40	8 - 14	18.5	36	<b>NZMB1-M40</b>	265710	<b>NZMN1-M40</b>	265718
	50	40 - 50	8 - 14	22	41	<b>NZMB1-M50</b>	265711	<b>NZMN1-M50</b>	265719
	63	50 - 63	8 - 14	30	55	<b>NZMB1-M63</b>	265712	<b>NZMN1-M63</b>	265720
	80	63 - 80	8 - 14	37	68	<b>NZMB1-M80</b>	265713	<b>NZMN1-M80</b>	265721
	100	80 - 100	8 - 12.5	45	81	<b>NZMB1-M100</b>	265714	<b>NZMN1-M100</b>	265722
<b>Motor protection: electronic release</b>									
Fixed installation, screw connection With phase-failure sensitivity, adjustable trip class					<b>Normal switching capacity: 50 kA</b>		<b>High switching capacity: 150 kA</b>		
	90	36 - 90	2 - 18	45	81	<b>NZMN2-MX90</b>	191631	<b>NZMH2-MX90</b>	191681
	140	56 - 140	2 - 18	75	134	<b>NZMN2-MX140</b>	191632	<b>NZMH2-MX140</b>	191682
	220	88 - 220	2 - 14	100	196	<b>NZMN2-MX220</b>	191633	<b>NZMH2-MX220</b>	191683
	220	88 - 220	2 - 18	110	196	<b>NZMN3-MX220</b>	191605	<b>NZMH3-MX220</b>	191352
	350	140 - 350	2 - 15	200	349	<b>NZMN3-MX350</b>	191606	<b>NZMH3-MX350</b>	191367
	450	180 - 450	2 - 12	250	437	<b>NZMN3-MX450</b>	191607	<b>NZMH3-MX450</b>	191368
<b>Motor protection: electronic release with class 1 energy measurement according to IEC 61557-12</b>									
Fixed installation, screw connection With phase-failure sensitivity, adjustable trip class					<b>Normal switching capacity: 50 kA</b>		<b>High switching capacity: 150 kA</b>		
	250	100 - 250	2 - 18	110	196	<b>NZMN3-PMX250</b>	192322	<b>NZMH3-PMX250</b>	192325
	350	140 - 350	2 - 15	200	349	<b>NZMN3-PMX350</b>	192323	<b>NZMH3-PMX350</b>	192326
	450	180 - 450	2 - 12	250	437	<b>NZMN3-PMX450</b>	192324	<b>NZMH3-PMX450</b>	192327
Rated current = rated uninterrupted current $I_n = I_u$ A					Max. fuse rating of the short-circuit protection: gG/gL  A gL		Part no.		Article no.
<b>Switch-disconnector</b>									
3 switch settings: I, +, 0 Can be remotely operated with XU/XA voltage release, XR remote operator Can be equipped with M22-K... trip-indicating auxiliary switch									
Fixed installation, box terminal									
	63				125			<b>N1-63</b>	259143
	100				125			<b>N1-100</b>	259144
	125				125			<b>N1-125</b>	259145
	160				160			<b>N1-160</b>	281236
Fixed installation, screw connection									
	160				250			<b>N2-160</b>	266008
	200				250			<b>N2-200</b>	266009
	250				250			<b>N2-250</b>	266010
	400				630			<b>N3-400</b>	266019
	630				630			<b>N3-630</b>	266020

Power management






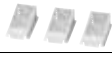






# NZM circuit breakers and switch-disconnectors

UL/CSA, IEC circuit breakers, molded-case switches for use in North America, 3 -pole

Moeller series

Rated current = rated uninterrupted current $I_n = I_u$ A	Settings range Overload release	Short-circuit release		Switching capacity: 480 V 60 Hz		Switching capacity: 480 V 60 Hz		
		Instantaneous $I_i = I_n \times \dots$	Delayed $I_{sd} = I_n \times \dots$	Part no.	Article no.	Part no.	Article no.	
<b>System and line protection: thermo-magnetic release</b>								
Adjustable overload releases $I_r$ Fixed installation, box terminal				<b>Normal switching capacity: 35 kA</b>				
	20	15 - 20	350 A fixed	<b>NZMN1-A20-NA</b>	281570	-	-	
	25	20 - 25	350 A fixed	<b>NZMN1-A25-NA</b>	281571	-	-	
	32	25 - 32	350 A fixed	<b>NZMN1-A32-NA</b>	281572	-	-	
	40	32 - 40	8 - 10	<b>NZMN1-A40-NA</b>	274237	-	-	
	50	40 - 50	6 - 10	<b>NZMN1-A50-NA</b>	274239	-	-	
	63	50 - 63	6 - 10	<b>NZMN1-A63-NA</b>	274240	-	-	
	80	63 - 80	6 - 10	<b>NZMN1-A80-NA</b>	274241	-	-	
	100	80 - 100	6 - 10	<b>NZMN1-A100-NA</b>	274242	-	-	
	125	100 - 125	6 - 10	<b>NZMN1-A125-NA</b>	281573	-	-	
<b>System and line protection: electronic release</b>								
Adjustable overload releases $I_r$ R.m.s. value measurement and thermal memory Fixed installation, screw connection				<b>Normal switching capacity: 42 kA</b>		<b>High breaking capacity: 100 kA</b>		
	100	40-100	2-12	<b>NZMN2-AX100-NA</b>	195225	<b>NZMH2-AX100-NA</b>	195229	
	160	64-160	2-12	<b>NZMN2-AX160-NA</b>	195226	<b>NZMH2-AX160-NA</b>	195230	
	250	100-250	2-12	<b>NZMN2-AX250-NA</b>	195227	<b>NZMH2-AX250-NA</b>	195231	
	250	100 - 250	2 - 11	<b>NZMN3-AX250-NA</b>	192484	<b>NZMH3-AX250-NA</b>	192496	
	400	160 - 400	2 - 11	<b>NZMN3-AX400-NA</b>	192485	<b>NZMH3-AX400-NA</b>	192497	
	600	240 - 600	2 - 8	<b>NZMN3-AX600-NA</b>	192486	<b>NZMH3-AX600-NA</b>	192498	
<b>System, line, selective and generator protection: electronic release with class 1 energy measurement according to IEC 61557-12</b>								
Adjustable overload releases $I_r$ R.m.s. value measurement and thermal memory Fixed installation, screw connection								
	100	40-100	2-18	2 - 10	<b>NZMN2-PX100-NA</b>	192573	<b>NZMH2-PX100-NA</b>	192577
	160	64-160	2-18	2 - 10	<b>NZMN2-PX160-NA</b>	192574	<b>NZMH2-PX160-NA</b>	192578
	250	100-250	2-12	2 - 10	<b>NZMN2-PX250-NA</b>	192575	<b>NZMH2-PX250-NA</b>	192579
	250	100 - 250	2 - 18	2 - 10	<b>NZMN3-PX250-NA</b>	192586	<b>NZMH3-PX250-NA</b>	192589
	400	160 - 400	2 - 12	2 - 10	<b>NZMN3-PX400-NA</b>	192587	<b>NZMH3-PX400-NA</b>	192590
	600	240-600	2 - 8	1.5 - 7	<b>NZMN3-PX600-NA</b>	192588	<b>NZMH3-PX600-NA</b>	192591
<b>Molded-case switches for use in North America</b>								
Fixed short-circuit release (self-protection) Three switch settings: I, +, 0 Can be remotely operated with XU/XA voltage release, XR remote operator Can be equipped with M22-K... trip-indicating auxiliary switch Fixed installation, box terminal				<b>High breaking capacity: 35 kA</b>				
	63	-	1250 A fixed	<b>NS1-63-NA</b>	102681	-	-	
	100	-	1250 A fixed	<b>NS1-100-NA</b>	102682	-	-	
	125	-	1250 A fixed	<b>NS1-125-NA</b>	102683	-	-	
Fixed installation, screw connection				<b>High breaking capacity: 100 kA</b>				
	160	-	2500 A fixed	<b>NS2-160-NA</b>	102684	-	-	
	200	-	2500 A fixed	<b>NS2-200-NA</b>	102685	-	-	
	250	-	2500 A fixed	<b>NS2-250-NA</b>	102686	-	-	
	400	-	6600 A fixed	<b>NS3-400-NA</b>	102687	-	-	
	600	-	6600 A fixed	<b>NS3-600-NA</b>	102688	-	-	























	For use with	Terminal capacity Terminal type	Terminal capacities mm <sup>2</sup>	Part. no. suffix	Article no. if ordered together with base unit	Part no.	Article no. if ordered separately
<b>NZM1 terminal types</b>							
	NZM1, PN1, N(S)1	Box terminal	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	<b>NZM-XSTK</b>	266739
	NZM1, N(S)1 ≤ 160 A	Cu cable	6 x 2.5 - 16	-	-	<b>NZM1-XKAM</b>	144112
	NZM1, N1	-	-	-	-	<b>NZM1-XKSFA</b>	100780
	NZM1, N(S)1	-	-	-	-	<b>NZM1-XKSA</b>	260021
	NZM1, N1	-	-	-	-	<b>NZM1-XIPK</b>	266744
	NZM1, N(S)1	-	-	-	-	<b>NZM1-XIPA</b>	266748
	NZM1, N(S)1	-	-	-	-	<b>NZM1-XKP</b>	119862
<b>NZM2 terminal types</b>							
	NZM2, N(S)2 ≤ 160 A	Cu cable	1 x 10 - 185 2 x 4 - 70	+NZM2-160-XKCO	262218	<b>NZM2-160-XKC</b>	262240
	NZM2, N(S)2 > 160 A			+NZM2-160-XKCU	262223	-	-
				+NZM2-250-XKCO	262242	<b>NZM2-250-XKC</b>	262244
				+NZM2-250-XKCU	262243	-	-
	NZM2, N(S)2 ≤ 250 A	Cu cable	6 x 2.5 - 35	-	-	<b>NZM2-XKAM</b>	144113
	NZM2, PN2, N(S)2	Screw connection	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	<b>NZM2-XSTS</b>	260156
	NZM2, PN2, N(S)2	Box terminal	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	<b>NZM-XSTK</b>	266739
	NZM2, N(S)2	Cu cable lug Al cable lug	1 x 10 - 185 2 x 4 - 70 1 x 10 - 50 2 x 10 - 50	-	-	<b>NZM2-XKSAE</b>	119868

# NZM circuit breakers and switch-disconnectors











Terminal type







Moeller series

	For use with	Terminal capacity Terminal type	Terminal capacity Terminal type mm <sup>2</sup>	Part. no. suffix	Article no. if ordered together with base unit	Part no.	Article no. if ordered separately
Phase isolator 	NZM2, N(S)2	-	-	-	-	<b>NZM2-XKP</b>	119864
IP2X finger protection							
For box terminals 	NZM2, PN2, N2	-	-	-	-	<b>NZM2-XIPK</b>	266773
For covers NZM2-XKSA, NZM2, NZM2...(C)NA or N(S)2...NA 	NZM2, PN2, N(S)2	-	-	-	-	<b>NZM2-XIPA</b>	266777
Cu cable lug Not UL/CSA approved If used without cover NZM2(-4)-XKSA, the cable lug must be insulated. 	NZM2, N2	-	95	-	-	<b>KS95-NZM7</b>	059775
		-	120	-	-	<b>KS120-NZM7</b>	059776
		-	150	-	-	<b>KS150-NZM7</b>	059777
		-	185	-	-	<b>NZM2-XKS185</b>	260032
<b>NZM3 terminal types</b>							
Box terminal 	NZM3, N(S)3	Cu cable	1 x 35 - 240 2 x 16 - 120	<b>+NZM3-XKCO</b> <b>+NZM3-XKCU</b>	262246 262245	<b>NZM3-XKC</b> -	260042 -
Control-circuit terminal 	NZM3, PN3, N(S)3	Screw connection	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	<b>NZM3/4-XSTS</b>	266797
		Box terminal	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	<b>NZM-XSTK</b>	266739
Cable-lug cover 	NZM3, N(S)3	Cu cable lug Al cable lug	1 x 16 - 240 2 x 16 - 240 1 x 10 - 120 2 x 10 - 120	-	-	<b>NZM3-XKSAE</b>	119869
Phase isolator 	NZM3, N(S)3	-	-	-	-	<b>NZM3-XKP</b>	100512
IP2X finger protection							
For box terminals 	NZM3, N3	-	-	-	-	<b>NZM3-XIPK</b>	266804
For covers NZM3-XKSA, NZM3, NZM3...(C)NA or N(S)3...NA 	NZM3, N(S)3	-	-	-	-	<b>NZM3-XIPA</b>	266808
Cu cable lug Not UL/CSA approved. If used without cover NZM3(-4)-XKSA, the cable lug must be insulated. 	NZM3, N3	-	185	-	-	<b>NZM3-XKS185</b>	260040
		-	240	-	-	<b>NZM3-XKS240</b>	260041
		-	300	-	-	<b>NZM3-XKS300</b>	153186







		For use with	Contacts ⊖ = Safety function implemented with positive opening according to IEC/EN 60947-5-1 N/O = normally open      N/C = normally closed		Part no.	Article no.
<b>Auxiliary contact with screw terminal/spring-loaded terminal</b>						
Standard auxiliary contact (HIN) Switches using the main contacts. Used for signaling and interlocking tasks.						
	Single contact	NZM1, 2, 3 N(S)1, 2, 3	1 N/O	-	<b>M22-K10</b>	216376
			-	1 N/C ⊖	<b>M22-K01</b>	216378
Early-make auxiliary contacts For interlocking and load shedding circuits as well as early-make connection of the undervoltage release in main switch/ emergency-stop applications.						
	With terminal block on the left-hand side of the switch	NZM1 N(S)1	2 N/O	-	<b>NZM1-XHIV</b>	259426
	With screw connection	NZM2, 3 N(S)2, 3	2 N/O	-	<b>NZM2/3-XHIV</b>	259430
	With Push-in terminals 	NZM2(3)-VX(MX)(PX) (PMX)...	1 N/O	-	<b>NZM2/3-XHIV-PI</b>	189748
Trip-indicating auxiliary switch (HIA) General trip indication "+" if tripped by a voltage release, overload release, short-circuit release and due to residual current if a residual-current release is used.						
	Single contact	NZM1, 2, 3 N(S)1, 2, 3	1 N/O	-	<b>M22-K10</b>	216376
			-	1 N/C ⊖	<b>M22-K01</b>	216378
		For use with	Contacts N/O = normally open      N/C = normally closed		Part no.	Article no.
<b>Relay module with undervoltage release</b>						
For use with emergency-stop devices (in combination with an emergency-stop button). Two relays per unit, for signaling commands or different circuit-breaker states. The tripping criteria can be configured in the trip unit. Tripping of the undervoltage release will safely prevent unintentional contact with the main contacts when the circuit breaker switches on. Can only be used in combination with circuit breakers with electronic releases. The undervoltage release relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA... shunt releases. Relay contacts for control wiring. Control wiring on Push-in terminals.						
		PXR20(25) NZM2(-4)-...X... PXR20(25) NZM3(-4)- ...X...	2	-	<b>NZM2/3-XU2A24DC</b>	189725
			2	-	<b>NZM2/3-XU2A208-240AC</b>	189727
<b>Relay module with undervoltage release and early-make auxiliary contact</b>						
For interlocking and load-shedding circuits as well as for early-break interruption of the undervoltage release in main switch applications. NZM circuit breakers will trip instantaneously if the control voltage drops below 35 - 70% Us. For use with emergency-stop devices (in combination with an emergency-stop button). Two relays per unit, for signaling commands or different circuit-breaker states. The tripping criteria can be configured in the trip unit. Tripping of the undervoltage release will safely prevent unintentional contact with the main contacts when the circuit breaker switches on. Can only be used in combination with circuit breakers with electronic releases. Cannot be used in combination with the NZM...-XR... remote operator. The undervoltage release relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA... shunt releases. Control wiring on Push-in terminals.						
		PXR20(25) NZM2(-4)- ...X... PXR20(25) NZM3(-4)- ...X...	2 (for relays) 1 (for HIV)	-	<b>NZM2/3-XUHIV2A24DC</b>	189733
			2 (for relays) 1 (for HIV)	-	<b>NZM2/3-XUHIV2A208-240AC</b>	189735



Power management


		For use with	Contacts	Part no.	Article no.	
			N/O = normally open N/C = normally closed			
<b>Relay module with shunt release</b>						
<p>The breakers will trip in the event of a voltage pulse or if a no-break current is applied.                      Two relays per unit, for signaling commands or different circuit-breaker states.                      The activation criteria can be configured in the trip unit.                      If the shunt release is energized, contact with the main contacts of the circuit breaker will be prevented when the latter is switched on.                      Can only be used in combination with circuit breakers with electronic releases.                      Shunt release relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA.... shunt releases.                      Control wiring on Push-in terminals.</p>						
		PXR20(25) NZM2(-4)-...X...	2	-	<b>NZM2/3-XA2A24AC/DC</b>	189740
		PXR20(25) NZM3(-4)-...X...	2	-	<b>NZM2/3-XA2A208-240AC</b>	189743
<b>Relay module</b>						
<p>Two relays per unit, for signaling commands or different circuit-breaker states.                      The activation criteria can be configured in the trip unit.                      Can only be used in combination with circuit breakers with electronic releases. Relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA.... shunt releases.                      Relay contacts for control wiring. Control wiring on Push-in terminals.</p>						
		PXR20(25) NZM2(-4)-...X... PXR20(25) NZM3(-4)-...X...	2	-	<b>NZM2/3-X2A</b>	189722
		For use with	Rated control voltage	Part no.	Article no.	
			U <sub>s</sub> V			
<b>Undervoltage releases</b>						
<p>Without auxiliary contact                      NZM circuit breakers and N switch-disconnectors will trip instantaneously if the control voltage drops below 35 - 70% U<sub>s</sub>.                      For use with emergency-stop devices (in combination with an emergency-stop button).</p>						
	With terminal block on the left-hand side of the switch	NZM1 N(S)1	208 - 240 V 50/60 Hz 380 - 440 V 50/60 Hz 24 V DC	<b>NZM1-XU208-240AC</b> <b>NZM1-XU380-440AC</b> <b>NZM1-XU24DC</b>	259442 259444 259452	
	With screw connection	NZM2, 3 N(S)2, 3	208 - 240 V 50/60 Hz	<b>NZM2/3-XU208-240AC</b>	259499	
			380 - 440 V 50/60 Hz	<b>NZM2/3-XU380-440AC</b>	259501	
	With Push-in terminals 		208 - 240 V 50/660 HZ	<b>NZM2/3-XU208-240AC-PI</b>	189754	
			24 V DC	<b>NZM2/3-XU24DC-PI</b>	189757	
<b>Shunt releases</b>						
<p>Without auxiliary contact                      The circuit breakers will trip in the event of a voltage pulse or if a continuous voltage is applied.</p>						
	With terminal block on the left-hand side of the switch	NZM1 N(S)1	24 V AC/DC	<b>NZM1-XA24AC/DC</b>	259708	
			208 - 250 V AC/DC	<b>NZM1-XA208-250AC/DC</b>	259726	
	With screw connection	NZM2, 3 N(S)2, 3	208 - 250 V AC/DC	<b>NZM2/3-XA208-250AC/DC</b>	259763	
			With Push-in terminals 	208 - 250 V AC/DC	<b>NZM2/3-XA208-250AC/DC-PI</b>	189803
		24 V AC/DC		<b>NZM2/3-XA24AC/DC-PI</b>	189799	


	For use with	Part no.	Article no.	Notes	
<b>Door-coupling rotary handles</b>					
Complete handles including rotary drive and coupling parts Requires an additional extension shaft IP66 degree of protection, UL/CSA Type 4X, Type 12					
Standard, black/grey					
	Lockable in the 0 position on the handle with max. three padlocks With door interlock	NZM1, N(S)1	<b>NZM1-XTVD</b>	260166	Door interlock <ul style="list-style-type: none"> <li>• Cannot be overridden if ON or OFF is locked</li> <li>• Can be modified if ON is not locked</li> <li>• Can be overridden from the outside using a screwdriver</li> <li>• Door can be opened in OFF</li> <li>• External warning plate/designation label can be clipped on</li> </ul>
		NZM2, N(S)2	<b>NZM2-XTVD</b>	260168	
		NZM3, N(S)3	<b>NZM3-XTVD</b>	260170	
	Lockable on the handle and the switch with up to three padlocks each Can also be modified on the handle in the I position With door interlock	NZM1, N(S)1	<b>NZM1-XTVDV</b>	260172	
		NZM2, N(S)2	<b>NZM2-XTVDV</b>	260174	
		NZM3, N(S)3	<b>NZM3-XTVDV</b>	260176	
Red-yellow for emergency-stop					
	Lockable on the handle and the switch with up to three padlocks each With door interlock	NZM1, N(S)1	<b>NZM1-XTVDVR</b>	260178	Door interlock <ul style="list-style-type: none"> <li>• Cannot be overridden if OFF is locked</li> <li>• Can be modified if ON is not locked</li> <li>• Can be overridden from the outside using a screwdriver</li> <li>• Door can be opened in OFF</li> <li>• External warning plate/designation label can be clipped on</li> </ul>
		NZM2, N(S)2	<b>NZM2-XTVDVR</b>	260180	
		NZM3, N(S)3	<b>NZM3-XTVDVR</b>	260182	
<b>Door-coupling rotary handles for use in North America</b>					
Complete handles including rotary drive and coupling parts Requires an additional extension shaft IP66 degree of protection, UL/CSA Type 4X, Type 12					
Standard, black/grey					
	Lockable in the 0 position on the handle with up to three padlocks With door interlock	NZM1, N1	<b>NZM1-XTVD-NA</b>	271445	Door interlock <ul style="list-style-type: none"> <li>• Cannot be overridden if OFF is locked</li> <li>• Door can only be opened after active rotation beyond the 0 position</li> <li>• Cannot be combined with mechanical interlock</li> <li>• External warning plate/designation label can be clipped on</li> </ul>
		NZM2, N2	<b>NZM2-XTVD-NA</b>	271446	
		NZM3, N3	<b>NZM3-XTVD-NA</b>	271447	
	Lockable on the handle and the switch with up to three padlocks each With door interlock	NZM1, N(S)1	<b>NZM1-XTVDVR-NA</b>	271449	
		NZM2, N(S)2	<b>NZM2-XTVDVR-NA</b>	271450	
		NZM3, N(S)3	<b>NZM3-XTVDVR-NA</b>	271451	
<b>Extension shaft</b>					
	Mounting depth: max. 400 mm	NZM1, N(S)1	<b>NZM1/2-XV4</b>	261232	Length: 290 mm, can be cut to the desired length
		NZM2, N(S)2			
		NZM3, N(S)3	<b>NZM3/4-XV4</b>	261234	
	Mounting depth: max. 600 mm	NZM1, N(S)1	<b>NZM1/2-XV6</b>	260191	Length: 425 mm, can be cut to the desired length
		NZM2, N(S)2			
		NZM3, N(S)3	<b>NZM3/4-XV6</b>	260193	



	For use with	Rated control voltage $U_s$ V	Part no. Article no.	
<b>Main switch assembly kit for IEC, UL/CSA</b>				
Includes:				
<ul style="list-style-type: none"> <li>• Door-coupling rotary handle with rotary drive</li> <li>• NZM...-XV4 shaft extension</li> <li>• External warning plate in German/English</li> <li>• Black-and-yellow lightning symbol</li> </ul>				
IP66 degree of protection, UL/CSA Type 4X, Type 12				
With black door-coupling rotary handle				
	Door can be locked in OFF position with up to three padlocks Can also be modified in the I position After the door interlock is activated it cannot be opened in the ON or TRIP position. Door can only be opened in the OFF position Can be overridden from the outside using a screwdriver Cannot be overridden if OFF is locked Can only be switched on if the door is closed	NZM1, N(S)1	-	<b>NZM1-XHB</b> 266626
		NZM2, N(S)2	-	<b>NZM2-XHB</b> 266627
		NZM3, N(S)3	-	<b>NZM3-XHB</b> 266628
With red door-coupling rotary handle for use as an emergency-stop device in accordance with IEC/EN 60204-1, VDE 0113 Part 1				
	Door can be locked in the OFF position with up to three padlocks After the door interlock is activated it cannot be opened in the ON or TRIP position. Door can only be opened in the OFF position Can be overridden from the outside using a screwdriver Cannot be overridden if OFF is locked Can only be switched on if the door is closed	NZM1, N(S)1	-	<b>NZM1-XHBR</b> 266632
		NZM2, N(S)2	-	<b>NZM2-XHBR</b> 266633
		NZM3, N(S)3	-	<b>NZM3-XHBR</b> 266634
<b>Main switch assembly kit with additional rotary handle for IEC, UL/CSA</b>				
Includes:				
<ul style="list-style-type: none"> <li>• Door-coupling rotary handle with rotary drive</li> <li>• Additional rotary handle on the switch with "Deliberate Action" operating mode according to NFPA79 and UL508A Part 2</li> <li>• NZM1/2-XV4 shaft extension for mounting depth of 400 mm</li> <li>• External warning plate in German/English</li> <li>• Black-and-yellow lightning symbol</li> </ul>				
IP66 degree of protection, UL/CSA Type 4X, Type 12				
With black door-coupling rotary handle				
	Door can be locked in the OFF position with up to three padlocks With activated door interlock Cannot be opened in the ON, OFF or TRIP position Can only be opened in the RESET position Can be overridden from the outside using a screwdriver Cannot be overridden if OFF is locked	NZM1, N(S)1	-	<b>NZM1-XHB-DA-NA</b> 125958
		NZM2, N(S)2	-	<b>NZM2-XHB-DA-NA</b> 116897
		NZM3, N(S)3	-	<b>NZM3-XHB-DA-NA</b> 119000
With red door-coupling rotary handle for use as an emergency-stop device				
	Door can be locked in the OFF position with up to three padlocks With activated door interlock Cannot be opened in the ON, OFF or TRIP position Can only be opened in the RESET position Can be overridden from the outside using a screwdriver Cannot be overridden if OFF is locked	NZM1, N(S)1	-	<b>NZM1-XHB-DAR-NA</b> 125959
		NZM2, N(S)2	-	<b>NZM2-XHB-DAR-NA</b> 116898
		NZM3, N(S)3	-	<b>NZM3-XHB-DAR-NA</b> 119001
<b>Remote operator</b>				
For remote switching of circuit breakers and switch-disconnectors ON, OFF and reset by means of two-wire or three-wire control Can be manually switched on site Lockable in the 0 position of the remote operator with up to three padlocks (hasp thickness: 4 – 8 mm)				
Closing delay 110 - 170 ms, break time 110 - 170 ms				
	Sliding switch for "Auto" or "Manual" Max. number of auxiliary contacts: two standard auxiliary contacts, one trip-indicating auxiliary switch	NZM2, N(S)2	208 - 240 V 50/60 Hz	<b>NZM2-XRD208-240AC</b> 115391
		NZM2, N(S)2	24 - 30 V DC	<b>NZM2-XRD24-30DC</b> 115393
Closing delay 60 - 100 ms, break time 300 - 3000 ms Synchronized				
		NZM3, N(S)3	208 - 240 V 50/60 Hz	<b>NZM3-XR208-240AC</b> 259850
		NZM3, N(S)3	24 - 30 V DC	<b>NZM3-XR24-30DC</b> 259854

Description	For use with	Part no. Article no.
<b>Interface module for NZM2 PXR20 and communication interfaces</b>		
 <p>For universal connection of optional circuit breaker functions. Required for connectivity. The connection types depend on the design of the interface module. Circuit-breaker status detection (I, +, 0) of the electronic release. The switch status can be communicated. 24 V DC auxiliary power connection. Connection for communications adapter module (CAM). Optional CAM available for various fieldbus communication systems (Profibus DP, SmartWire-DT, Ethernet-based fieldbuses). Connection to optional internal Modbus RTU module. Mechanical pass-through of the switch's status (I, 0) for use by the remote operator.</p>	NZM2(-4)-VX(MX)...	<b>NZM2-XBSM</b> 189825
	NZM3(-4)-VX(MX)...	<b>NZM3-XBSM</b> 189826
<b>Integrated communication module, RS485, Modbus RTU, for use with NZM</b>		
 <p>For fieldbus connections. For installation in the right-hand accessory pocket of the circuit breaker. For connection to Modbus RTU. RS485 interface. Cannot be used with the PXR10 NZM-AX electronic release.</p>	NZM2(3)(4)(-4)-VX(MX)(PX)(PMX)	<b>PXR-RCAM-MRTU-I</b> 189836
<b>External communication modules, for use with NZM and IZMX</b>		
<p>For fieldbus connections. For external installation in the vicinity of the circuit breaker. Cannot be used with the PXR10 NZM-AX electronic trip.</p>	NZM2(3)(4)(-4)-VX(MX)(PX)(PMX)	<b>PXR-ECAM-PNET</b> 302050
<p>For connection to Profinet Connection via PXR-RCAM-MRTU-I</p>		<b>PXR-ECAM-IP</b> 302051
<p>For connection to Ethercat Connection via PXR-RCAM-MRTU-I</p>		<b>PXR-ECAM-ECT</b> 302052

No. of poles	Rated current = rated uninterrupted current $I_n = I_u$ A	Settings range		High switching capacity of 150 kA	Part no.	Article no.
		Overload release $I_r$ A	Short-circuit release $I_i$ A			
				Screw connection		
						

<b>Circuit breaker with residual-current release</b>						
<p>For equipment with power electronics, such as inverters or variable frequency drives. Not UL/CSA approved. Suitable for use in three-phase systems. 3-pole Rated fault current <math>I_{\Delta n} = 0.03</math> A Internal power supply <math>U_0 = 50 - 400</math> V (...-500 AC: 500 V) AC/DC sensitive in the 0-100 kHz residual-current frequency range according to the core-balance principle Pre-assembled combination of current-limiting circuit breaker and residual-current protection module Adjustable and sealable buttons.</p>						
	Rated operating voltage: 400 V 50/60 Hz	100	80 - 100	600 - 1000	<b>NZMH2-A100-FIA30</b>	158530
		125	100 - 125	750 - 1250	<b>NZMH2-A125-FIA30</b>	129710
		160	125 - 160	960 - 1600	<b>NZMH2-A160-FIA30</b>	112627
		200	160 - 200	1200 - 2000	<b>NZMH2-A200-FIA30</b>	112628
		250	200 - 250	1500 - 2500	<b>NZMH2-A250-FIA30</b>	112629
		250	200 - 250	1500 - 2500	<b>NZMH2-A250-FIA30-500AC</b>	184963
	Rated operating voltage: 500 V 50/60 Hz	100	80 - 100	600 - 1000	<b>NZMH2-A100-FIA30-500AC</b>	184959
		125	100 - 125	750 - 1250	<b>NZMH2-A125-FIA30-500AC</b>	184960
		160	125 - 160	960 - 1600	<b>NZMH2-A160-FIA30-500AC</b>	184961
		200	160 - 200	1200 - 2000	<b>NZMH2-A200-FIA30-500AC</b>	184962
		250	200 - 250	1500 - 2500	<b>NZMH2-A250-FIA30-500AC</b>	184963
		250	200 - 250	1500 - 2500	<b>NZMH2-A250-FIA30-500AC</b>	184963

Power management



## Using hydraulic-magnetic circuit breakers to design more reliable machines

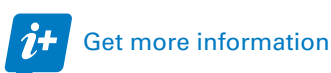


Download the catalog:  
[Eaton.com/HMCB](https://Eaton.com/HMCB)

Hydraulic-magnetic circuit breakers provide maximum protection for your equipment and avoid nuisance tripping during start-up current peaks (motor) or in inductive circuits with long cables, which also allows you to optimize the conductor cross-sections.

The transmission of low DC voltage across long cable runs is subject to many limitations. The reasons include circuit impedance, interference from long cables acting like antennas, voltage peaks from inductive circuits, or the starting of a motor. These types of issues often lead to nuisance tripping of the circuit-protection devices.

Hydraulic-magnetic circuit breakers, however, provide accurate, robust and reliable protection of your electrical equipment from the start, without any nuisance tripping. The benefits of our Heinemann hydraulic magnetic circuit breakers include the ability to manage current peaks generated by motor starts, a fixed tripping point that is insensitive to ambient temperature variations, proven resistance to shocks and vibrations and no derating over time or as a result of the type of usage.





### Special tripping characteristics prevent nuisance tripping

The trip mechanism in a hydraulic-magnetic circuit breaker is based on solenoid coils. The coil is wound around a hermetic tube containing a movable core damped by silicone oil and held in place by a spring. The core is moved by the build-up of the magnetic field in the coil. The combination of the spring and the viscosity of the silicone oil creates a dynamic in the movement of the core that enables special tripping characteristics, thereby preventing nuisance tripping and providing precise, robust and reliable protection, immune to the effects of aging and frequency of use.

### What makes this technology stand out

In the event of an overload or a fault, the core of the coil will be attracted towards the pole piece due to the increase in current, causing the resistor of the solenoid circuit to drop with the armature. As soon as the core comes into contact with the pole piece, the armature will be attracted and the switch mechanism will be triggered, separating the contacts. In the event of a short circuit, the magnetic field induced by the current in the solenoid coil will immediately attract the armature. This use of magnetism to achieve two different effects is the main hallmark of this technology.



### ADS – hydraulic-magnetic circuit breakers for DIN-rail mounting

The ADS auxiliary protective device is rated for both DC and AC voltages, in accordance with the UL 1077, CSA 22.2, VDE 0660 and IEC 60947-2 standards. It is typically used in conjunction with a circuit breaker (if required), for example to as a substitute for fuses. Compared to fuses, this offers the advantage that the circuit breaker can be reset and that the switch status can be identified by the position of the lever.

In addition, you can also choose from a wide range of products that are tailored to the needs of your application. These devices are available with a wide range of rated currents, three inrush current tolerances (8-fold, 15-fold and 22-fold at 50 Hz) and flexible time characteristics (short, medium and long delay).

Furthermore, ADS protection has no adverse effects and is insensitive to abnormal or variable ambient temperatures or harsh environments.

As a result, these devices can be used in environments with high levels of fungal contamination or excessive shocks and vibrations.

### Accessories

The wide range of internal circuits, levers, terminals, auxiliary contacts, mounting options and protection types make these circuit breakers the ideal choice for demanding applications.





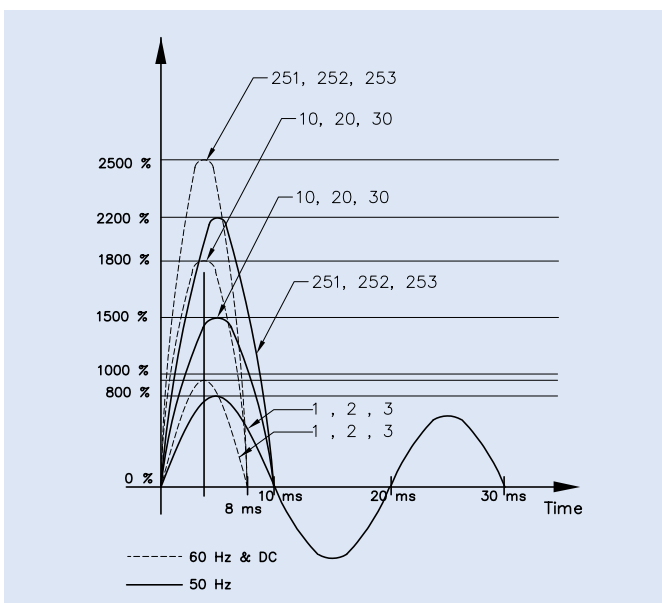


### Features, advantages and functions

- The devices can be used for overcurrent protection where line protection (for example according to UL 489 MCCB) is already available or not required.
- They can also be used as components in assemblies, devices or electrical equipment.
- They are an ideal substitute for fuses if additional protection is required, for instance in addition to line protection (if required).
- They come in a light gray housing with a white lever, marked "O" (Off) and "I" (On).
- They are resistant to environmental impacts, shocks and vibrations, moisture and salt fog and come with MIL specifications for fungus resistance.
- **Elimination of heat-induced nuisance tripping:** The circuit breaker is designed to operate at 100 % continuous rated current without being affected by ambient temperatures from -40 °C to +85 °C.
- **Immediate reset after tripping:** The circuit breaker can be reset (closed) immediately after an overcurrent trip without any "cooling-down" period.
- **High half-cycle inrush current tolerance – 8-fold (standard), 15-fold and 22-fold for 50 Hz (10-, 18-, 25-fold for 60 Hz):** The circuit breaker is available at different

tolerance levels for current peaks at half a cycle. The standard tolerance is eight times the continuous current rating; versions with 18 and 25 times the continuous current rating are also available.

- **Overcurrent characteristics, short, medium or long delay:** The circuit breaker is equipped with time characteristics for short, medium and long delay.
- **Integrated auxiliary contact (optional):** For each pole, one auxiliary contact (normally open or normally closed) can be pre-installed – an additional pole for the auxiliary contact is thus NOT required.
- **Precise overcurrent calibration:** The circuit breaker can be calibrated to a wide range of current ratings, from 0.1 A to 63 A continuous.
- **DIN-rail mounting:** The circuit breaker can be quickly and easily mounted on a 35 mm DIN rail via the integrated quick-release spring clip.
- **Standards and certifications**
  - UL approval under UL 1077
  - UL File No. E69553
  - CSA 22.2 No. 235
  - IEC 60947-2
  - CE marking
  - CCC marking



### Inrush currents

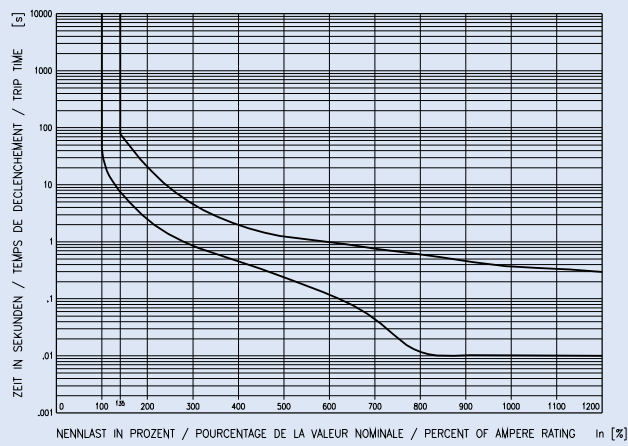
The ADS circuit breakers are available with various tolerance levels for current peaks and prevent nuisance tripping due to inrush currents during start-up. The circuit breaker can thus be used as a motor-protective circuit breaker, for example – although a brief but high current amplitude will cause an overload when the motor is switched on, the circuit breaker will not trip.

Using AS type devices for high inrush currents makes it possible to avoid unnecessary and dangerous over-calibrations, which also require larger cable cross-sections. This saves both energy and money.

The magnetic shunt offers maximum possibilities in the case of half-waves, for instance 10 ms at a frequency of 50 Hz. At a frequency of 60 Hz, a half-wave has a duration of 8 ms, based on a value of 1800 % instead of 1500 %; at 50 Hz, the corresponding value is 2500 % instead of 2200 %.



## Curve 20 50 Hz / 60 Hz / DC



## Medium delay

### Approvals

VDE 60947-2 : 80 V DC / 400 V AC  
1-2 poles  
63 A max.  
Ic 1500 A

UL 1077 : 65 V DC / 250 – 277 V AC  
1-4 poles  
50 A max.  
Ic 5000 A

In.%	135	200	300	400	500	600	700	800	900	1000	1100	1200
<b>MAX.</b>	85.0	20.0	4.50	2.00	1.20	1.00	.750	.600	.450	.290	-	-
<b>MIN</b>	8.0	2.5	.85	.45	.25	.13	.045	.012	.010	.010	-	-

## Ordering information

### 15-fold inrush current (50 Hz) – medium delay characteristic 20 (AC / DC)

Ampere	Part no. 1-pole	Part no. 2-pole	Part no. 3-pole	Part no. 4-pole
0.16	AD1S-Y50x-1	AD2S-Y50x-1	AD3S-Y50x-1	AD4S-Y50x-1
0.25	AD1S-Y50x-2	AD2S-Y50x-2	AD3S-Y50x-2	AD4S-Y50x-2
0.5	AD1S-Y50x-3	AD2S-Y50x-3	AD3S-Y50x-3	AD4S-Y50x-3
0.75	AD1S-Y50x-4	AD2S-Y50x-4	AD3S-Y50x-4	AD4S-Y50x-4
1	AD1S-Y50x-5	AD2S-Y50x-5	AD3S-Y50x-5	AD4S-Y50x-5
1.5	AD1S-Y50x-6	AD2S-Y50x-6	AD3S-Y50x-6	AD4S-Y50x-6
1.6	AD1S-Y50x-7	AD2S-Y50x-7	AD3S-Y50x-7	AD4S-Y50x-7
2	AD1S-Y50x-8	AD2S-Y50x-8	AD3S-Y50x-8	AD4S-Y50x-8
2.5	AD1S-Y50x-9	AD2S-Y50x-9	AD3S-Y50x-9	AD4S-Y50x-9
3	AD1S-Y50x-10	AD2S-Y50x-10	AD3S-Y50x-10	AD4S-Y50x-10
3.5	AD1S-Y50x-11	AD2S-Y50x-11	AD3S-Y50x-11	AD4S-Y50x-11
4	AD1S-Y50x-12	AD2S-Y50x-12	AD3S-Y50x-12	AD4S-Y50x-12
5	AD1S-Y50x-13	AD2S-Y50x-13	AD3S-Y50x-13	AD4S-Y50x-13
6	AD1S-Y50x-14	AD2S-Y50x-14	AD3S-Y50x-14	AD4S-Y50x-14
7	AD1S-Y50x-15	AD2S-Y50x-15	AD3S-Y50x-15	AD4S-Y50x-15
8	AD1S-Y50x-16	AD2S-Y50x-16	AD3S-Y50x-16	AD4S-Y50x-16
10	AD1S-Y50x-17	AD2S-Y50x-17	AD3S-Y50x-17	AD4S-Y50x-17
12	AD1S-Y50x-18	AD2S-Y50x-18	AD3S-Y50x-18	AD4S-Y50x-18
13	AD1S-Y50x-19	AD2S-Y50x-19	AD3S-Y50x-19	AD4S-Y50x-19
15	AD1S-Y50x-20	AD2S-Y50x-20	AD3S-Y50x-20	AD4S-Y50x-20
16	AD1S-Y50x-21	AD2S-Y50x-21	AD3S-Y50x-21	AD4S-Y50x-21
20	AD1S-Y50x-22	AD2S-Y50x-22	AD3S-Y50x-22	AD4S-Y50x-22
25	AD1S-Y50x-23	AD2S-Y50x-23	AD3S-Y50x-23	AD4S-Y50x-23
30	AD1S-Y50x-24	AD2S-Y50x-24	AD3S-Y50x-24	AD4S-Y50x-24
32	AD1S-Y50x-25	AD2S-Y50x-25	AD3S-Y50x-25	AD4S-Y50x-25
35	AD1S-Y50x-26	AD2S-Y50x-26	AD3S-Y50x-26	AD4S-Y50x-26
40	AD1S-Y50x-27	AD2S-Y50x-27	AD3S-Y50x-27	AD4S-Y50x-27
50	AD1S-Y50x-28	AD2S-Y50x-28	AD3S-Y50x-28	AD4S-Y50x-28
63	AD1S-Y50x-29	AD2S-Y50x-29	AD3S-Y50x-29	AD4S-Y50x-29



This is just one example of the many different types of internal circuits, tripping characteristics and inrush currents available.

For more information, see [Eaton.com/HMCB](http://Eaton.com/HMCB)

0: without auxiliary contact  
X selection 1: with N/O auxiliary contact  
2: with N/C auxiliary contact

The auxiliary contact is connected to the first pole by default, other configurations are possible.




Up to 25 kA  
According to IEC/EN 60947-2

## Protection for any application – safety up to 125 A



Eaton products and solutions are used in industrial, panel-building and commercial applications all over the world. Thanks to their proven quality, international certifications and marine or rail approvals, our xEffect industrial miniature circuit breakers offer the functionality and safety required by the global market. In conjunction with our versatile range of rail-mounted devices and accessories, they provide users with more options for solving complex tasks.

Furthermore, we offer a comprehensive range of residual-current circuit breakers to protect people from electric shock and installations against fire.

 [Get more information](#)



### Industrial clients in many countries rely on our protective devices and switchgear.

Superior product quality and tested safety guarantee a high level of protection for people, installations and equipment. Approvals from many countries confirm that we build our products in accordance with the latest national and international standards. The high, IEC/EN 60947-2 compliant rated breaking capacity of the FAZ (15 kA) and FAZT (15 to 25 kA) devices, as well as their excellent current-limiting and selectivity characteristics, ensure maximum system protection and availability.



### Powerful products for machine and panel building

The xEffect FAZ industrial circuit breakers are available with B, C and D characteristics in accordance with IEC/EN 60898-1. Due to the growth in the use of sensitive electronics, special characteristics are required for effective protection. To this end, the Z characteristic with a short-circuit trip current of  $2$  to  $3 \times I_n$  provides fast overload protection. The K characteristic with a high short-circuit trip current of  $8$  to  $12 \times I_n$  prevents nuisance tripping when switching three-phase loads. The most commonly used type in panel-building applications is the S characteristic with a limited trip range of  $13$  to  $17 \times I_n$ .



### Digital residual-current protection for enhanced operational continuity

In both 3- and 4-pole applications, our new digital residual-current circuit breakers act as powerful multi-functional "bodyguards," designed to provide safety in a wide range of distributed environments. They are as intelligent as they are vigilant and will switch off any residual current. These digital bodyguards will immediately indicate any irregularities. Their advance warning function enables operators to intervene and ensures operational continuity. In the event of a real danger, the digital RCD will switch off with pinpoint accuracy – much more precisely than a conventional analog circuit breaker. This precise tripping behavior reduces nuisance tripping to a minimum and increases operational continuity.



### Gradual fault warning

Digital circuit breakers use a potential-free switching contact to communicate with their surroundings. Operators therefore do not necessarily have to run to the distribution board to check the status of the system, but are automatically warned, for example, if  $I_{\Delta} > 0.3 \times I_{\Delta n}$ . Anything is possible, from the simple control of external lights and/or buzzers to the connection of monitoring systems, including mobile phone notifications via text message.

### Continuous monitoring of electrical systems

An LED traffic light on the device makes it possible to determine the system status at a glance.

Green = normal range

Yellow = the leakage or fault current amounts to 30–50 % of  $I_{\Delta n}$

Red = the leakage or fault current amounts to > 50 % of  $I_{\Delta n}$ . The device will trip once a value of 100 % is almost reached.



### Ease of use combined with efficiency and safety

The test button of the digital RCD only needs to be pressed once a year. The integrated overload functionality means that no thermal back-up fuse is required. Thanks to the integrated short-time delay (G-type), the circuit breaker will not trip in the event of brief transient overvoltages (e.g. lightning strikes). Meanwhile, the lift/claw terminals at the top and bottom are also easy to use. The integrated red-green position indicator and the white-blue fault-current tripping indicator provide all the information you need directly on the circuit breaker. A wide range of accessories, such as the Z-HK, can be retrofitted, while the device can also be sealed for additional safety.



### Type F residual-current device

Type F residual-current circuit breakers are specially designed for use in applications featuring single-phase variable frequency drives, such as pumps, welding units, vibrators or impact drills. In such applications, residual currents with mixed frequencies may occur, which cannot be detected by Type AC and Type A residual-current circuit breakers.



### Versatile, modular devices

We offer a wide range of rail-mounted devices for controlling, switching and signaling. All devices are suitable for DIN-rail mounting and are easy to mount and wire, making them ideal for any industrial installation.



### Lightning and surge protection

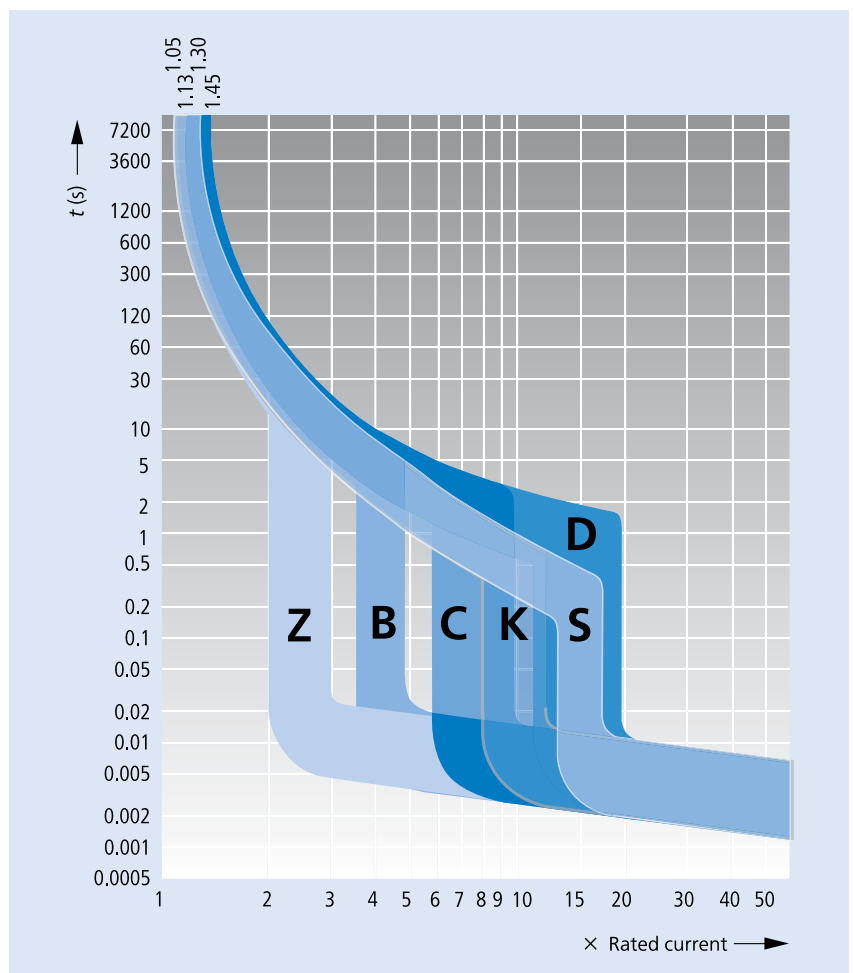
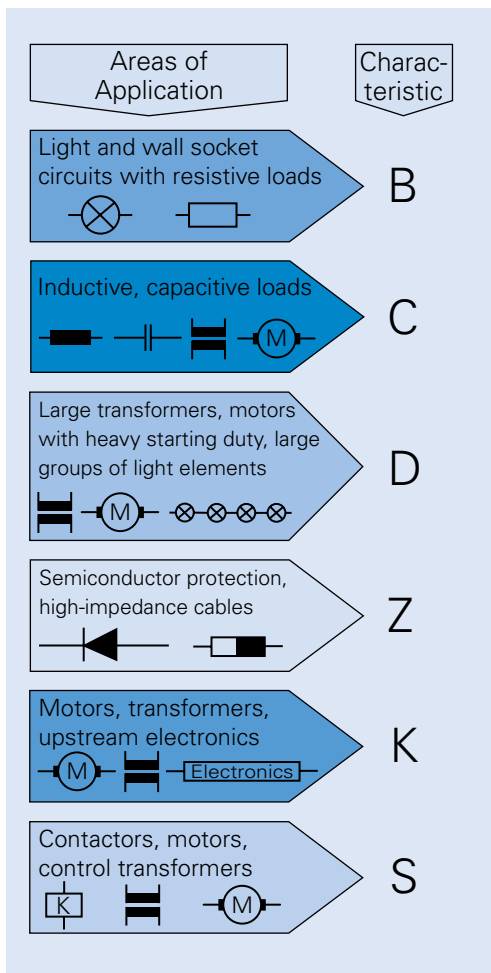
Harmful overvoltage events can be caused by direct or indirect lightning strikes, yet also by switching actions in your installation or by the utility. The application of SPDs is very versatile and ranges from protecting residential homes to industrial buildings. Therefore, Eaton offers a broad and complete range of surge protection devices in accordance with IEC/EN 61643-11 or IEC/EN 61643-31 to fulfill all your protection needs on the AC and DC side of your installation.



### A comprehensive product range

Our extensive portfolio also includes Schuko sockets for industrial installations, ammeters and voltmeters, energy and hour meters for DIN-rail mounting, main switches, on/off switches, control switches, pushbuttons (with and without indicator lights), indicator lights, analog and digital timers, staircase timers, twilight switches, buzzers and bells. We thus offer a comprehensive product range for your entire electrical installation from a single source.





Tripping characteristics of xEffect FAZ industrial miniature circuit breakers

In addition to line protection, the versatile, customizable tripping characteristics provide individual device and control-circuit protection. The high rated breaking capacity of 10 to 25 kA and the excellent current-limiting and selectivity characteristics ensure maximum system protection and availability. Devices with B characteristic are used for the protection of lighting and socket circuits. Devices with C characteristic are used wherever current peaks and other overcurrents may occur during operation that should not cause tripping. The D characteristic is the right solution for large transformers, motors with heavy starting duties or large groups of luminaires. All devices are available as single- and multi-pole versions up to a rated current of 63 A, irrespective of the characteristic.

### Improved line protection with high operational continuity

In the event of short circuits, devices with K characteristic will trip at eight to 12 times the rated current and are thus used wherever current peaks and other overcurrents may occur during operation that should not cause tripping. These devices are therefore in the upper range of the C characteristic and in the lower range of the D characteristic. This enables motors, capacitors, welding transformers and electronically controlled ballasts to be optimally connected. Our K characteristic devices ensure improved line protection thanks to the narrower range of the bimetallic strip in the overload release.

### Control-circuit safety

Circuit breakers with S characteristic are designed for the protection of control circuits with high inrush currents. The short-circuit current threshold of  $13$  to  $17 \times I_n$  is within a narrowed range of the D characteristic and thus higher than the inrush current of a typical control transformer in order to prevent nuisance tripping. Devices with S characteristic are tested according to IEC/EN 60947-2. As per this standard, these control circuit breakers only allow an overload of 5 to 30 %.

### Rapid-response protection of electronic components

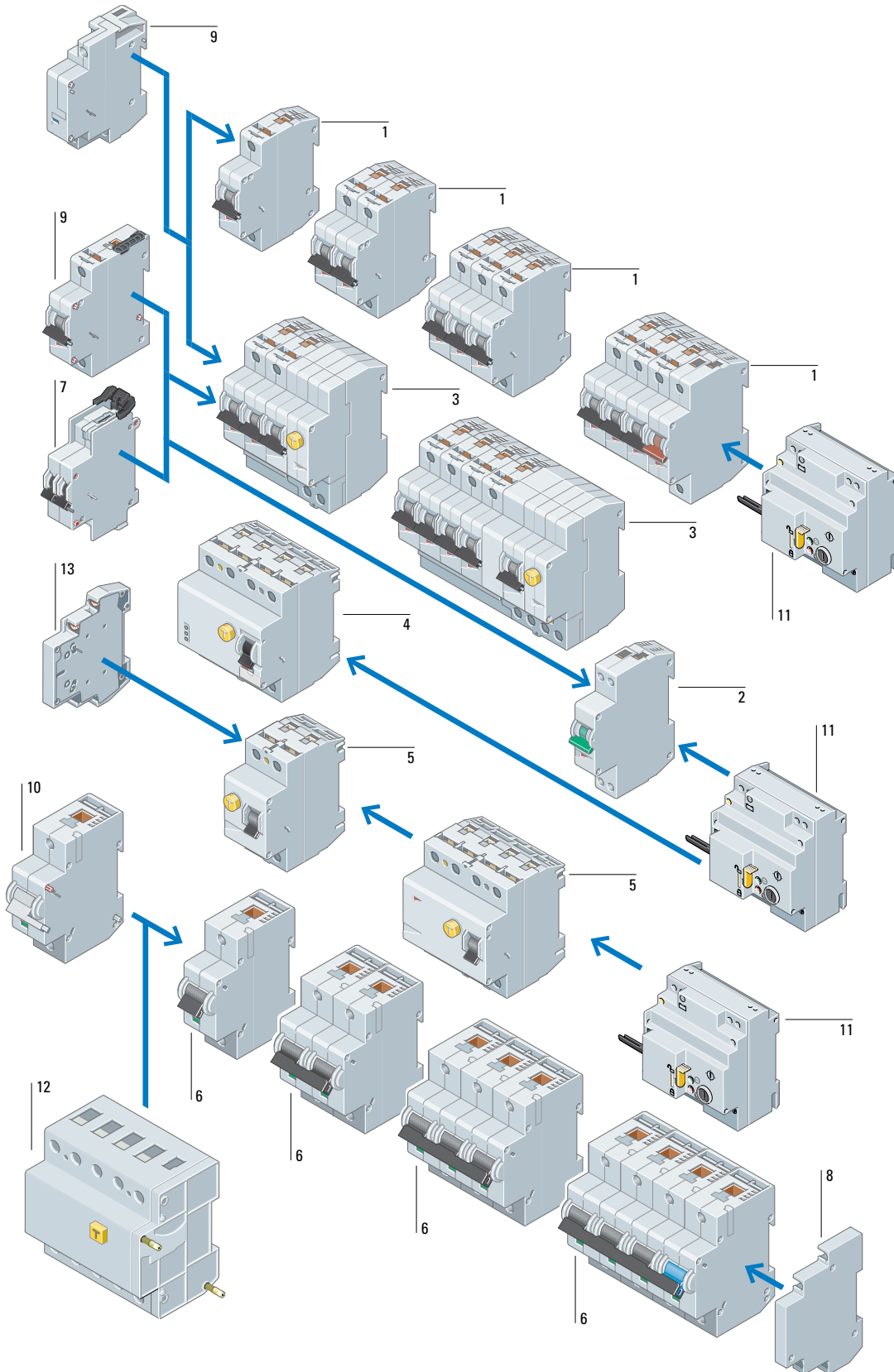
Even small overcurrents can destroy electronic components and devices. The xEffect FAZ industrial miniature circuit breakers with Z characteristic will trip instantaneously at two to three times the overcurrent threshold. Thanks to this characteristic, the circuit breakers are also suitable for protecting lines with high impedance.



# Miniature circuit breakers and residual-current circuit breakers

System overview

Moeller series



- |   |   |    |  |
|---|---|----|--|
| 1 | FAZ miniature circuit breaker                                   | 7  | FAZ auxiliary contact or SWD connection module                     |
| 1 | FAZT miniature circuit breaker                                  | 8  | AZ auxiliary contact   |
| 2 | FAZ-PN miniature circuit breaker                                | 9  | FAZ voltage release  |
| 3 | FBSmV residual-current protective modules (for mounting on FAZ) | 10 | AZ voltage release   |
| 4 | FRBmM combination switch  | 11 | Remote switching module  |
| 5 | FRCmM residual-current circuit breaker                          | 12 | FBHmV residual-current protective modules (for mounting on FAZ)    |
| 6 | AZ miniature circuit breaker                                    | 13 | Residual-current auxiliary contact module or SWD connection module |



Rated current $I_n$ A	Switching capacity IEC 60947-2 kA	1-pole		1-pole+N		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FAZ miniature circuit breakers</b>									
(Circuit breakers with 3+N and 4 poles available on request)									
Characteristic: B Instantaneous release response current: $3 - 5 \times I_n$									
1	15	FAZ-B1/1	278520	FAZ-B1/1N	278633	FAZ-B1/2	278719	FAZ-B1/3	278832
1.5	15	FAZ-B1,5/1	278521	FAZ-B1,5/1N	278634	FAZ-B1,5/2	278720	FAZ-B1,5/3	278833
1.6	15	FAZ-B1,6/1	278522	FAZ-B1,6/1N	278635	FAZ-B1,6/2	278721	FAZ-B1,6/3	278834
2	15	FAZ-B2/1	278523	FAZ-B2/1N	278636	FAZ-B2/2	278722	FAZ-B2/3	278835
2.5	15	FAZ-B2,5/1	278524	FAZ-B2,5/1N	278637	FAZ-B2,5/2	278723	FAZ-B2,5/3	278836
3	15	FAZ-B3/1	278525	FAZ-B3/1N	278638	FAZ-B3/2	278724	FAZ-B3/3	278837
3.5	15	FAZ-B3,5/1	278526	FAZ-B3,5/1N	278639	FAZ-B3,5/2	278725	FAZ-B3,5/3	278838
4	15	FAZ-B4/1	278527	FAZ-B4/1N	278640	FAZ-B4/2	278726	FAZ-B4/3	278839
5	15	FAZ-B5/1	278528	FAZ-B5/1N	278641	FAZ-B5/2	278727	FAZ-B5/3	278840
6	15	FAZ-B6/1	278529	FAZ-B6/1N	278642	FAZ-B6/2	278728	FAZ-B6/3	278841
8	15	FAZ-B8/1	278530	FAZ-B8/1N	278643	FAZ-B8/2	278729	FAZ-B8/3	278842
10	15	FAZ-B10/1	278531	FAZ-B10/1N	278644	FAZ-B10/2	278730	FAZ-B10/3	278843
12	15	FAZ-B12/1	278532	FAZ-B12/1N	278645	FAZ-B12/2	278731	FAZ-B12/3	278844
13	15	FAZ-B13/1	278533	FAZ-B13/1N	278646	FAZ-B13/2	278732	FAZ-B13/3	278845
15	15	FAZ-B15/1	278534	FAZ-B15/1N	278647	FAZ-B15/2	278733	FAZ-B15/3	278846
16	15	FAZ-B16/1	278535	FAZ-B16/1N	278648	FAZ-B16/2	278734	FAZ-B16/3	278847
20	15	FAZ-B20/1	278536	FAZ-B20/1N	278649	FAZ-B20/2	278735	FAZ-B20/3	278848
25	15	FAZ-B25/1	278537	FAZ-B25/1N	278650	FAZ-B25/2	278736	FAZ-B25/3	278849
32	15	FAZ-B32/1	278538	FAZ-B32/1N	278651	FAZ-B32/2	278737	FAZ-B32/3	278850
40	15	FAZ-B40/1	278539	FAZ-B40/1N	278652	FAZ-B40/2	278738	FAZ-B40/3	278851
50	15	FAZ-B50/1	278540	FAZ-B50/1N	278653	FAZ-B50/2	278739	FAZ-B50/3	278852
63	15	FAZ-B63/1	278541	FAZ-B63/1N	278654	FAZ-B63/2	278740	FAZ-B63/3	278853
Characteristic: C Instantaneous release response current: $5 - 10 \times I_n$									
0.16	15	FAZ-C0,16/1	278542	FAZ-C0,16/1N	278655	FAZ-C0,16/2	278741	FAZ-C0,16/3	278854
0.25	15	FAZ-C0,25/1	278543	FAZ-C0,25/1N	278656	FAZ-C0,25/2	278742	FAZ-C0,25/3	278855
0.5	15	FAZ-C0,5/1	278544	FAZ-C0,5/1N	278657	FAZ-C0,5/2	278743	FAZ-C0,5/3	278856
0.75	15	FAZ-C0,75/1	278545	FAZ-C0,75/1N	278658	FAZ-C0,75/2	278744	FAZ-C0,75/3	278857
1	15	FAZ-C1/1	278546	FAZ-C1/1N	278659	FAZ-C1/2	278745	FAZ-C1/3	278858
1.5	15	FAZ-C1,5/1	278547	FAZ-C1,5/1N	278660	FAZ-C1,5/2	278746	FAZ-C1,5/3	278859
1.6	15	FAZ-C1,6/1	278548	FAZ-C1,6/1N	278661	FAZ-C1,6/2	278747	FAZ-C1,6/3	278860
2	15	FAZ-C2/1	278549	FAZ-C2/1N	278662	FAZ-C2/2	278748	FAZ-C2/3	278861
2.5	15	FAZ-C2,5/1	278550	FAZ-C2,5/1N	278663	FAZ-C2,5/2	278749	FAZ-C2,5/3	278862
3	15	FAZ-C3/1	278551	FAZ-C3/1N	278664	FAZ-C3/2	278750	FAZ-C3/3	278863
3.5	15	FAZ-C3,5/1	278552	FAZ-C3,5/1N	278665	FAZ-C3,5/2	278751	FAZ-C3,5/3	278864
4	15	FAZ-C4/1	278553	FAZ-C4/1N	278666	FAZ-C4/2	278752	FAZ-C4/3	278865
5	15	FAZ-C5/1	278554	FAZ-C5/1N	278667	FAZ-C5/2	278753	FAZ-C5/3	278866
6	15	FAZ-C6/1	278555	FAZ-C6/1N	278668	FAZ-C6/2	278754	FAZ-C6/3	278867
8	15	FAZ-C8/1	278556	FAZ-C8/1N	278669	FAZ-C8/2	278755	FAZ-C8/3	278868
10	15	FAZ-C10/1	278557	FAZ-C10/1N	278670	FAZ-C10/2	278756	FAZ-C10/3	278869
12	15	FAZ-C12/1	278558	FAZ-C12/1N	278671	FAZ-C12/2	278757	FAZ-C12/3	278870
13	15	FAZ-C13/1	278559	FAZ-C13/1N	278672	FAZ-C13/2	278758	FAZ-C13/3	278871
15	15	FAZ-C15/1	278560	FAZ-C15/1N	278673	FAZ-C15/2	278759	FAZ-C15/3	278872
16	15	FAZ-C16/1	278561	FAZ-C16/1N	278674	FAZ-C16/2	278760	FAZ-C16/3	278873
20	15	FAZ-C20/1	278562	FAZ-C20/1N	278675	FAZ-C20/2	278761	FAZ-C20/3	278874
25	15	FAZ-C25/1	278563	FAZ-C25/1N	278676	FAZ-C25/2	278762	FAZ-C25/3	278875
32	15	FAZ-C32/1	278564	FAZ-C32/1N	278677	FAZ-C32/2	278763	FAZ-C32/3	278876
40	15	FAZ-C40/1	278565	FAZ-C40/1N	278678	FAZ-C40/2	278764	FAZ-C40/3	278877
50	15	FAZ-C50/1	278566	FAZ-C50/1N	278679	FAZ-C50/2	278765	FAZ-C50/3	278878
63	15	FAZ-C63/1	278567	FAZ-C63/1N	278680	FAZ-C63/2	278766	FAZ-C63/3	278879



Rated current $I_n$ A	Switching capacity IEC 60947-2 kA	1-pole		1-pole+N		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FAZ miniature circuit breakers</b>									
(Circuit breakers with 3+N and 4 poles available on request)									
Characteristic: D Instantaneous release response current: 10 - 20 x $I_n$									
0.5	15	FAZ-D0,5/1	278568	FAZ-D0,5/1N	278681	FAZ-D0,5/2	278767	FAZ-D0,5/3	278880
1	15	FAZ-D1/1	278569	FAZ-D1/1N	278682	FAZ-D1/2	278768	FAZ-D1/3	278881
1.5	15	FAZ-D1,5/1	278570	FAZ-D1,5/1N	278683	FAZ-D1,5/2	278769	FAZ-D1,5/3	278882
1.6	15	FAZ-D1,6/1	278571	FAZ-D1,6/1N	278684	FAZ-D1,6/2	278770	FAZ-D1,6/3	278883
2	15	FAZ-D2/1	278572	FAZ-D2/1N	278685	FAZ-D2/2	278771	FAZ-D2/3	278884
2.5	15	FAZ-D2,5/1	278573	FAZ-D2,5/1N	278686	FAZ-D2,5/2	278772	FAZ-D2,5/3	278885
3	15	FAZ-D3/1	278574	FAZ-D3/1N	278687	FAZ-D3/2	278773	FAZ-D3/3	278886
3.5	15	FAZ-D3,5/1	278575	FAZ-D3,5/1N	278688	FAZ-D3,5/2	278774	FAZ-D3,5/3	278887
4	15	FAZ-D4/1	278576	FAZ-D4/1N	278689	FAZ-D4/2	278775	FAZ-D4/3	278888
5	15	FAZ-D5/1	278577	FAZ-D5/1N	278690	FAZ-D5/2	278776	FAZ-D5/3	278889
6	15	FAZ-D6/1	278578	FAZ-D6/1N	278691	FAZ-D6/2	278777	FAZ-D6/3	278890
8	15	FAZ-D8/1	278579	FAZ-D8/1N	278692	FAZ-D8/2	278778	FAZ-D8/3	278891
10	15	FAZ-D10/1	278580	FAZ-D10/1N	278693	FAZ-D10/2	278779	FAZ-D10/3	278892
12	15	FAZ-D12/1	278581	FAZ-D12/1N	278694	FAZ-D12/2	278780	FAZ-D12/3	278893
13	15	FAZ-D13/1	278582	FAZ-D13/1N	278695	FAZ-D13/2	278781	FAZ-D13/3	278894
15	15	FAZ-D15/1	278583	FAZ-D15/1N	278696	FAZ-D15/2	278782	FAZ-D15/3	278895
16	15	FAZ-D16/1	278584	FAZ-D16/1N	278697	FAZ-D16/2	278783	FAZ-D16/3	278896
20	15	FAZ-D20/1	278585	FAZ-D20/1N	278698	FAZ-D20/2	278784	FAZ-D20/3	278897
25	15	FAZ-D25/1	278586	FAZ-D25/1N	278699	FAZ-D25/2	278785	FAZ-D25/3	278898
32	15	FAZ-D32/1	278587	FAZ-D32/1N	278700	FAZ-D32/2	278786	FAZ-D32/3	278899
40	15	FAZ-D40/1	278588	FAZ-D40/1N	278701	FAZ-D40/2	278787	FAZ-D40/3	278900
50	10	FAZ-D50/1	115370	FAZ-D50/1N	115378	FAZ-D50/2	115372	FAZ-D50/3	115374
63	10	FAZ-D63/1	115371	FAZ-D63/1N	115379	FAZ-D63/2	115373	FAZ-D63/3	115375
Characteristic: K Instantaneous release response current: 8 - 12 x $I_n$									
0.5	10	FAZ-K0,5/1	278589	FAZ-K0,5/1N	278702	FAZ-K0,5/2	278788	FAZ-K0,5/3	278901
1	10	FAZ-K1/1	278590	FAZ-K1/1N	278703	FAZ-K1/2	278789	FAZ-K1/3	278902
1.6	10	FAZ-K1,6/1	278591	FAZ-K1,6/1N	278704	FAZ-K1,6/2	278790	FAZ-K1,6/3	278903
2	10	FAZ-K2/1	278592	FAZ-K2/1N	278705	FAZ-K2/2	278791	FAZ-K2/3	278904
3	10	FAZ-K3/1	278593	FAZ-K3/1N	278706	FAZ-K3/2	278792	FAZ-K3/3	278905
4	10	FAZ-K4/1	278594	FAZ-K4/1N	278707	FAZ-K4/2	278793	FAZ-K4/3	278906
6	10	FAZ-K6/1	278595	FAZ-K6/1N	278708	FAZ-K6/2	278794	FAZ-K6/3	278907
8	10	FAZ-K8/1	278596	FAZ-K8/1N	278709	FAZ-K8/2	278795	FAZ-K8/3	278908
10	10	FAZ-K10/1	278597	FAZ-K10/1N	278710	FAZ-K10/2	278796	FAZ-K10/3	278909
13	10	FAZ-K13/1	278598	FAZ-K13/1N	278711	FAZ-K13/2	278797	FAZ-K13/3	278910
16	10	FAZ-K16/1	278599	FAZ-K16/1N	278712	FAZ-K16/2	278798	FAZ-K16/3	278911
20	10	FAZ-K20/1	278600	FAZ-K20/1N	278713	FAZ-K20/2	278799	FAZ-K20/3	278912
25	10	FAZ-K25/1	278601	FAZ-K25/1N	278714	FAZ-K25/2	278800	FAZ-K25/3	278913
32	10	FAZ-K32/1	278602	FAZ-K32/1N	278715	FAZ-K32/2	278801	FAZ-K32/3	278914
40	10	FAZ-K40/1	278603	FAZ-K40/1N	278716	FAZ-K40/2	278802	FAZ-K40/3	278915
50	10	FAZ-K50/1	278604	FAZ-K50/1N	278717	FAZ-K50/2	278803	FAZ-K50/3	278916
63	10	FAZ-K63/1	278605	FAZ-K63/1N	278718	FAZ-K63/2	278804	FAZ-K63/3	278917



Rated current $I_n$ A	Switching capacity IEC 60947-2 kA	1-pole		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FAZ miniature circuit breakers</b>							
Characteristic: S Instantaneous release response current: 13 - 17 x $I_n$							
1	10	FAZ-S1/1	278606	FAZ-S1/2	278805	-	-
2	10	FAZ-S2/1	278607	FAZ-S2/2	278806	-	-
3	10	FAZ-S3/1	278608	FAZ-S3/2	278807	-	-
4	10	FAZ-S4/1	278609	FAZ-S4/2	278808	-	-
6	10	FAZ-S6/1	278610	FAZ-S6/2	278809	-	-
10	10	FAZ-S10/1	278611	FAZ-S10/2	278810	-	-
16	10	FAZ-S16/1	278612	FAZ-S16/2	278811	-	-
20	10	FAZ-S20/1	278613	FAZ-S20/2	278812	-	-
25	10	FAZ-S25/1	278614	FAZ-S25/2	278813	-	-
32	10	FAZ-S32/1	278615	FAZ-S32/2	278814	-	-
40	10	FAZ-S40/1	278616	FAZ-S40/2	278815	-	-
Characteristic: Z Instantaneous release response current: 2 - 3 x $I_n$							
0.5	10	FAZ-Z0,5/1	278617	FAZ-Z0,5/2	278816	FAZ-Z0,5/3	278918
1	10	FAZ-Z1/1	278618	FAZ-Z1/2	278817	FAZ-Z1/3	278919
1.6	10	FAZ-Z1,6/1	278619	FAZ-Z1,6/2	278818	FAZ-Z1,6/3	278920
2	10	FAZ-Z2/1	278620	FAZ-Z2/2	278819	FAZ-Z2/3	278921
3	10	FAZ-Z3/1	278621	FAZ-Z3/2	278820	FAZ-Z3/3	278922
4	10	FAZ-Z4/1	278622	FAZ-Z4/2	278821	FAZ-Z4/3	278923
6	10	FAZ-Z6/1	278623	FAZ-Z6/2	278822	FAZ-Z6/3	278924
8	10	FAZ-Z8/1	278624	FAZ-Z8/2	278823	FAZ-Z8/3	278925
10	10	FAZ-Z10/1	278625	FAZ-Z10/2	278824	FAZ-Z10/3	278926
16	10	FAZ-Z16/1	278626	FAZ-Z16/2	278825	FAZ-Z16/3	278927
20	10	FAZ-Z20/1	278627	FAZ-Z20/2	278826	FAZ-Z20/3	278928
25	10	FAZ-Z25/1	278628	FAZ-Z25/2	278827	FAZ-Z25/3	278929
32	10	FAZ-Z32/1	278629	FAZ-Z32/2	278828	FAZ-Z32/3	278930
40	10	FAZ-Z40/1	278630	FAZ-Z40/2	278829	FAZ-Z40/3	278931
50	10	FAZ-Z50/1	278631	FAZ-Z50/2	278830	FAZ-Z50/3	278932
63	10	FAZ-Z63/1	278632	FAZ-Z63/2	278831	FAZ-Z63/3	278933
<b>FAZ miniature circuit breakers for DC applications <sup>1)</sup></b>							
Characteristic: C Instantaneous release response current: 5 - 10 x $I_n$							
2	10	FAZ-C2/1-DC	279122	FAZ-C2/2-DC	279134	-	-
3	10	FAZ-C3/1-DC	279123	FAZ-C3/2-DC	279135	-	-
4	10	FAZ-C4/1-DC	279124	FAZ-C4/2-DC	279136	-	-
6	10	FAZ-C6/1-DC	279125	FAZ-C6/2-DC	279137	-	-
10	10	FAZ-C10/1-DC	279126	FAZ-C10/2-DC	279138	-	-
13	10	FAZ-C13/1-DC	279127	FAZ-C13/2-DC	279139	-	-
16	10	FAZ-C16/1-DC	279128	FAZ-C16/2-DC	279140	-	-
20	10	FAZ-C20/1-DC	279129	FAZ-C20/2-DC	279141	-	-
25	10	FAZ-C25/1-DC	279130	FAZ-C25/2-DC	279142	-	-
32	10	FAZ-C32/1-DC	279131	FAZ-C32/2-DC	279143	-	-
40	10	FAZ-C40/1-DC	279132	FAZ-C40/2-DC	279144	-	-
50	10	FAZ-C50/1-DC	279133	FAZ-C50/2-DC	279145	-	-

**Note:** <sup>1)</sup> FAZ miniature circuit breakers for DC applications are also available with B characteristic on request.



Rated current $I_n$ A	Switching capacity IEC 60947-2  kA	1-pole		1-pole+N		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FAZT miniature circuit breakers</b>									
(Circuit breakers with 3+N and 4 poles available on request)									
Characteristic: B Instantaneous release response current: 3-5 x $I_n$									
1	25	FAZT-B1/1	240770	FAZT-B1/1N	240994	FAZT-B1/2	240820	FAZT-B1/3	240874
2	25	FAZT-B2/1	240771	FAZT-B2/1N	240995	FAZT-B2/2	240821	FAZT-B2/3	240875
3	25	FAZT-B3/1	240772	FAZT-B3/1N	240996	FAZT-B3/2	240822	FAZT-B3/3	240876
4	25	FAZT-B4/1	240777	FAZT-B4/1N	240997	FAZT-B4/2	240823	FAZT-B4/3	240877
6	25	FAZT-B6/1	240782	FAZT-B6/1N	240998	FAZT-B6/2	240824	FAZT-B6/3	240878
10	25	FAZT-B10/1	240787	FAZT-B10/1N	240999	FAZT-B10/2	240825	FAZT-B10/3	240879
12	25	FAZT-B12/1	240792	FAZT-B12/1N	241000	FAZT-B12/2	240826	FAZT-B12/3	240880
13	25	FAZT-B13/1	240793	FAZT-B13/1N	241001	FAZT-B13/2	240827	FAZT-B13/3	240881
15	25	FAZT-B15/1	240794	FAZT-B15/1N	241005	FAZT-B15/2	240828	FAZT-B15/3	240882
16	25	FAZT-B16/1	240795	FAZT-B16/1N	241009	FAZT-B16/2	240829	FAZT-B16/3	240883
20	25	FAZT-B20/1	240796	FAZT-B20/1N	241015	FAZT-B20/2	240830	FAZT-B20/3	240884
25	25	FAZT-B25/1	240797	FAZT-B25/1N	241019	FAZT-B25/2	240831	FAZT-B25/3	240885
32	20	FAZT-B32/1	141907	FAZT-B32/1N	142509	FAZT-B32/2	142485	FAZT-B32/3	142493
40	20	FAZT-B40/1	141908	FAZT-B40/1N	142510	FAZT-B40/2	142486	FAZT-B40/3	142494
Characteristic: C Instantaneous release response current: 5-10 x $I_n$									
1	25	FAZT-C1/1	240798	FAZT-C1/1N	241022	FAZT-C1/2	240832	FAZT-C1/3	240886
2	25	FAZT-C2/1	240799	FAZT-C2/1N	241023	FAZT-C2/2	240833	FAZT-C2/3	240887
3	25	FAZT-C3/1	240800	FAZT-C3/1N	241024	FAZT-C3/2	240838	FAZT-C3/3	240888
4	25	FAZT-C4/1	240801	FAZT-C4/1N	241025	FAZT-C4/2	240843	FAZT-C4/3	240889
6	25	FAZT-C6/1	240802	FAZT-C6/1N	241026	FAZT-C6/2	240850	FAZT-C6/3	240890
10	25	FAZT-C10/1	240803	FAZT-C10/1N	241027	FAZT-C10/2	240855	FAZT-C10/3	240891
12	25	FAZT-C12/1	240804	FAZT-C12/1N	241028	FAZT-C12/2	240858	FAZT-C12/3	240892
13	25	FAZT-C13/1	240805	FAZT-C13/1N	241029	FAZT-C13/2	240859	FAZT-C13/3	240893
15	25	FAZT-C15/1	240806	FAZT-C15/1N	241030	FAZT-C15/2	240860	FAZT-C15/3	240894
16	25	FAZT-C16/1	240807	FAZT-C16/1N	241034	FAZT-C16/2	240861	FAZT-C16/3	240895
20	25	FAZT-C20/1	240808	FAZT-C20/1N	241038	FAZT-C20/2	240862	FAZT-C20/3	240896
25	25	FAZT-C25/1	240809	FAZT-C25/1N	241044	FAZT-C25/2	240863	FAZT-C25/3	240897
32	20	FAZT-C32/1	141909	FAZT-C32/1N	142511	FAZT-C32/2	142487	FAZT-C32/3	142495
40	20	FAZT-C40/1	142480	FAZT-C40/1N	142512	FAZT-C40/2	142488	FAZT-C40/3	142496
Characteristic: D Instantaneous release response current: 10-20 x $I_n$									
1	25	FAZT-D1/1	240810	FAZT-D1/1N	241048	FAZT-D1/2	240864	FAZT-D1/3	240898
2	25	FAZT-D2/1	240811	FAZT-D2/1N	241051	FAZT-D2/2	240865	FAZT-D2/3	240899
3	25	FAZT-D3/1	240812	FAZT-D3/1N	241052	FAZT-D3/2	240866	FAZT-D3/3	240900
4	25	FAZT-D4/1	240813	FAZT-D4/1N	241053	FAZT-D4/2	240867	FAZT-D4/3	240901
6	25	FAZT-D6/1	240814	FAZT-D6/1N	241054	FAZT-D6/2	240868	FAZT-D6/3	240902
10	25	FAZT-D10/1	240815	FAZT-D10/1N	241055	FAZT-D10/2	240869	FAZT-D10/3	240903
12	25	FAZT-D12/1	240816	FAZT-D12/1N	241056	FAZT-D12/2	240870	FAZT-D12/3	240904
13	25	FAZT-D13/1	240817	FAZT-D13/1N	241057	FAZT-D13/2	240871	FAZT-D13/3	240905
15	20	FAZT-D15/1	240818	FAZT-D15/1N	241058	FAZT-D15/2	240872	FAZT-D15/3	240910
16	20	FAZT-D16/1	240819	FAZT-D16/1N	241059	FAZT-D16/2	240873	FAZT-D16/3	240915
20	20	FAZT-D20/1	142481	FAZT-D20/1N	142513	FAZT-D20/2	142489	FAZT-D20/3	142497
25	15	FAZT-D25/1	142482	FAZT-D25/1N	142514	FAZT-D25/2	142490	FAZT-D25/3	142498
32	15	FAZT-D32/1	142483	FAZT-D32/1N	142515	FAZT-D32/2	142491	FAZT-D32/3	142499
40	15	FAZT-D40/1	142484	FAZT-D40/1N	142516	FAZT-D40/2	142492	FAZT-D40/3	142500





Rated current $I_n$ A	Switching capacity (UL489) kA	1-pole		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FAZ circuit breakers for use in North America</b>							
<b>Characteristic: B</b> Instantaneous release response current: $3-5 \times I_n$							
1	10	FAZ-B1/1-NA	132414	FAZ-B1/2-NA	132693	FAZ-B1/3-NA	132712
1.5	10	FAZ-B1,5/1-NA	132415	FAZ-B1,5/2-NA	132694	FAZ-B1,5/3-NA	132713
2	10	FAZ-B2/1-NA	132416	FAZ-B2/2-NA	132695	FAZ-B2/3-NA	132714
3	10	FAZ-B3/1-NA	132417	FAZ-B3/2-NA	132696	FAZ-B3/3-NA	132715
4	10	FAZ-B4/1-NA	132418	FAZ-B4/2-NA	132697	FAZ-B4/3-NA	132716
5	10	FAZ-B5/1-NA	132419	FAZ-B5/2-NA	132698	FAZ-B5/3-NA	132717
6	10	FAZ-B6/1-NA	132680	FAZ-B6/2-NA	132699	FAZ-B6/3-NA	132718
7	10	FAZ-B7/1-NA	132681	FAZ-B7/2-NA	132700	FAZ-B7/3-NA	132719
8	10	FAZ-B8/1-NA	132682	FAZ-B8/2-NA	132701	FAZ-B8/3-NA	132720
10	10	FAZ-B10/1-NA	132683	FAZ-B10/2-NA	132702	FAZ-B10/3-NA	132721
13	10	FAZ-B13/1-NA	132684	FAZ-B13/2-NA	132703	FAZ-B13/3-NA	132722
15	14	FAZ-B15/1-NA	132685	FAZ-B15/2-NA	132704	FAZ-B15/3-NA	132723
16	14	FAZ-B16/1-NA	132686	FAZ-B16/2-NA	132705	FAZ-B16/3-NA	132724
20	14	FAZ-B20/1-NA	132687	FAZ-B20/2-NA	132706	FAZ-B20/3-NA	132725
25	14	FAZ-B25/1-NA	132688	FAZ-B25/2-NA	132707	FAZ-B25/3-NA	132726
30	10	FAZ-B30/1-NA	132689	FAZ-B30/2-NA	132708	FAZ-B30/3-NA	132727
32	10	FAZ-B32/1-NA	132690	FAZ-B32/2-NA	132709	FAZ-B32/3-NA	132728
35	10	FAZ-B35/1-NA	132691	FAZ-B35/2-NA	132710	FAZ-B35/3-NA	132729
40	10	FAZ-B40/1-NA	132692	FAZ-B40/2-NA	132711	FAZ-B40/3-NA	132730
<b>Characteristic: C</b> Instantaneous release response current: $5-10 \times I_n$							
0.5	10	FAZ-C0,5/1-NA	102077	FAZ-C0,5/2-NA	102157	FAZ-C0,5/3-NA	102237
1	10	FAZ-C1/1-NA	102078	FAZ-C1/2-NA	102158	FAZ-C1/3-NA	102238
1.5	10	FAZ-C1,5/1-NA	102079	FAZ-C1,5/2-NA	102159	FAZ-C1,5/3-NA	102239
2	10	FAZ-C2/1-NA	102080	FAZ-C2/2-NA	102160	FAZ-C2/3-NA	102240
3	10	FAZ-C3/1-NA	102081	FAZ-C3/2-NA	102161	FAZ-C3/3-NA	102241
4	10	FAZ-C4/1-NA	102082	FAZ-C4/2-NA	102162	FAZ-C4/3-NA	102242
5	10	FAZ-C5/1-NA	102083	FAZ-C5/2-NA	102163	FAZ-C5/3-NA	102243
6	10	FAZ-C6/1-NA	102084	FAZ-C6/2-NA	102164	FAZ-C6/3-NA	102244
7	10	FAZ-C7/1-NA	102085	FAZ-C7/2-NA	102165	FAZ-C7/3-NA	102245
8	10	FAZ-C8/1-NA	102086	FAZ-C8/2-NA	102166	FAZ-C8/3-NA	102246
10	10	FAZ-C10/1-NA	102087	FAZ-C10/2-NA	102167	FAZ-C10/3-NA	102247
13	10	FAZ-C13/1-NA	102088	FAZ-C13/2-NA	102168	FAZ-C13/3-NA	102248
15	14	FAZ-C15/1-NA	102089	FAZ-C15/2-NA	102169	FAZ-C15/3-NA	102249
16	14	FAZ-C16/1-NA	102090	FAZ-C16/2-NA	102170	FAZ-C16/3-NA	102250
20	14	FAZ-C20/1-NA	102091	FAZ-C20/2-NA	102171	FAZ-C20/3-NA	102251
25	14	FAZ-C25/1-NA	102092	FAZ-C25/2-NA	102172	FAZ-C25/3-NA	102252
30	10	FAZ-C30/1-NA	102093	FAZ-C30/2-NA	102173	FAZ-C30/3-NA	102253
32	10	FAZ-C32/1-NA	102094	FAZ-C32/2-NA	102174	FAZ-C32/3-NA	102254
35	10	FAZ-C35/1-NA	102095	FAZ-C35/2-NA	102175	FAZ-C35/3-NA	102255
40	10	FAZ-C40/1-NA	102096	FAZ-C40/2-NA	102176	FAZ-C40/3-NA	102256

# Circuit breakers

FAZ-NA, FAZ-NA-DC miniature circuit breakers for use in North America

Moeller series



Rated current $I_n$ A	Switching capacity (UL489) kA	1-pole		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FAZ circuit breakers for use in North America</b>							
Characteristic: D Instantaneous release response current: $10-20 \times I_n$							
0.5	10	FAZ-D0,5/1-NA	102097	FAZ-D0,5/2-NA	102177	FAZ-D0,5/3-NA	102257
1	10	FAZ-D1/1-NA	102098	FAZ-D1/2-NA	102178	FAZ-D1/3-NA	102258
1.5	10	FAZ-D1,5/1-NA	102099	FAZ-D1,5/2-NA	102179	FAZ-D1,5/3-NA	102259
2	10	FAZ-D2/1-NA	102100	FAZ-D2/2-NA	102180	FAZ-D2/3-NA	102260
3	10	FAZ-D3/1-NA	102101	FAZ-D3/2-NA	102181	FAZ-D3/3-NA	102261
4	10	FAZ-D4/1-NA	102102	FAZ-D4/2-NA	102182	FAZ-D4/3-NA	102262
5	10	FAZ-D5/1-NA	102103	FAZ-D5/2-NA	102183	FAZ-D5/3-NA	102263
6	10	FAZ-D6/1-NA	102104	FAZ-D6/2-NA	102184	FAZ-D6/3-NA	102264
7	10	FAZ-D7/1-NA	102105	FAZ-D7/2-NA	102185	FAZ-D7/3-NA	102265
8	10	FAZ-D8/1-NA	102106	FAZ-D8/2-NA	102186	FAZ-D8/3-NA	102266
10	10	FAZ-D10/1-NA	102107	FAZ-D10/2-NA	102187	FAZ-D10/3-NA	102267
13	10	FAZ-D13/1-NA	102108	FAZ-D13/2-NA	102188	FAZ-D13/3-NA	102268
15	14	FAZ-D15/1-NA	102109	FAZ-D15/2-NA	102189	FAZ-D15/3-NA	102269
16	14	FAZ-D16/1-NA	102110	FAZ-D16/2-NA	102190	FAZ-D16/3-NA	102270
20	14	FAZ-D20/1-NA	102111	FAZ-D20/2-NA	102191	FAZ-D20/3-NA	102271
25	14	FAZ-D25/1-NA	102112	FAZ-D25/2-NA	102192	FAZ-D25/3-NA	102272
30	10	FAZ-D30/1-NA	102113	FAZ-D30/2-NA	102193	FAZ-D30/3-NA	102273
32	10	FAZ-D32/1-NA	102114	FAZ-D32/2-NA	102194	FAZ-D32/3-NA	102274
35	10	FAZ-D35/1-NA	102115	FAZ-D35/2-NA	102195	FAZ-D35/3-NA	102275
40	10	FAZ-D40/1-NA	102116	FAZ-D40/2-NA	102196	FAZ-D40/3-NA	102276
<b>Miniature circuit breakers for DC applications for use in North America</b>							
Characteristic: C Instantaneous release response current: $5-10 \times I_n$							
2	10	FAZ-C2/1-NA-DC	113752	FAZ-C2/2-NA-DC	137239	-	-
3	10	FAZ-C3/1-NA-DC	113753	FAZ-C3/2-NA-DC	137250	-	-
4	10	FAZ-C4/1-NA-DC	113754	FAZ-C4/2-NA-DC	137251	-	-
5	10	FAZ-C5/1-NA-DC	113755	FAZ-C5/2-NA-DC	137252	-	-
6	10	FAZ-C6/1-NA-DC	113756	FAZ-C6/2-NA-DC	120638	-	-
7	10	FAZ-C7/1-NA-DC	113757	FAZ-C7/2-NA-DC	120639	-	-
8	10	FAZ-C8/1-NA-DC	113758	FAZ-C8/2-NA-DC	120640	-	-
10	10	FAZ-C10/1-NA-DC	113759	FAZ-C10/2-NA-DC	120641	-	-
13	10	FAZ-C13/1-NA-DC	113760	FAZ-C13/2-NA-DC	120642	-	-
15	10	FAZ-C15/1-NA-DC	113761	FAZ-C15/2-NA-DC	120643	-	-
16	10	FAZ-C16/1-NA-DC	113762	FAZ-C16/2-NA-DC	120644	-	-
20	10	FAZ-C20/1-NA-DC	113763	FAZ-C20/2-NA-DC	120645	-	-
25	10	FAZ-C25/1-NA-DC	113764	FAZ-C25/2-NA-DC	120646	-	-
30	10	FAZ-C30/1-NA-DC	113765	FAZ-C30/2-NA-DC	120647	-	-
32	10	FAZ-C32/1-NA-DC	113766	FAZ-C32/2-NA-DC	120648	-	-
35	10	FAZ-C35/1-NA-DC	113767	FAZ-C35/2-NA-DC	120649	-	-
40	10	FAZ-C40/1-NA-DC	113768	FAZ-C40/2-NA-DC	120650	-	-



Rated current $I_n$ A	Rated fault current $I_{\Delta N}$ A	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FRCdM digital residual-current circuit breakers</b> (60 Hz products available on request)		<b>Type B, AC/DC all-current sensitive, 240/415 V</b>		<b>Type B+, AC/DC all-current sensitive, 240/415 V</b>		<b>Type Bfq, AC/DC sensitive - converter proof, 240/415 V</b>	
Type G, short-time delayed							
25	0.03	FRCDM-25/4/003-G/B	167892	FRCDM-25/4/003-G/B+	167880	FRCDM-25/4/003-G/BFQ	179530
40	0.03	FRCDM-40/4/003-G/B	167893	FRCDM-40/4/003-G/B+	167881	FRCDM-40/4/003-G/BFQ	179531
63	0.03	FRCDM-63/4/003-G/B	167894	FRCDM-63/4/003-G/B+	167882	FRCDM-63/4/003-G/BFQ	179532
25	0.3	FRCDM-25/4/03-G/B	167896	FRCDM-25/4/03-G/B+	167884	FRCDM-25/4/03-G/BFQ	167904
40	0.3	FRCDM-40/4/03-G/B	167897	FRCDM-40/4/03-G/B+	167885	FRCDM-40/4/03-G/BFQ	167905
63	0.3	FRCDM-63/4/03-G/B	167898	FRCDM-63/4/03-G/B+	167886	FRCDM-63/4/03-G/BFQ	167906
Type S, selective switch-off							
25	0.3	FRCDM-25/4/03-S/B	167900	FRCDM-25/4/03-S/B+	167888	FRCDM-25/4/03-S/BFQ	167908
40	0.3	FRCDM-40/4/03-S/B	167901	FRCDM-40/4/03-S/B+	167889	FRCDM-40/4/03-S/BFQ	167909
63	0.3	FRCDM-63/4/03-S/B	167902	FRCDM-63/4/03-S/B+	167890	FRCDM-63/4/03-S/BFQ	167910
<b>FRCmM-125 residual-current circuit breakers</b>							
125	0.03	FRCMM-125/4/003-G/B	171188	FRCMM-125/4/003-G/B+	171189	-	-
125	0.03	FRCMM-125/4/003-B	171184	-	-	-	-
125	0.1	FRCMM-125/4/01-B	171185	-	-	-	-
125	0.3	FRCMM-125/4/03-B	171186	-	-	FRCMM-125/4/03-S/BFQ	171190
125	0.5	FRCMM-125/4/05-B	171187	-	-	FRCMM-125/4/05-S/BFQ	171191
<b>FRCdM digital residual-current circuit breakers</b>		<b>Type U, pulse-current sensitive - converter proof, 240/415 V</b>		<b>Type R for X-ray applications, 240/415 V</b>		<b>Type A, pulse-current sensitive, 240/415 V</b>	
Type G, short-time delayed							
25	0.03	-	-	-	-	FRCDM-25/4/003-G/A	168646
40	0.03	FRCDM-40/4/003-U	168643	-	-	FRCDM-40/4/003-G/A	168648
63	0.03	FRCDM-63/4/003-U	168640	FRCDM-63/4/003-R	168636	FRCDM-63/4/003-G/A	168650
80	0.03	-	-	-	-	FRCDM-80/4/003-G/A	168634
25	0.3	-	-	-	-	FRCDM-25/4/03-G/A	168647
40	0.3	-	-	-	-	FRCDM-40/4/03-G/A	168649
63	0.3	-	-	-	-	FRCDM-63/4/03-G/A	168651
80	0.3	-	-	-	-	FRCDM-80/4/03-G/A	168635
Type S, selective switch-off							
40	0.3	FRCDM-40/4/03-U	168644	-	-	FRCDM-40/4/03-S/A	168637
63	0.3	FRCDM-63/4/03-U	168641	-	-	FRCDM-63/4/03-S/A	168638
80	0.3	FRCDM-80/4/03-U	168642	-	-	FRCDM-80/4/03-S/A	168639
<b>FRCmM residual-current circuit breakers</b>		<b>Type F, pulse-current sensitive - 1-phase converter applications, 240/415 V</b>		<b>Type F, pulse-current sensitive - 1-phase converter applications, 240/415 V</b>			
Type G, short-time delayed							
16	0.03	FRCMM-16/2/003-G/F	187365	FRCMM-16/4/003-G/F	187407	-	-
25	0.03	FRCMM-25/2/003-G/F	187366	FRCMM-25/4/003-G/F	187408	-	-
40	0.03	FRCMM-40/2/003-G/F	187367	FRCMM-40/4/003-G/F	187409	-	-
63	0.03	FRCMM-63/2/003-G/F	187368	FRCMM-63/4/003-G/F	187010	-	-
80	0.03	FRCMM-80/2/003-G/F	187369	FRCMM-80/4/003-G/F	187411	-	-
100	0.03	FRCMM-100/2/003-G/F	187370	FRCMM-100/4/003-G/F	187412	-	-
25	0.3	FRCMM-25/2/03-G/F	187378	FRCMM-25/4/03-G/F	187420	-	-
40	0.3	FRCMM-40/2/03-G/F	187379	FRCMM-40/4/03-G/F	187421	-	-
62	0.3	FRCMM-63/2/03-G/F	187380	FRCMM-63/4/03-G/F	187422	-	-
80	0.3	FRCMM-80/2/03-G/F	187381	FRCMM-80/4/03-G/F	187423	-	-
100	0.3	FRCMM-100/2/03-G/F	187382	FRCMM-100/4/03-G/F	187424	-	-
Type S, selective switch-off							
25	0.3	FRCMM-25/2/03-S/F	187396	FRCMM-25/4/03-S/F	187438	-	-
40	0.3	FRCMM-40/2/03-S/F	187397	FRCMM-40/4/03-S/F	187439	-	-
63	0.3	FRCMM-63/2/03-S/F	187398	FRCMM-63/4/03-S/F	187440	-	-
80	0.3	FRCMM-80/2/03-S/F	187399	FRCMM-80/4/03-S/F	187441	-	-
100	0.3	FRCMM-100/2/03-S/F	187400	FRCMM-100/4/03-S/F	187442	-	-



Rated current $I_n$ A	Rated fault current $I_{\Delta N}$ A	2-pole 240/415 V Part no.	Article no.	4-pole 240/415 V Part no.	Article no.
<b>FRCmM residual-current circuit breakers</b>					
(Products for other voltage ranges available on request)					
Type A, pulse-current sensitive					
16	0.03	FRCMM-16/2/003-A	170430	FRCMM-16/4/003-A	170285
25	0.03	FRCMM-25/2/003-A	170431	FRCMM-25/4/003-A	170332
40	0.03	FRCMM-40/2/003-A	170432	FRCMM-40/4/003-A	170333
63	0.03	FRCMM-63/2/003-A	170433	FRCMM-63/4/003-A	170334
80	0.03	FRCMM-80/2/003-A	170434	FRCMM-80/4/003-A	170335
100	0.03	FRCMM-100/2/003-A	170435	FRCMM-100/4/003-A	170336
125	0.03	FRCMM-125/2/003-A	171164	FRCMM-125/4/003-A	171174
16	0.3	FRCMM-16/2/03-A	170278	FRCMM-16/4/03-A	170340
25	0.3	FRCMM-25/2/03-A	170279	FRCMM-25/4/03-A	170341
40	0.3	FRCMM-40/2/03-A	170280	FRCMM-40/4/03-A	170342
63	0.3	-	-	FRCMM-63/4/03-A	170343
80	0.3	-	-	FRCMM-80/4/03-A	170344
100	0.3	-	-	FRCMM-100/4/03-A	170345
125	0.3	FRCMM-125/2/03-A	171166	FRCMM-125/4/03-A	171176
16	0.5	FRCMM-16/2/05-A	170281	FRCMM-16/4/05-A	170346
25	0.5	FRCMM-25/2/05-A	170282	FRCMM-25/4/05-A	170347
40	0.5	FRCMM-40/2/05-A	170283	FRCMM-40/4/05-A	170348
63	0.5	FRCMM-63/2/05-A	170284	FRCMM-63/4/05-A	170349
80	0.5	-	-	FRCMM-80/4/05-A	170350
100	0.5	-	-	FRCMM-100/4/05-A	170351
125	0.5	FRCMM-125/2/05-A	171167	FRCMM-125/4/05-A	171177
Type G/A (ÖVE E 8601), short-time delayed					
16	0.03	FRCMM-16/2/003-G/A	170382	FRCMM-16/4/003-G/A	170293
25	0.03	FRCMM-25/2/003-G/A	170383	FRCMM-25/4/003-G/A	170294
40	0.03	FRCMM-40/2/003-G/A	170384	FRCMM-40/4/003-G/A	170295
63	0.03	FRCMM-63/2/003-G/A	170385	FRCMM-63/4/003-G/A	170296
80	0.03	FRCMM-80/2/003-G/A	170386	FRCMM-80/4/003-G/A	170297
100	0.03	FRCMM-100/2/003-G/A	170387	FRCMM-100/4/003-G/A	170298
125	0.03	FRCMM-125/2/003-G/A	171168	FRCMM-125/4/003-G/A	171178
16	0.3	FRCMM-16/2/03-G/A	170290	FRCMM-16/4/03-G/A	170302
25	0.3	FRCMM-25/2/03-G/A	170291	FRCMM-25/4/03-G/A	170303
40	0.3	FRCMM-40/2/03-G/A	170292	FRCMM-40/4/03-G/A	170304
63	0.3	-	-	FRCMM-63/4/03-G/A	170305
80	0.3	-	-	FRCMM-80/4/03-G/A	170306
100	0.3	-	-	FRCMM-100/4/03-G/A	170307
125	0.3	FRCMM-125/2/03-G/A	171170	FRCMM-125/4/03-G/A	171180
Type S/A, selective switch-off					
40	0.3	-	-	FRCMM-40/4/03-S/A	170448
63	0.3	-	-	FRCMM-63/4/03-S/A	170449
<b>FRCmM-NA residual-current circuit breakers for use in North America</b>		<b>IEC: 240/415 V; UL: 480Y/277 V</b>		<b>IEC: 240/415 V; UL: 480Y/277 V</b>	
Type A, pulse-current sensitive					
25	0.03	FRCMM-25/2/003-A-NA	167113	FRCMM-25/4/003-A-NA	167125
40	0.03	FRCMM-40/2/003-A-NA	167114	FRCMM-40/4/003-A-NA	167102
63	0.03	FRCMM-63/2/003-A-NA	167115	FRCMM-63/4/003-A-NA	167103
25	0.3	FRCMM-25/2/03-A-NA	167116	FRCMM-25/4/03-A-NA	167104
40	0.3	FRCMM-40/2/03-A-NA	167117	FRCMM-40/4/03-A-NA	167105
63	0.3	FRCMM-63/2/03-A-NA	167118	FRCMM-63/4/03-A-NA	167106
Type G/A (ÖVE E 8601), short-time delayed					
25	0.03	FRCMM-25/2/003-G/A-NA	167119	FRCMM-25/4/003-G/A-NA	167107
40	0.03	FRCMM-40/2/003-G/A-NA	167120	FRCMM-40/4/003-G/A-NA	167108
63	0.03	FRCMM-63/2/003-G/A-NA	167121	FRCMM-63/4/003-G/A-NA	167109
25	0.3	FRCMM-25/2/03-G/A-NA	167122	FRCMM-25/4/03-G/A-NA	167110
40	0.3	FRCMM-40/2/03-G/A-NA	167123	FRCMM-40/4/03-G/A-NA	167111
63	0.3	FRCMM-63/2/03-G/A-NA	167124	FRCMM-63/4/03-G/A-NA	167112



Rated current $I_n$ A	Rated fault current $I_{\Delta N}$ A	2-pole Part no.	Article no.	4-pole Part no.	Article no.
<b>FRCmM-NA-110 residual-current circuit breakers for use in North America</b>					
IEC: 110/190 V; UL: 208/120 V					
Type A, pulse-current sensitive					
25	0.03	-	-	<b>FRCMM-25/4/003-A-NA-110</b>	167699
40	0.03	-	-	<b>FRCMM-40/4/003-A-NA-110</b>	167700
63	0.03	-	-	<b>FRCMM-63/4/003-A-NA-110</b>	167701
25	0.3	-	-	<b>FRCMM-25/4/03-A-NA-110</b>	167702
40	0.3	-	-	<b>FRCMM-40/4/03-A-NA-110</b>	167703
63	0.3	-	-	<b>FRCMM-63/4/03-A-NA-110</b>	167704
Type G/A (ÖVE E 8601), short-time delayed					
25	0.03	<b>FRCMM-25/2/003-G/A-NA-110</b>	167693	<b>FRCMM-25/4/003-G/A-NA-110</b>	167705
40	0.03	<b>FRCMM-40/2/003-G/A-NA-110</b>	167694	<b>FRCMM-40/4/003-G/A-NA-110</b>	167706
63	0.03	<b>FRCMM-63/2/003-G/A-NA-110</b>	167695	<b>FRCMM-63/4/003-G/A-NA-110</b>	167707
25	0.3	<b>FRCMM-25/2/03-G/A-NA-110</b>	167696	<b>FRCMM-25/4/03-G/A-NA-110</b>	167708
40	0.3	<b>FRCMM-40/2/03-G/A-NA-110</b>	167697	<b>FRCMM-40/4/03-G/A-NA-110</b>	167709
63	0.3	<b>FRCMM-63/2/03-G/A-NA-110</b>	167698	<b>FRCMM-63/4/03-G/A-NA-110</b>	167710
<b>FBSmV add-on residual-current protection unit</b>					
240/415 V (Products for 120 V and 440 V available on request)					
Type A, pulse-current sensitive					
40	0.03	<b>FBSMV-40/2/003-A</b>	170207	<b>FBSMV-40/4/003-A</b>	170227
63	0.03	<b>FBSMV-63/2/003-A</b>	170208	<b>FBSMV-63/4/003-A</b>	170228
40	0.1	<b>FBSMV-40/2/01-A</b>	170209	<b>FBSMV-40/4/01-A</b>	170229
63	0.1	<b>FBSMV-63/2/01-A</b>	170210	<b>FBSMV-63/4/01-A</b>	170230
40	0.3	<b>FBSMV-40/2/03-A</b>	170211	<b>FBSMV-40/4/03-A</b>	170231
63	0.3	<b>FBSMV-63/2/03-A</b>	170212	<b>FBSMV-63/4/03-A</b>	170232
40	0.5	<b>FBSMV-40/2/05-A</b>	170213	<b>FBSMV-40/4/05-A</b>	170233
63	0.5	<b>FBSMV-63/2/05-A</b>	170214	<b>FBSMV-63/4/05-A</b>	170234
40	1	<b>FBSMV-40/2/1-A</b>	170215	<b>FBSMV-40/4/1-A</b>	170235
63	1	<b>FBSMV-63/2/1-A</b>	170216	<b>FBSMV-63/4/1-A</b>	170236
Type S/A, selective switch-off					
40	0.1	<b>FBSMV-40/2/01-S/A</b>	170158	<b>FBSMV-40/4/01-S/A</b>	170166
63	0.1	<b>FBSMV-63/2/01-S/A</b>	170159	<b>FBSMV-63/4/01-S/A</b>	170167
40	0.3	<b>FBSMV-40/2/03-S/A</b>	170160	<b>FBSMV-40/4/03-S/A</b>	170168
63	0.3	<b>FBSMV-63/2/03-S/A</b>	170161	<b>FBSMV-63/4/03-S/A</b>	170169
<b>FBHmV add-on residual-current protection unit</b>					
240/415 V (Products 440 V available on request)					
Type A, pulse-current sensitive					
80	0.03	<b>FBHMV-80/2/003-A</b>	170257	<b>FBHMV-80/4/003-A</b>	170265
125	0.03	<b>FBHMV-125/2/003-A</b>	170258	<b>FBHMV-125/4/003-A</b>	170130
80	0.3	<b>FBHMV-80/2/03-A</b>	170259	<b>FBHMV-80/4/03-A</b>	170131
125	0.3	<b>FBHMV-125/2/03-A</b>	170260	<b>FBHMV-125/4/03-A</b>	170132
80	0.5	<b>FBHMV-80/2/05-A</b>	170261	<b>FBHMV-80/4/05-A</b>	170133
125	0.5	<b>FBHMV-125/2/05-A</b>	170262	<b>FBHMV-125/4/05-A</b>	170134
80	1	<b>FBHMV-80/2/1-A</b>	170263	<b>FBHMV-80/4/1-A</b>	170135
125	1	<b>FBHMV-125/2/1-A</b>	170264	<b>FBHMV-125/4/1-A</b>	170136
Type A, selective switch-off					
80	0.3	<b>FBHMV-80/2/03-S/A</b>	170137	<b>FBHMV-80/4/03-S/A</b>	170171
125	0.3	<b>FBHMV-125/2/03-S/A</b>	170138	<b>FBHMV-125/4/03-S/A</b>	170172
80	0.5	<b>FBHMV-80/2/05-S/A</b>	170139	<b>FBHMV-80/4/05-S/A</b>	170173
125	0.5	<b>FBHMV-125/2/05-S/A</b>	170140	<b>FBHMV-125/4/05-S/A</b>	170174
80	1	<b>FBHMV-80/2/1-S/A</b>	170141	<b>FBHMV-80/4/1-S/A</b>	170175
125	1	<b>FBHMV-125/2/1-S/A</b>	170170	<b>FBHMV-125/4/1-S/A</b>	170176

Power management



# Circuit breakers

FRB residual-current circuit breakers with overcurrent protection

Moeller series



Rated current $I_n$ A	Rated fault current $I_{\Delta n}$ A	Tripping characteristic: B Instantaneous release response current: $3-5 \times I_n$ Part no.	Article no.	Tripping characteristic: C Instantaneous release response current: $5-10 \times I_n$ Part no.	Article no.	Tripping characteristic: D Instantaneous release response current: $10-20 \times I_n$ Part no.	Article no.
<b>FRBmM digital residual-current circuit breakers with overcurrent protection</b>							
Type A, pulse-current sensitive, 240 V							
1-pole+N, short-time delayed							
6	0.01	-	-	FRBDM-C6/1N/001-G/A	168252	FRBDM-D6/1N/001-G/A	168258
10	0.01	FRBDM-B10/1N/001-G/A	168249	FRBDM-C10/1N/001-G/A	168253	FRBDM-D10/1N/001-G/A	168259
13	0.01	FRBDM-B13/1N/001-G/A	168250	FRBDM-C13/1N/001-G/A	168254	FRBDM-D13/1N/001-G/A	168260
16	0.01	FRBDM-B16/1N/001-G/A	168251	FRBDM-C16/1N/001-G/A	168255	FRBDM-D16/1N/001-G/A	168261
20	0.01	-	-	FRBDM-C20/1N/001-G/A	168256	FRBDM-D20/1N/001-G/A	168262
25	0.01	-	-	FRBDM-C25/1N/001-G/A	168257	FRBDM-D25/1N/001-G/A	168263
6	0.03	-	-	FRBDM-C6/1N/003-G/A	168267	FRBDM-D6/1N/003-G/A	168273
10	0.03	FRBDM-B10/1N/003-G/A	168264	FRBDM-C10/1N/003-G/A	168268	FRBDM-D10/1N/003-G/A	168274
13	0.03	FRBDM-B13/1N/003-G/A	168265	FRBDM-C13/1N/003-G/A	168269	FRBDM-D13/1N/003-G/A	168275
16	0.03	FRBDM-B16/1N/003-G/A	168266	FRBDM-C16/1N/003-G/A	168270	FRBDM-D16/1N/003-G/A	168276
20	0.03	-	-	FRBDM-C20/1N/003-G/A	168271	FRBDM-D20/1N/003-G/A	168277
25	0.03	-	-	FRBDM-C25/1N/003-G/A	168272	FRBDM-D25/1N/003-G/A	168278
6	0.1	-	-	FRBDM-C6/1N/01-G/A	168282	FRBDM-D6/1N/01-G/A	168288
10	0.1	FRBDM-B10/1N/01-G/A	168279	FRBDM-C10/1N/01-G/A	168283	FRBDM-D10/1N/01-G/A	168289
13	0.1	FRBDM-B13/1N/01-G/A	168280	FRBDM-C13/1N/01-G/A	168284	FRBDM-D13/1N/01-G/A	168290
16	0.1	FRBDM-B16/1N/01-G/A	168281	FRBDM-C16/1N/01-G/A	168285	FRBDM-D16/1N/01-G/A	168291
20	0.1	-	-	FRBDM-C20/1N/01-G/A	168286	FRBDM-D20/1N/01-G/A	168292
25	0.1	-	-	FRBDM-C25/1N/01-G/A	168287	FRBDM-D25/1N/01-G/A	168293
2-pole, short-time delayed							
6	0.01	-	-	FRBDM-C6/2/001-G/A	168297	FRBDM-D6/2/001-G/A	168303
10	0.01	FRBDM-B10/2/001-G/A	168294	FRBDM-C10/2/001-G/A	168298	FRBDM-D10/2/001-G/A	168304
13	0.01	FRBDM-B13/2/001-G/A	168295	FRBDM-C13/2/001-G/A	168299	FRBDM-D13/2/001-G/A	168305
16	0.01	FRBDM-B16/2/001-G/A	168296	FRBDM-C16/2/001-G/A	168300	FRBDM-D16/2/001-G/A	168195
20	0.01	-	-	FRBDM-C20/2/001-G/A	168301	FRBDM-D20/2/001-G/A	168196
25	0.01	-	-	FRBDM-C25/2/001-G/A	168302	FRBDM-D25/2/001-G/A	168197
6	0.03	-	-	FRBDM-C6/2/003-G/A	168201	FRBDM-D6/2/003-G/A	168207
10	0.03	FRBDM-B10/2/003-G/A	168198	FRBDM-C10/2/003-G/A	168202	FRBDM-D10/2/003-G/A	168208
13	0.03	FRBDM-B13/2/003-G/A	168199	FRBDM-C13/2/003-G/A	168203	FRBDM-D13/2/003-G/A	168209
16	0.03	FRBDM-B16/2/003-G/A	168200	FRBDM-C16/2/003-G/A	168204	FRBDM-D16/2/003-G/A	168210
20	0.03	-	-	FRBDM-C20/2/003-G/A	168205	FRBDM-D20/2/003-G/A	168211
25	0.03	-	-	FRBDM-C25/2/003-G/A	168206	FRBDM-D25/2/003-G/A	168212
6	0.1	-	-	FRBDM-C6/2/01-G/A	168216	FRBDM-D6/2/01-G/A	168222
10	0.1	FRBDM-B10/2/01-G/A	168213	FRBDM-C10/2/01-G/A	168217	FRBDM-D10/2/01-G/A	168223
13	0.1	FRBDM-B13/2/01-G/A	168214	FRBDM-C13/2/01-G/A	168218	FRBDM-D13/2/01-G/A	168224
16	0.1	FRBDM-B16/2/01-G/A	168215	FRBDM-C16/2/01-G/A	168219	FRBDM-D16/2/01-G/A	168225
20	0.1	-	-	FRBDM-C20/2/01-G/A	168220	FRBDM-D20/2/01-G/A	168226
25	0.1	-	-	FRBDM-C25/2/01-G/A	168221	FRBDM-D25/2/01-G/A	168227
<b>FRBmM residual-current circuit breakers with overcurrent protection</b>							
Type A, pulse-current sensitive, 240 V (products for other voltage ranges available on request)							
1-pole+N, instantaneous							
2	0.03	-	-	FRBMM-C2/1N/003-A	170614	FRBMM-D2/1N/003-A	170643
4	0.03	-	-	FRBMM-C4/1N/003-A	170615	FRBMM-D4/1N/003-A	170644
6	0.03	FRBMM-B6/1N/003-A	170702	FRBMM-C6/1N/003-A	170616	FRBMM-D6/1N/003-A	170645
10	0.03	FRBMM-B10/1N/003-A	170703	FRBMM-C10/1N/003-A	170617	FRBMM-D10/1N/003-A	170646
13	0.03	FRBMM-B13/1N/003-A	170704	FRBMM-C13/1N/003-A	170618	FRBMM-D13/1N/003-A	170647
16	0.03	FRBMM-B16/1N/003-A	170705	FRBMM-C16/1N/003-A	170619	FRBMM-D16/1N/003-A	170648
20	0.03	FRBMM-B20/1N/003-A	170706	FRBMM-C20/1N/003-A	170620	FRBMM-D20/1N/003-A	170649
25	0.03	FRBMM-B25/1N/003-A	170707	FRBMM-C25/1N/003-A	170621	-	-
32	0.03	FRBMM-B32/1N/003-A	170708	FRBMM-C32/1N/003-A	170622	-	-
40	0.03	FRBMM-B40/1N/003-A	170709	FRBMM-C40/1N/003-A	170623	-	-




Rated current $I_n$ A	Rated fault current $I_{\Delta N}$ A	Tripping characteristic: B Instantaneous release response current: $3-5 \times I_n$ Part no.	Article no.	Tripping characteristic: C Instantaneous release response current: $5-10 \times I_n$ Part no.	Article no.	Tripping characteristic: D Instantaneous release response current: $10-20 \times I_n$ Part no.	Article no.
<b>FRBMM residual-current circuit breakers with overcurrent protection</b>							
Type A, pulse-current sensitive, 240 V (products for other voltage ranges available on request)							
1-pole+N, instantaneous							
2	0.1	-	-	FRBMM-C2/1N/01-A	170682	FRBMM-D2/1N/01-A	170544
4	0.1	-	-	FRBMM-C4/1N/01-A	170683	FRBMM-D4/1N/01-A	170545
6	0.1	FRBMM-B6/1N/01-A	170664	FRBMM-C6/1N/01-A	170684	FRBMM-D6/1N/01-A	170546
10	0.1	FRBMM-B10/1N/01-A	170665	FRBMM-C10/1N/01-A	170685	FRBMM-D10/1N/01-A	170547
13	0.1	FRBMM-B13/1N/01-A	170666	FRBMM-C13/1N/01-A	170686	FRBMM-D13/1N/01-A	170548
16	0.1	FRBMM-B16/1N/01-A	170667	FRBMM-C16/1N/01-A	170687	FRBMM-D16/1N/01-A	170549
20	0.1	FRBMM-B20/1N/01-A	170668	FRBMM-C20/1N/01-A	170688	FRBMM-D20/1N/01-A	170550
25	0.1	FRBMM-B25/1N/01-A	170669	FRBMM-C25/1N/01-A	170689	-	-
32	0.1	FRBMM-B32/1N/01-A	170670	FRBMM-C32/1N/01-A	170690	-	-
40	0.1	FRBMM-B40/1N/01-A	170671	FRBMM-C40/1N/01-A	170691	-	-
2	0.3	-	-	FRBMM-C2/1N/03-A	170571	FRBMM-D2/1N/03-A	170594
4	0.3	-	-	FRBMM-C4/1N/03-A	170572	FRBMM-D4/1N/03-A	170595
6	0.3	FRBMM-B6/1N/03-A	170607	FRBMM-C6/1N/03-A	170573	FRBMM-D6/1N/03-A	170596
10	0.3	FRBMM-B10/1N/03-A	170608	FRBMM-C10/1N/03-A	170574	FRBMM-D10/1N/03-A	170597
13	0.3	FRBMM-B13/1N/03-A	170609	FRBMM-C13/1N/03-A	170575	FRBMM-D13/1N/03-A	170598
16	0.3	FRBMM-B16/1N/03-A	170610	FRBMM-C16/1N/03-A	170576	FRBMM-D16/1N/03-A	170599
20	0.3	FRBMM-B20/1N/03-A	170611	FRBMM-C20/1N/03-A	170577	FRBMM-D20/1N/03-A	170868
25	0.3	FRBMM-B25/1N/03-A	170552	FRBMM-C25/1N/03-A	170578	-	-
32	0.3	FRBMM-B32/1N/03-A	170553	FRBMM-C32/1N/03-A	170579	-	-
40	0.3	FRBMM-B40/1N/03-A	170554	FRBMM-C40/1N/03-A	170580	-	-
2-pole, instantaneous							
6	0.03	-	-	FRBMM-C6/2/003-A	170785	-	-
10	0.03	FRBMM-B10/2/003-A	170879	FRBMM-C10/2/003-A	170786	-	-
13	0.03	FRBMM-B13/2/003-A	170880	FRBMM-C13/2/003-A	170787	-	-
16	0.03	FRBMM-B16/2/003-A	170881	FRBMM-C16/2/003-A	170788	-	-
20	0.03	FRBMM-B20/2/003-A	170882	FRBMM-C20/2/003-A	170789	-	-
25	0.03	FRBMM-B25/2/003-A	170883	-	-	-	-
32	0.03	FRBMM-B32/2/003-A	170884	-	-	-	-
40	0.03	FRBMM-B40/2/003-A	170885	-	-	-	-
6	0.1	-	-	FRBMM-C6/2/01-A	170819	-	-
10	0.1	FRBMM-B10/2/01-A	170803	FRBMM-C10/2/01-A	170820	-	-
13	0.1	FRBMM-B13/2/01-A	170804	FRBMM-C13/2/01-A	170821	-	-
16	0.1	FRBMM-B16/2/01-A	170805	FRBMM-C16/2/01-A	170822	-	-
20	0.1	FRBMM-B20/2/01-A	170806	FRBMM-C20/2/01-A	170823	-	-
6	0.3	-	-	FRBMM-C6/2/03-A	170863	-	-
10	0.3	FRBMM-B10/2/03-A	170844	FRBMM-C10/2/03-A	170864	-	-
13	0.3	FRBMM-B13/2/03-A	170845	FRBMM-C13/2/03-A	170865	-	-
16	0.3	FRBMM-B16/2/03-A	170846	FRBMM-C16/2/03-A	170866	-	-
20	0.3	FRBMM-B20/2/03-A	170847	FRBMM-C20/2/03-A	170867	-	-
3-pole, instantaneous, 415 V							
6	0.03	-	-	FRBMM-C6/3/003-A	170737	FRBMM-D6/3/003-A	170774
10	0.03	FRBMM-B10/3/003-A	170733	FRBMM-C10/3/003-A	170738	FRBMM-D10/3/003-A	170775
13	0.03	FRBMM-B13/3/003-A	170734	FRBMM-C13/3/003-A	170739	FRBMM-D13/3/003-A	170776
16	0.03	FRBMM-B16/3/003-A	170735	FRBMM-C16/3/003-A	170740	FRBMM-D16/3/003-A	170777
20	0.03	FRBMM-B20/3/003-A	170736	FRBMM-C20/3/003-A	170741	FRBMM-D20/3/003-A	170778
25	0.03	-	-	FRBMM-C25/3/003-A	170772	FRBMM-D25/3/003-A	170779
32	0.03	-	-	FRBMM-C32/3/003-A	170773	-	-
6	0.1	-	-	FRBMM-C6/3/01-A	170742	FRBMM-D6/3/01-A	170749
10	0.1	FRBMM-B10/3/01-A	170780	FRBMM-C10/3/01-A	170743	FRBMM-D10/3/01-A	170750

Power management

Rated current $I_n$ A	Rated fault current $I_{\Delta N}$ A	Tripping characteristic: B Instantaneous release response current: $3-5 \times I_n$		Tripping characteristic: C Instantaneous release response current: $5-10 \times I_n$		Tripping characteristic: D Instantaneous release response current: $10-20 \times I_n$	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
<b>FRBmM residual-current circuit breakers with overcurrent protection</b>							
Type A, pulse-current sensitive (products for other voltage ranges available on request)							
13	0.1	FRBMM-B13/3/01-A	170781	FRBMM-C13/3/01-A	170744	FRBMM-D13/3/01-A	170751
16	0.1	FRBMM-B16/3/01-A	170782	FRBMM-C16/3/01-A	170745	FRBMM-D16/3/01-A	170752
20	0.1	FRBMM-B20/3/01-A	170783	FRBMM-C20/3/01-A	170746	FRBMM-D20/3/01-A	170753
25	0.1	-	-	FRBMM-C25/3/01-A	170747	FRBMM-D25/3/01-A	170754
32	0.1	-	-	FRBMM-C32/3/01-A	170748	-	-
6	0.3	-	-	FRBMM-C6/3/03-A	170759	FRBMM-D6/3/03-A	170766
10	0.3	FRBMM-B10/3/03-A	170755	FRBMM-C10/3/03-A	170760	FRBMM-D10/3/03-A	170767
13	0.3	FRBMM-B13/3/03-A	170756	FRBMM-C13/3/03-A	170761	FRBMM-D13/3/03-A	170768
16	0.3	FRBMM-B16/3/03-A	170757	FRBMM-C16/3/03-A	170762	FRBMM-D16/3/03-A	170769
20	0.3	FRBMM-B20/3/03-A	170758	FRBMM-C20/3/03-A	170763	FRBMM-D20/3/03-A	170770
25	0.3	-	-	FRBMM-C25/3/03-A	170764	FRBMM-D25/3/03-A	170771
32	0.3	-	-	FRBMM-C32/3/03-A	170765	-	-
3-pole+N, instantaneous, 240/415 V							
6	0.03	-	-	FRBM6-C6/3N/003-A	170996	FRBM6-D6/3N/003-A	171008
10	0.03	-	-	FRBM6-C10/3N/003-A	170997	FRBM6-D10/3N/003-A	170892
13	0.03	FRBM6-B13/3N/003-A	170987	FRBM6-C13/3N/003-A	170998	FRBM6-D13/3N/003-A	170893
16	0.03	FRBM6-B16/3N/003-A	170988	FRBM6-C16/3N/003-A	170999	FRBM6-D16/3N/003-A	170894
20	0.03	-	-	FRBM4-C20/3N/003-A	171000	FRBM4-D20/3N/003-A	170895
25	0.03	-	-	FRBM4-C25/3N/003-A	171001	-	-
32	0.03	-	-	FRBM4-C32/3N/003-A	171002	-	-
6	0.1	-	-	FRBM6-C6/3N/01-A	170926	FRBM6-D6/3N/01-A	170938
10	0.1	-	-	FRBM6-C10/3N/01-A	170927	FRBM6-D10/3N/01-A	170939
13	0.1	FRBM6-B13/3N/01-A	170898	FRBM6-C13/3N/01-A	170928	FRBM6-D13/3N/01-A	170940
16	0.1	FRBM6-B16/3N/01-A	170899	FRBM6-C16/3N/01-A	170929	FRBM6-D16/3N/01-A	170941
20	0.1	-	-	FRBM4-C20/3N/01-A	170930	FRBM4-D20/3N/01-A	170942
25	0.1	-	-	FRBM4-C25/3N/01-A	170931	-	-
32	0.1	-	-	FRBM4-C32/3N/01-A	170932	-	-
6	0.3	-	-	FRBM6-C6/3N/03-A	170954	FRBM6-D6/3N/03-A	170966
10	0.3	-	-	FRBM6-C10/3N/03-A	170955	FRBM6-D10/3N/03-A	170967
13	0.3	FRBM6-B13/3N/03-A	170945	FRBM6-C13/3N/03-A	170956	FRBM6-D13/3N/03-A	170968
16	0.3	FRBM6-B16/3N/03-A	170946	FRBM6-C16/3N/03-A	170957	FRBM6-D16/3N/03-A	170969
20	0.3	-	-	FRBM4-C20/3N/03-A	170958	FRBM4-D20/3N/03-A	170970
25	0.3	-	-	FRBM4-C25/3N/03-A	170959	-	-
32	0.3	-	-	FRBM4-C32/3N/03-A	170960	-	-
Type F, 1-phase converter applications, 240 V							
1-pole+N, short-time delayed							
13	0.03	FRBmM-B13/1N/003-F	193479	FRBmM-C13/1N/003-F	193482	FRBmM-D13/1N/003-F	193485
16	0.03	FRBmM-B16/1N/003-F	193480	FRBmM-C16/1N/003-F	193483	FRBmM-D16/1N/003-F	193486
20	0.03	FRBmM-B20/1N/003-F	193481	FRBmM-C20/1N/003-F	193484	FRBmM-D20/1N/003-F	193487
25	0.03	FRBmM-B25/1N/003-F	193488	FRBmM-C25/1N/003-F	193491	-	-
32	0.03	FRBmM-B32/1N/003-F	193489	FRBmM-C32/1N/003-F	193492	-	-
40	0.03	FRBmM-B40/1N/003-F	193490	FRBmM-C40/1N/003-F	193493	-	-
13	0.3	FRBmM-B13/1N/03-F	193494	FRBmM-C13/1N/03-F	193497	FRBmM-D13/1N/03-F	193500
16	0.3	FRBmM-B16/1N/03-F	193495	FRBmM-C16/1N/03-F	193498	FRBmM-D16/1N/03-F	193501
20	0.3	FRBmM-B20/1N/03-F	193496	FRBmM-C20/1N/03-F	193499	FRBmM-D20/1N/03-F	193502
25	0.3	FRBmM-B25/1N/03-F	193503	FRBmM-C25/1N/03-F	193506	-	-
32	0.3	FRBmM-B32/1N/03-F	193504	FRBmM-C32/1N/03-F	193507	-	-
40	0.3	FRBmM-B40/1N/03-F	193505	FRBmM-C40/1N/03-F	193508	-	-

Moeller series

Description	Part no.	Article no.
<b>Accessories for IEC circuit breakers</b>		
SWD connection module for miniature circuit breakers, residual-current circuit breakers and residual-current circuit breakers with overcurrent protection	<b>MCB-HK-SWD</b> 	177175
Screw-in auxiliary contact		
Auxiliary contact for residual-current circuit breakers, 1 N/O, 1 N/C	<b>Z-HK</b>	248432
Auxiliary contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 1 N/O, 1 N/C	<b>Z-AHK</b>	248433
Tripping signal contact for miniature circuit breakers, residual-current circuit breakers and residual-current circuit breakers with overcurrent protection, 2 W	<b>Z-NHK</b>	248434
Snap-on auxiliary contact		
Auxiliary contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 1 N/O, 1 N/C	<b>ZP-IHK</b>	286052
Auxiliary contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 1 W	<b>ZP-WHK</b>	286053
Tripping signal contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 2 W	<b>ZP-NHK</b>	248437
Snap-on shunt release		
12 - 110 V DC	<b>ZP-ASA/24</b>	248438
110 - 415 V DC	<b>ZP-ASA/230</b>	248439
Undervoltage release, instantaneous		
115 V DC	<b>Z-USA/115</b>	248288
230 V DC	<b>Z-USA/230</b>	248289
400 V DC	<b>Z-USA/400</b>	248290
<b>Accessories for UL/CSA circuit breakers</b>		
Auxiliary contact for FAZ-NA, -RT	<b>Z-IHK-NA</b>	113895
Shunt release for FAZ-NA, -RT, 12 - 110 V AC	<b>FAZ-XAA-NA12-110VAC</b>	102037
Shunt release for FAZ-NA, -RT, 110 - 415 V AC	<b>FAZ-XAA-NA110-415VAC</b>	102036

Description	Devices Quantity	Type	Part no.	Article no.
<b>Busbars</b>				
Busbar for FAZ, can be cut to the required length, 100 A				
Cross-section: 18 mm <sup>2</sup>	-	1-phase	<b>BB-UL-18/1P-1M/57</b>	121981
Cross-section: 18 mm <sup>2</sup>	-	2-phase	<b>BB-UL-18/2P-2M/56</b>	121982
Cross-section: 18 mm <sup>2</sup>	-	3-phase	<b>BB-UL-18/3P-3M/57</b>	121983
Cross-section: 25 mm <sup>2</sup>	-	1-phase	<b>BB-UL-25/1P-1M/57</b>	121989
Cross-section: 25 mm <sup>2</sup>	-	2-phase	<b>BB-UL-25/2P-2M/56</b>	121990
Cross-section: 25 mm <sup>2</sup>	-	3-phase	<b>BB-UL-25/3P-3M/57</b>	121991
Busbar for FAZ-NA and -RT, can be cut to the required length, 100 A				
Cross-section: 25 mm <sup>2</sup>	-	1-phase	<b>Z-BB/UL25/1P1MU/57</b>	171131
Cross-section: 25 mm <sup>2</sup>	-	1-phase + auxiliary contact	<b>Z-BB/UL25/1P1MU+AUX/37</b>	171137
Cross-section: 25 mm <sup>2</sup>	-	2 x 1-phase + auxiliary contact	<b>Z-BB/UL25/2X1P1MU+AUX/38</b>	171143
Cross-section: 25 mm <sup>2</sup>	-	3 x 1-phase + auxiliary contact	<b>Z-BB/UL25/3X1P1MU+AUX/39</b>	171141
Cross-section: 25 mm <sup>2</sup>	-	2-phase	<b>Z-BB/UL25/2P1MU/56</b>	171132
Cross-section: 25 mm <sup>2</sup>	-	2-phase + auxiliary contact	<b>Z-BB/UL25/2P1MU+AUX/46</b>	171138
Cross-section: 25 mm <sup>2</sup>	-	3-phase	<b>Z-BB/UL25/3P1MU/57</b>	171133
Cross-section: 25 mm <sup>2</sup>	-	3-phase + auxiliary contact	<b>Z-BB/UL25/3P1MU+AUX/48</b>	171139
End cap for shroud section	-	-	<b>Z-ECUL</b>	171145
Extension terminals	-	-	<b>Z-TEUL35</b>	171144
Busbar tag shroud	-	-	<b>Z-FPUL</b>	171146
Z-SV/UL busbar for FAZ-NA and -RT, 80 A				
Cross-section: 16 mm <sup>2</sup>	6	1-phase	<b>Z-SV/UL-16/1P-1TE/6</b>	104892
Cross-section: 16 mm <sup>2</sup>	12	1-phase	<b>Z-SV/UL-16/1P-1TE/12</b>	104893
Cross-section: 16 mm <sup>2</sup>	18	1-phase	<b>Z-SV/UL-16/1P-1TE/18</b>	104894
Cross-section: 16 mm <sup>2</sup>	6	2-phase	<b>Z-SV/UL-16/2P-2TE/6</b>	104895
Cross-section: 16 mm <sup>2</sup>	12	2-phase	<b>Z-SV/UL-16/2P-2TE/12</b>	104896
Cross-section: 16 mm <sup>2</sup>	18	2-phase	<b>Z-SV/UL-16/2P-2TE/18</b>	104897
Cross-section: 16 mm <sup>2</sup>	6	3-phase	<b>Z-SV/UL-16/3P-3TE/6</b>	104898
Cross-section: 16 mm <sup>2</sup>	12	3-phase	<b>Z-SV/UL-16/3P-3TE/12</b>	104899
Cross-section: 16 mm <sup>2</sup>	18	3-phase	<b>Z-SV/UL-16/3P-3TE/18</b>	104900
Connection terminal: 2.5 - 35 mm <sup>2</sup>	-	-	<b>Z-EK/35/UL</b>	104901
Connection terminal: 1.5 - 50 mm <sup>2</sup>	-	-	<b>Z-EB/50/UL</b>	104902
Busbar tag shroud for three pins	-	-	<b>ZV-BS-UL</b>	104904



## PXS24 electronic overload protection - highlights:

- Modular system – single-channel modules
- Protection of long cables
- Active current limitation
- Integrated inputs/outputs
- Protection and switching of loads
- Direct connection of up to three loads
- Push-in terminals

# Electronic protection for maximum safety in 24 V DC circuits



[Download the brochure](#)

The rise of electronic current monitoring is unstoppable. We are at the forefront of this development, with electronic solutions that provide maximum protection and a wide range of practical application benefits.

While electromechanical circuit breakers used to provide sufficient safety in 24 V DC circuits featuring conventional power supplies, this is no longer the case if modern electronic power supplies are used. Although electronic power supplies are short-circuit-proof, in the event of a fault they reduce the output voltage to such a low level that there is no longer sufficient energy to trip conventional circuit breakers.

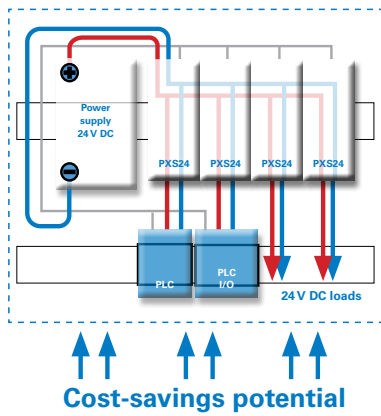
Electronic protection modules offer much greater protection in this respect: They can quickly detect an overload and will only disconnect the malfunctioning parts of the machine from the power supply. The machine remains controllable and can be shut down automatically, for example.

The PXS24 electronic protection device not only ensures the highest possible system availability but also saves time, space and installation costs.



Get more information





Loads can be directly connected to the output side of the PXS24 electronic protection device. This helps to reduce the number of potential-distributor terminals, which in turn reduces the size of the control cabinet.

Additional features such as Push-in terminals also help to reduce the time required for installation. There is no need for coupling relays, since all switching operations are carried out via the PXS24 electronic protection device.

Rated current $I_n$ (A)	Rated voltage $U_n$ (V)	With feed-in terminal		Without feed-in terminal	
		Part no.	Article no.	Part no.	Article no.

#### PXS24...F/ORT-IT and PXS24...F/ORT

Standard (with communication plug)	Rated current $I_n$ (A)	Rated voltage $U_n$ (V)	With feed-in terminal		Without feed-in terminal	
			Part no.	Article no.	Part no.	Article no.
	2	24	<b>PXS24S-e2/F/ORT-IT</b>	PXS24S02A001	<b>PXS24S-e2/F/ORT</b>	PXS24S02A002
	4	24	<b>PXS24S-e4/F/ORT-IT</b>	PXS24S04A001	<b>PXS24S-e4/F/ORT</b>	PXS24S04A002
	6	24	<b>PXS24S-e6/F/ORT-IT</b>	PXS24S06A001	<b>PXS24S-e6/F/ORT</b>	PXS24S06A002
	8	24	<b>PXS24S-e8/F/ORT-IT</b>	PXS24S08A001	<b>PXS24S-e8/F/ORT</b>	PXS24S08A002
	10	24	<b>PXS24S-e10/F/ORT-IT</b>	PXS24S10A001	<b>PXS24S-e10/F/ORT</b>	PXS24S10A002
	13	24	<b>PXS24S-e13/F/ORT-IT</b>	PXS24S13A001	<b>PXS24S-e13/F/ORT</b>	PXS24S13A002
16	24	<b>PXS24S-e16/F/ORT-IT</b>	PXS24S16A001	<b>PXS24S-e16/F/ORT</b>	PXS24S16A002	

#### PXS24E...-It and PXS24E...-F

Economy (without communication plug)	Rated current $I_n$ (A)	Rated voltage $U_n$ (V)	With feed-in terminal		Without feed-in terminal	
			Part no.	Article no.	Part no.	Article no.
	2	24	<b>PXS24E-e2/F-IT</b>	PXS24E02A001	<b>PXS24E-e2/F</b>	PXS24E02A002
	4	24	<b>PXS24E-e4/F-IT</b>	PXS24E04A001	<b>PXS24E-e4/F</b>	PXS24E04A002
	6	24	<b>PXS24E-e6/F-IT</b>	PXS24E06A001	<b>PXS24E-e6/F</b>	PXS24E06A002
	8	24	<b>PXS24E-e8/F-IT</b>	PXS24E08A001	<b>PXS24E-e8/F</b>	PXS24E08A002
	10	24	<b>PXS24E-e10/F-IT</b>	PXS24E10A001	<b>PXS24E-e10/F</b>	PXS24E10A002

#### Accessories

Description	Length	Part no.	Article no.	
<b>Busbar with max. 30 V</b>				
	Can be cut to the required length Current-carrying capacity: 80 A (at an ambient temperature of 55° C)	1 m	<b>PXS24BB/80A/1m</b>	PXS24BB00001
		4 HP (approx. 70 mm)	<b>PXS24BB/80A/4TE</b>	PXS24BB00004
		8 HP (approx. 140 mm)	<b>PXS24BB/80A/8TE</b>	PXS24BB00008
		12 HP (approx. 210 mm)	<b>PXS24BB/80A/12TE</b>	PXS24BB00012
<b>Busbar cover</b>				
	Can be cut to the required length	1 m	<b>PXS24ACC0002</b>	PXS24-BBC
<b>Placeholder modules</b>				
	Empty module without any electrical function		<b>PXS24ACC0000</b>	PXS24-PCH
<b>Connection terminals</b>				
	Insulated Two terminals are required! Terminal cross-section: 1.5 - 16 mm <sup>2</sup>		<b>AKI16/10</b>	184515
	Two terminals are required! Terminal cross-section: 1.5 - 16 mm <sup>2</sup> with or without ferrules, rigid and flexible Current-carrying capacity: 60 A (at an ambient temperature of 50° C, only in connection with PXS24-BB...)		<b>PXS24ACC0001</b>	PXS24-IT



## The SASY 60i busbar system ensures maximum efficiency inside the control cabinet

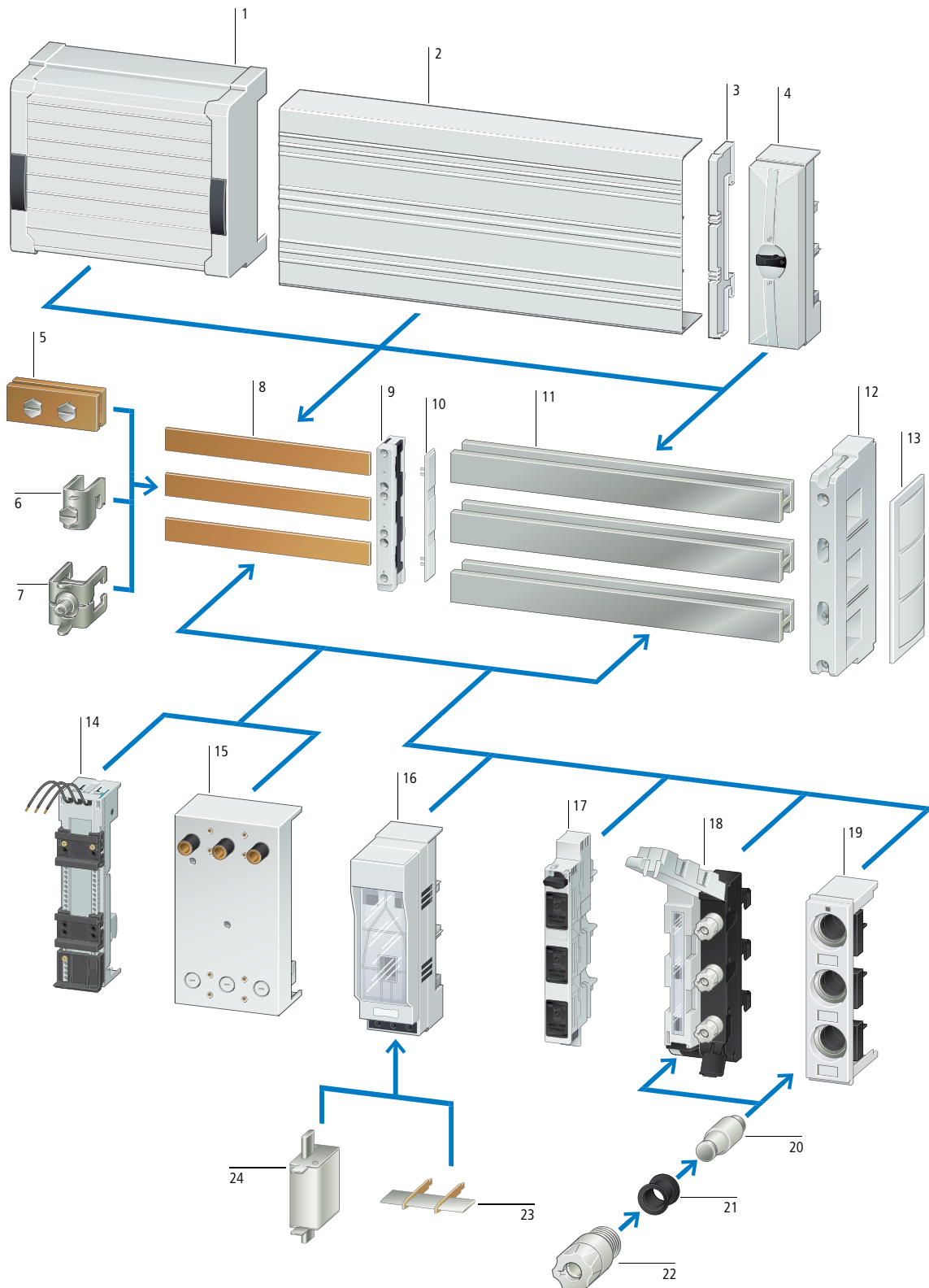


**SASY 60i** – safe and reliable: SASY 60i is a comprehensive and UL-certified switching, control and power distribution solution that is designed for use with our standard and motor-protective circuit breakers. The modular SASY 60i busbar system has been specifically designed for efficient power distribution inside the control panel. Thanks to the busbar adapter, incoming and outgoing circuit breakers can be mounted directly on the busbar system – quickly, easily and in a space-saving manner.

The double-T busbars of the SASY 60i system reduce the time and effort required for preparing the contact points. The busbar has a very high rated impulse withstand current and yet requires only a small number of supports, thus making optimum use of the limited space inside the control cabinet. In addition, the large surface area of the busbar ensures the best possible dissipation of power losses.



Get more information















- |  |                                   |  |                                 |
|--|-----------------------------------|--|---------------------------------|
| 1 System cover                             | 7 Clamp terminal                  | 15 Busbar adapter for NZM                            | 19 D busbar-mounted fuse device |
| 2 Modular cover for empty sections         | 8 Flat busbars                    | 16 NH fuse switch-disconnector                       | 20 Fuse link                    |
| 3 Support for the cover for empty sections | 9 Double-T busbar supports        | 17 D fuse switch-disconnector with flash function    | 21 Fuse adapter                 |
| 4 Terminal plates                          | 10 End shroud                     | 18 D fuse switch-disconnector without flash function | 22 Screw cap                    |
| 5 Busbar end-to-end connectors             | 11 Double-T busbars               |  | 23 NH disconnecting blades      |
| 6 Universal conductor terminals            | 12 Busbar supports                |  | 24 NH fuse link                 |
|  | 13 End shroud                     |  |                                 |
|  | 14 Busbar adapter for PKZ and PKE |  |                                 |

# SASY 60-mm busbar system

For flat busbars and busbars with double-T cross-sections

Moeller series

Description	Poles	Rated operational current $I_e$ A	For use with	Part no. Article no.	
<b>Busbar supports</b>					
Thermoplast, silicone- and chlorine-free Halogen-free					
<b>IEC busbar supports</b>					
	Can be adapted to busbar sizes using a concertina mechanism	3	630	Flat busbars	<b>BBS-3/FL</b> 107066
	With screw blocks on the inside	4	630	Flat busbars	<b>BBS-4/FL</b> 138381
<b>UL busbar supports</b>					
	Can be adapted to busbar sizes using a concertina mechanism With screw blocks on the inside	3	630	Flat busbars	<b>BBS-3/FL-NA</b> 107067
<b>PE/N busbar supports</b>					
	Can be adapted to busbar sizes using a concertina mechanism	1	630	Flat busbars	<b>BBS-1/FL</b> 107161
	Can be individually mounted	2	630	Flat busbars	<b>BBS-2/FL</b> 107069
<b>Double-T busbar supports</b>					
	Can be used to assemble a PE or N busbar	1	1600	Double-T busbars	<b>BBS-1/PR-N-PE</b> 302105
	Can be used at the end or in the middle of the busbar With screw blocks on the inside	3	1600	Double-T busbars	<b>BBS-3/PR</b> 107162
<b>End shroud</b>					
	For covering the busbars	-	-	BBS-3/FL BBS-3/FL-NA	<b>ES-BBS-3/FL</b> 107068
		-	-	BBS-3/PR	<b>ES-BBS-3/PR</b> 107164
		-	-	BBS-1/PR-N-PE	<b>ES-BBS-1/PR-N-PE</b> 302107
<b>UL bottom plate</b>					
	To be used use if the air gap between the busbars and the mounting plate is insufficient	-	-	BBS-3/FL BBS-3/FL-NA BBS-3/PR	<b>BBC-BT-NA</b> 107172
<b>Busbar covers</b>					
	-	-	-	All flat busbars with a thickness of 5 mm	<b>BBC-FL5</b> 107173
	-	-	-	All flat busbars with a thickness of 10 mm	<b>BBC-FL10</b> 107174
	-	-	-	Double-T busbars	<b>BBC-CU-BAR/PR</b> 107175
<b>Double-T busbars</b>					
	Cross-section: 500 mm <sup>2</sup> , 2400 mm long, tin-plated	-	1250	BBS-3/PR, BBS-1/PR-N-PE	<b>CU-BAR-500/T</b> 107166
	Cross-section: 720 mm <sup>2</sup> , 2400 mm long, tin-plated	-	1600	BBS-3/PR, BBS-1/PR-N-PE	<b>CU-BAR-720/T</b> 107167
<b>Complete system covers</b>					
	Length: 228 mm	3	-	-	<b>BBC-CS1</b> 107209
	Length: 228 mm	4	-	-	<b>BBC-CS4</b> 138387









Description	Width mm	Poles	Rated operational current $I_e$ A	Terminal capacity	For use with	Part no. Article no.
<b>Terminal plates</b>						
 <p>The terminal can be removed to connect uncut conductors Looping is not possible</p>	54	3	300	6 - 50 mm <sup>2</sup> AWG 10 - AWG 2/0	Double-T 12 x 5/10 15 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10	<b>BBA-TP3/50</b> 107183
<b>Clamp terminals</b>						
 <p>No drilling required for termination on busbars</p>	38	-	480	35 - 150 mm <sup>2</sup> AWG2/0 - MCM 300	12 x 5/10 20 x 5/10	<b>AKS150</b> 138374
 <p>No drilling required for termination on busbars</p>	38	-	500	95 - 185 mm <sup>2</sup> AWG3/0 - MCM 350	Double-T 20 x 5/10 25 x 5/10 30 x 5/10	<b>AKS185</b> 107195
<b>Profile terminals</b>						
 <p>No drilling required for termination on busbars</p>	72	-	1600	800 mm <sup>2</sup> , terminal area 41 x 20 - 42	Double-T	<b>AKP800</b> 107198
<b>Universal conductor terminals</b>						
 <p>With integrated retaining spring, open terminal chamber and captive terminal screw</p>	11.5	-	180	1.5 - 16 mm <sup>2</sup> AWG 14 - AWG 6.	All flat busbars with a thickness of 5 mm	<b>AKU16/5</b> 107187
	23.5	-	440	16 - 120 mm <sup>2</sup> AWG 4 - MCM 250	All flat busbars with a thickness of 10 mm	<b>AKU120/10</b> 107194
	38	-	630	M10 cable lugs	All flat busbars with a thickness of 10 mm	<b>AKU-M10/10</b> 138361








# SASY 60-mm busbar system

Busbar adapters for NZM, DIN devices

Moeller series

	No. of poles	Rated operational current $I_b$ A	Adapter width mm	For use with	Part no. Article no.
<b>Adapters for circuit breakers and switch-disconnectors</b>					
For surface mounting on flat copper busbars (12 - 30 x 5 - 10) as well as double-T					
	3-pole	160	92	NZM1, PN1, N(S)1	<b>NZM1-XAD160</b> 104554
		250	106	NZM2, PN2, N(S)2	<b>NZM2-XAD250</b> 104555
		630	140	NZM3, PN3, N(S)3	<b>NZM3-XAD630</b> 107206
	4-pole	250	140	NZM2(-4), PN2(-4), N2(-4) NS2(-4)	<b>NZM2-4-XAD250</b> 138388
		630	185	NZM3(-4), PN3(-4), N3(-4) NS3(-4)	<b>NZM3-4-XAD630</b> 138389
<b>Connection blocks for component adapters</b>					
	3-pole	250	-	NZM2, PN2, N(S)2	<b>NZM2-XKR4</b> 281666
		630	-	NZM3, PN3, N(S)3	<b>NZM3-XKR13</b> 281668
	4-pole	250	-	NZM2-4, PN2-4, N2-4	<b>NZM2-4-XKR4</b> 118907
		630	-	NZM3-4, PN3-4, N3-4	<b>NZM3-4-XKR13</b> 119020
<b>Busbar adapters for DIN devices</b>					
<b>Dual adapters</b>					
	3-pole	35	54	Double-T 12x5/10 15x5/10 20x5/10 25x5/10 30x5/10	<b>Z-SS-60-ADD/6-54</b> 288791

	Rated operational current $I_e$ A	Frame size	Terminal type	Part no. Article no.		
<b>NH fuse-switch disconnectors</b>						
IEC/EN 60947-3 3-pole With reach-over guard Rated conditional short-circuit currents of 120 kA (500 V) and 100 kA (690 V) Flammability characteristics as per UL94 (self-extinguishing) Cable connection at the top or bottom Contacts made of silver-plated electrolytic copper						
<b>NH fuse switch-disconnectors without flash function</b>						
	160	NH00	Box terminal: 1.5 - 95 mm <sup>2</sup>	<b>XNH00-S160-BT1</b> 183034		
	250	NH1	Box terminal: 35 - 150 mm <sup>2</sup>	<b>XNH1-S250-BT</b> 183052		
	400	NH2	Box terminal: 95 - 300 mm <sup>2</sup>	<b>XNH2-S400-BT</b> 183066		
	630	NH3	Box terminal: 95 - 300 mm <sup>2</sup>	<b>XNH3-S630-BT</b> 183078		
<b>NH fuse switch-disconnector with flash function</b> The flash function indicates that the fuse link has blown						
	160	NH00	Box terminal: 1.5 - 95 mm <sup>2</sup>	<b>XNH00-FCL-S160-BT1</b> 183037		
	250	NH1	Box terminal: 35 - 150 mm <sup>2</sup>	<b>XNH1-FCL-S250-BT</b> 183054		
	400	NH2	Box terminal: 95 - 300 mm <sup>2</sup>	<b>XNH2-FCL-S400-BT</b> 183068		
	630	NH3	Box terminal: 95 - 300 mm <sup>2</sup>	<b>XNH3-FCL-S630-BT</b> 183080		
<b>D busbar-mounted fuse devices</b>						
Gauge ring Supplied empty, without screw caps						
	63	400	E18, D 02	27	12 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	<b>D02-S0/63/3-R-27</b> 114315
<b>D fuse switch-disconnectors without flash function</b>						
Gauge ring Supplied empty, without screw caps						
	63	400	E18, D 02	36	20 x 5/10 30 x 5/10 Double-T	<b>D02-S/63/3-RS</b> 284649
<b>D fuse switch-disconnector with flash function</b>						
The flash function indicates that the fuse link has blown Supplied empty, without adapter sleeves or fuse links Contact-position indicator Switches the load on all poles without any manual intervention Sealable and lockable						
	63	400	E18, D02	27	12 x 5/10 15 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	<b>D02-LTS/63/3-R</b> 114316



## A single product range for comprehensive circuit protection

Eaton's Bussmann series range of DIN NH fuse links and bases offers unrivalled choice, with a wide range of functions to suit all industrial applications.

This comprehensive portfolio includes fuses with different voltages, currents, designs and sizes. The dual indicator saves time and money, as tripped fuses can be quickly identified and replaced. The insulated metal grip tabs are voltage-free and thus increase the safety of the fuses.

A product range that sets the standard for the protection of electrical installations.



Get more information



### Dual indicator

Eaton's patented dual indicator clearly indicates if the fuse has tripped, thereby ensuring highly reliable local as well as remote signaling, which not only saves money but also reduces the time required for replacing the fuse links.



### Low power loss

Eaton's Bussmann series low power loss NH fuse links reduce total cost of ownership and CO<sub>2</sub> emissions by reducing both energy consumption and heat transfer to other components.



### Compliance with all global standards

Eaton's Bussmann series NH fuse links have been tested in accordance with IEC 60269-1 and 2, DIN 43620, VDE, CE and CCC (approved) and can therefore be used worldwide.



### Recycling

We specialize in the manufacturing of recyclable products and are a member of the industry's recognized recycling system. The HRC symbol indicates that a product can be recycled. Our fuses are naturally lead- and cadmium-free and are suitable for use in RoHS-compliant applications.



### NH 400 V

Eaton's Bussmann series 400 V class gG NH industrial fuses are suitable for a wide range of industrial and motor protection applications

- 2 to 630 Ampere
- Class gFF and gG/gL
- Breaking capacity: 120 kA~
- Frame sizes 000 to 3
- IEC 60269-1 and 2, VDE 0636, DIN 43620 and CE
- Available with metal grip lugs or insulated metal grip lugs



### NH 500 V

Eaton's Bussmann series 500 V class gG NH industrial fuses are suitable for a wide range of industrial and motor protection applications

- 2 to 1250 Ampere
- Class gG/gL and aM
- Breaking capacity: 120 kA~
- Frame sizes 000 to 4
- IEC 60269-1 and 2, VDE 0636, DIN 43620 and CE
- Available with metal grip lugs or insulated metal grip lugs



### NH 690 V

Eaton's Bussmann series 690 V class gG NH industrial fuses are suitable for a wide range of industrial and motor protection applications

- 2 to 800 Ampere
- Class gG/gL and aM
- Breaking capacity: 120 kA~
- Frame sizes 000 to 4
- IEC 60269-1 and 2, VDE 0636, DIN 43620 and CE
- Available with metal grip lugs or insulated metal grip lugs



### NH bases

Eaton's Bussmann series NH fuse bases are suitable for DIN-Rail and/or screw mounting. We offer complete accessory kits for this product range, including phase separators, IP20 finger guards and neutral disconnecting blades.

- 160 to 1600 Ampere
- 690 V AC
- For fuse links with a breaking capacity of 120 kA
- Frame sizes 00 to 4
- IEC 60269-1 and 2, VDE 0636-1 and 2



## A comprehensive portfolio of circuit protection solutions for UL markets



Download the catalog:  
[Bussmann series UL Catalog](#)

Eaton provides a comprehensive selection of Eaton's Bussmann series UL-Certified fuse links, fuse bases and fuse blocks for use in industrial and infrastructure applications.




Eaton's Bussmann series portfolio includes fuses with different voltages, currents and sizes. These UL fuses and fuse accessories come with all the necessary approvals, meaning your machines and systems will be perfectly equipped for export to the U.S. or to other UL markets. Eaton's Bussmann series circuit protection solutions ensure safe handling of electrical voltages and provide optimum protection of people and equipment.







Get more information



## UL low-voltage products – overview of fuse links for branch circuits




		Class CC	Class J	Class T
				
Catalog numbers		LP-CC, FNQ-R, KTK-R	LPJ-SP(I)	JJJ, JJS
Rated operating voltage	V AC	600	600	600
	V DC	300	300	160/170
Rated operational current		Up to 30 A	Up to 600 A	Up to 1200 A
Breaking capacity	RMS Sym	.. 200 kA	200/300 kA	.. 200 kA
	DC	20 kA	100 kA	20/100 kA
Operating class/tripping characteristic		Time-delayed, fast-acting	Time-delayed (current-limiting)	Fast-acting, ultra-fast-acting (current-limiting)
Fuse holders		Optima, CHCC, HPF, HPS	CUBEFuse, CH class J modular holder, J <sup>TM</sup> safety	N/ A
Fuse blocks		BCM	Power distribution, modular blade contacts, JM600, JP pyramid fuse blocks, front panel mounting, modular type, BH modular design.	BH modular design, T300 and T600 front plate mounting
Standards and regulations		CE, UL-listed and CSA-certified		
Applications		Special circuits, industrial control, insulated inline fuse holders, line protection for small control transformers	Power panelboards, circuit breakers for branch circuits, panelboards for main circuits, machine disconnectors, industrial controls	Large apartment complexes, meter cabinets for apartment buildings, VFD line protection




## UL low-voltage products – overview of supplemental fuse-link types

		Fast-acting fuses		Time-delayed fuses	
					
Catalog numbers		KTK	KLM	FNM	FNQ
Rated operating voltage	V AC	600	600	250	500
	V DC	-	600	-	-
Rated operational current		Up to 30 A	Up to 30 A	Up to 30 A	Up to 30 A
Breaking capacity	RMS Sym	100 kA	100 kA	200/300 kA	.. 200 kA
	DC	N/ A	50 kA	N/ A	N/ A
Operating class/tripping characteristic		Fast-acting fuse links		Time-delayed fuse links	
Fuse holders		Optima, CH, HPG, HPC, HPS, HPM, HPF, HEB, HEX, HEY, NDNF1-WH, CCP		Optima, CH, HPG, HPC, HPS, HPM, HPF, HEB, HEX, HEY, NDNF1-WH, CCP	
Fuse blocks		BCM, 4421 and 4515		BCM, 4421 and 4515	
Standards and regulations		CE, UL-listed and CSA-certified		CE, UL-listed and CSA-certified	
Applications		Control circuits, lightning protection systems, meter circuits		Circuits with high inrush currents (motor/transformer loads) Additional protection for 125 V AC and 250 V AC inductive circuits	Motor-control transformers, circuits with inrush currents

# Bussmann series fuses

## Cylindrical fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.		
	A	V AC	kA		mm			
<b>Cylindrical fuses: 10 x 38 mm and 14 x 51 mm</b>								
	0.5	500	120	gG	10 x 38	<b>C10G0-5</b>		
	1					<b>C10G1</b>		
	2					<b>C10G2</b>		
	4					<b>C10G4</b>		
	6					<b>C10G6</b>		
	8					<b>C10G8</b>		
	10					<b>C10G10</b>		
	12					<b>C10G12</b>		
	16					<b>C10G16</b>		
	20					<b>C10G20</b>		
	25					<b>C10G25</b>		
	32					400	<b>C10G32</b>	
		0.16	500	120	aM	10 x 38	<b>C10M0-16</b>	
0.25		<b>C10M0-25</b>						
0.5		<b>C10M0-5</b>						
1		<b>C10M1</b>						
2		<b>C10M2</b>						
4		<b>C10M4</b>						
6		<b>C10M6</b>						
8		<b>C10M8</b>						
10		<b>C10M10</b>						
12		<b>C10M12</b>						
16		<b>C10M16</b>						
20		400					<b>C10M20</b>	
25		<b>C10M25</b>						
32	<b>C10M32</b>							
	1	690	80	gG	14 x 51	<b>C14G1</b>		
	2					<b>C14G2</b>		
	4					<b>C14G4</b>		
	6					<b>C14G6</b>		
	8					<b>C14G8</b>		
	10					<b>C14G10</b>		
	12					<b>C14G12</b>		
	16					<b>C14G16</b>		
	20					<b>C14G20</b>		
	25					<b>C14G25</b>		
	32					500	120	<b>C14G32</b>
	40					500		<b>C14G40</b>
	50	400	<b>C14G50</b>					

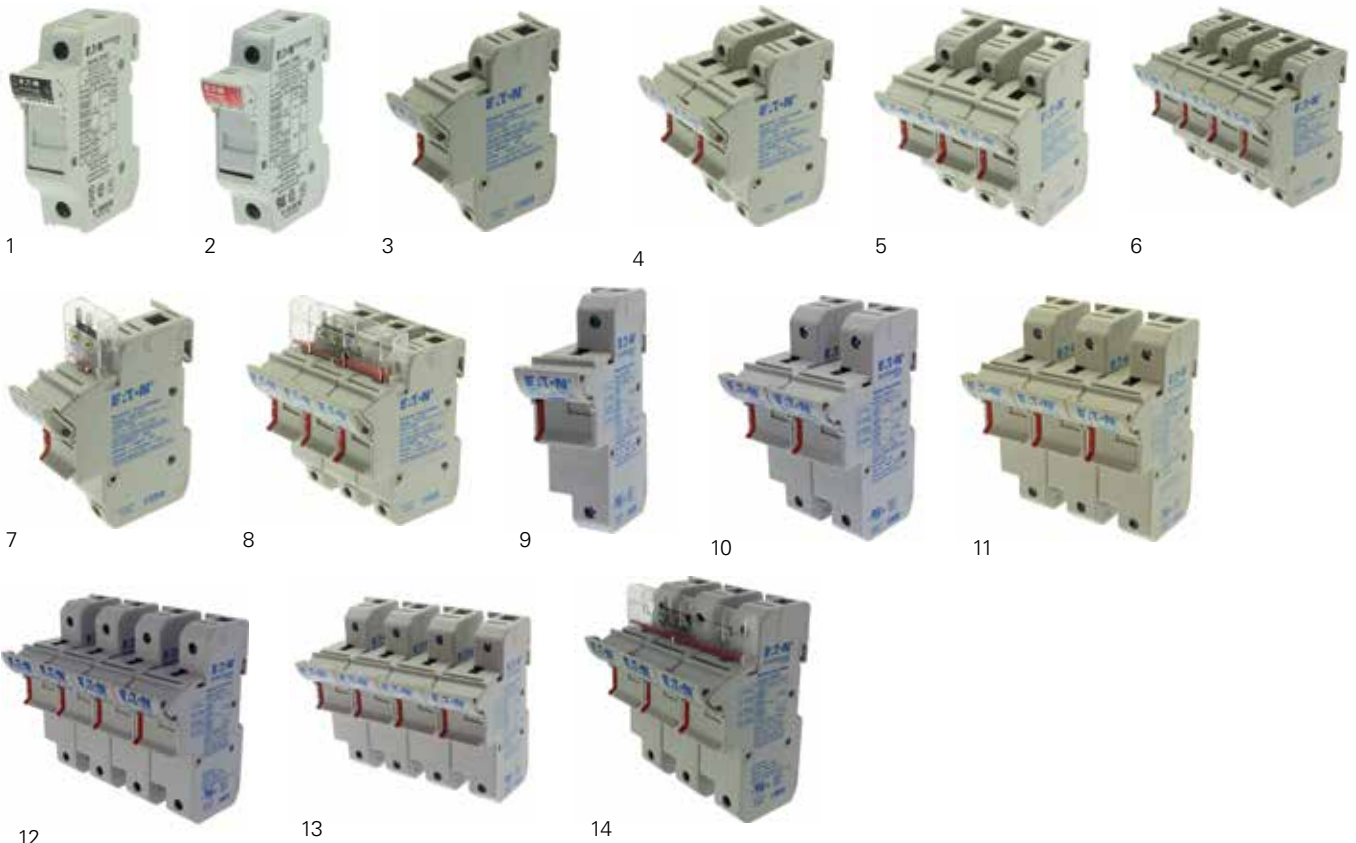
	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.
	A	V AC	kA		mm	
<b>Cylindrical fuses: 14 x 51 mm and 22 x 58 mm</b>						
	0.25	500	80	aM	14 x 51	C14M0-25
	0.5					C14M0-5
	1					C14M1
	2					C14M2
	4					C14M4
	6					C14M6
	8					C14M8
	10					C14M10
	12					C14M12
	16					C14M16
	20					C14M20
	25					C14M25
	32					120
	40	C14M40				
	50	400				C14M50
	2	690	80	gG	22 x 58	C22G2
	4					C22G4
	6					C22G6
	8					C22G8
	10					C22G10
	12					C22G12
	16					C22G16
	20					C22G20
	25					C22G25
	32					C22G32
	40					C22G40
	50					C22G50
	63					C22G63
	80	500	120	C22G80		
	100	500		C22G100		
125	400	C22G125				
	2	690	80	aM	22 x 58	C22M2
	4					C22M4
	6					C22M6
	8					C22M8
	10					C22M10
	12					C22M12
	16					C22M16
	20					C22M20
	25					C22M25
	32					C22M32
	40					C22M40
	50					C22M50
	63					C22M63
	80	500	120	C22M80		
	100	500		C22M100		
125	400	C22M125				





# Bussmann series fuses

## Fuse holders for cylindrical fuses

Version as shown	Rated current	Rated voltage	Function	Part no.			
	A	V/V AC					
<b>Fuse holders for 10 x 38 mm cylindrical fuses</b>							
1	30	600 V (UL)	1-pole with indicator	CHCC1DIU			
			2-pole with indicator	CHCC2DIU			
			3-pole with indicator	CHCC3DIU			
			1-pole	CHCC1DU			
			2-pole	CHCC2DU			
			3-pole	CHCC3DU			
2	32	690 V AC (IEC), 600 V (UL)	1-pole	CHM1DU			
			2-pole	CHM2DU			
			3-pole	CHM3DU			
			4-pole	CHM4DU			
			1-pole with indicator	CHM1DIU			
			2-pole with indicator	CHM2DIU			
			3-pole with indicator	CHM3DIU			
			4-pole with indicator	CHM4DIU			
			<b>Fuse holders for 14 x 51 mm cylindrical fuses</b>				
			3 4 5 6 7 8	50	690 V AC (IEC)	1-pole	CH141DU
2-pole	CH142DU						
3-pole	CH143DU						
4-pole	CH144DU						
1-pole with micro switch	CH141DMSU-F						
3-pole with micro switch	CH143DMSU-F						
<b>Fuse holders for 22 x 58 mm cylindrical fuses</b>							
9 10 11 12 13 14	125	690 V AC (IEC)				1-pole	CH221DU
			2-pole	CH222DU			
			3-pole	CH223DU			
			4-pole	CH224DU			
			3-pole with neutral	CH223DNU			
			3-pole with neutral and micro switch	CH223DMSU-L			

### Notes



	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Type <sup>1)</sup>
	A	V AC	kA			
	2	500	120	gG/gL	000	2NHG00B
	4					4NHG00B
	6					6NHG00B
	10					10NHG00B
	16					16NHG00B
	20					20NHG00B
	25					25NHG00B
	32					32NHG00B
	35					35NHG00B
	40					40NHG00B
	50					50NHG00B
	63					63NHG00B
	80					80NHG00B
	100					100NHG00B
	50	500	120	gG/gL	00	50NHG00B
	63					63NHG00B
	80					80NHG00B
	100					100NHG00B
	125					125NHG00B
	160					160NHG00B
	6	500	120	gG/gL	0	6NHG0B
	10					10NHG0B
	16					16NHG0B
	20					20NHG0B
	25					25NHG0B
	32					32NHG0B
	35					35NHG0B
	40					40NHG0B
	50					50NHG0B
	63					63NHG0B
	80					80NHG0B
	100					100NHG0B
	125					125NHG0B
	160					160NHG0B
	6	500	120	gG/gL	01	6NHG01B
	10					10NHG01B
	16					16NHG01B
	20					20NHG01B
	25					25NHG01B
	32					32NHG01B
	35					35NHG01B
	40					40NHG01B
	50					50NHG01B
	63					63NHG01B
	80					80NHG01B
	100					100NHG01B
	125					125NHG01B
	160					160NHG01B






**Notes**

<sup>1)</sup> Insulated metal grip tabs (optional)









# Bussmann series fuses

## NH fuse links

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Type <sup>1)</sup>
	A	V AC	kA			
	50	500	120	gG/gL	1	50NHG1B
	63					63NHG1B
	80					80NHG1B
	100					100NHG1B
	125					125NHG1B
	160					160NHG1B
	200					200NHG1B
	224					224NHG1B
	250					250NHG1B
	315					440
355	440	355NHG1B				
	35	500	120	gG/gL	02	35NHG02B
	40					40NHG02B
	50					50NHG02B
	63					63NHG02B
	80					80NHG02B
	100					100NHG02B
	125					125NHG02B
	160					160NHG02B
	200					200NHG02B
	224					224NHG02B
250	250NHG02B					
	250	500	120	gG/gL	2	250NHG2B
	300					300NHG2B
	315					315NHG2B
	355					355NHG2B
	400					400NHG2B
	425					425NHG2B
	450					450NHG2B
	500					440
	250	500	120	gG/gL	03	250NHG03B
	315					315NHG03B
	355					355NHG03B
	400					400NHG03B
	315	500	120	gG/gL	3	315NHG3B
	355					355NHG3B
	400					400NHG3B
	425					425NHG3B
	500					500NHG3B
	630					630NHG3B




### Notes

<sup>1)</sup> Insulated metal grip tabs (optional)

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.
	A	V AC	kA			
<b>NH fuse links</b>						
	500	500	120	gG/gL	4	500NHG4G
	630	500	120	gG/gL	4	630NHG4G
	6	690	120	aM	000	6NHM000B-690
	10					10NHM000B-690
	16					16NHM000B-690
	20					20NHM000B-690
	25					25NHM000B-690
	32					32NHM000B-690
	35					35NHM000B-690
	40					40NHM000B-690
	50					50NHM000B-690
	63	690	120	aM	00	63NHM00B-690
	80					80NHM00B-690
	100					100NHM00B-690
	50	690	120	aM	1	50NHM1B-690
	63					63NHM1B-690
	80					80NHM1B-690
	100					100NHM1B-690
	125					125NHM1B-690
	125	690	120	aM	2	125NHM2B-690
	160					160NHM2B-690
	200					200NHM2B-690
	224					224NHM2B-690
	250					250NHM2B-690
	315					315NHM2B-690
	315	690	120	aM	3	315NHM3B-690
	355					355NHM3B-690
	400					400NHM3B-690
	500					500NHM3B-690

# Bussmann series fuses

NH fuse bases, high-speed fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.
	A	V/V AC	kA			
<b>NH fuse bases</b>						
	160	690 V AC	-	-	00	<b>SD00-D</b>
	250		-	-	1	<b>SD1-D</b>
	400		-	-	2	<b>SD2-D</b>
	630		-	-	3	<b>SD3-D</b>
	160	690 V AC	-	-	00	<b>TD00-D</b>
	250		-	-	1	<b>TD1-D</b>
	400		-	-	2	<b>TD2-D</b>
	630		-	-	3	<b>TD3-D</b>
<b>Square-body fuse links (DIN 43620) with dual indicator</b>						
	10	690 (IEC), 700 (UL)	200	gR	000	<b>170M1558D</b>
	16					<b>170M1559D</b>
	20					<b>170M1560D</b>
	25					<b>170M1561D</b>
	32					<b>170M1562D</b>
	40					<b>170M1563D</b>
	50					<b>170M1564D</b>
	63					<b>170M1565D</b>
	80					<b>170M1566D</b>
	100					<b>170M1567D</b>
	125	<b>170M1568D</b>				
	160	<b>170M1569D</b>				
	200	<b>170M1570D</b>				
	250	<b>170M1571D</b>				
	315	690 (IEC), 700 (UL)	200	aR	00	<b>170M1572D</b>
	40	690 (IEC), 700 (UL)	200	aR	1	<b>170M3808D</b>
	50					<b>170M3809D</b>
	63					<b>170M3810D</b>
	80					<b>170M3811D</b>
	100					<b>170M3812D</b>
	125					<b>170M3813D</b>
160	<b>170M3814D</b>					
200	<b>170M3815D</b>					
250	<b>170M3816D</b>					
315	<b>170M3817D</b>					
350	<b>170M3818D</b>					
400	<b>170M3819D</b>					
450	<b>170M4863D</b>					
500	<b>170M4864D</b>					
550	<b>170M4865D</b>					
630	<b>170M4866D</b>					
400	690 (IEC), 700 (UL)	200	aR	2	<b>170M5808D</b>	
450					<b>170M5809D</b>	
500					<b>170M5810D</b>	
550					<b>170M5811D</b>	
630	<b>170M5812D</b>					
500	690 (IEC), 700 (UL)	200	aR	3	<b>170M6808D</b>	
550					<b>170M6809D</b>	
630					<b>170M6810D</b>	

# Struggling to find the right fuse for your application?

Our field application engineers will help you select the right fuses for your application, based on our 100 years of experience in fuse design.

**Eaton's field application engineers offer the following services:**

**Help in selecting Eaton Bussmann series fuses** for a wide range of applications: machinery and equipment, AC/DC drives, traction and soft starters, grid rectifiers, photovoltaics, energy storage, hybrid and electric vehicles, UPS, etc.

**The development of customized Eaton Bussmann series fuses** for your application: new ratings, dimensions, connections, UL/IEC tests, approvals, standards.

**General inquiries:** cross references to competitors, selection of accessories (fuse holders, microswitches), technical documentation (data sheets, drawings, 3D files) and electrical certificates.

**Contact us today:**



**For general inquiries about fuses:**  
[buletechnical@eaton.com](mailto:buletechnical@eaton.com)

**For inquiries about high-speed fuses:**  
[bulehighspeedtechnical@eaton.com](mailto:bulehighspeedtechnical@eaton.com)



We make what matters work.

# Bussmann series fuses

## High-speed fuses


	Rated current	Rated voltage	Breaking capacity	Operating class	-TN/80 T indicator for micro switches	-TN/110 T indicator for micro switches
	A	V AC	kA		Part no.	Part no.
<b>Square-body fuse links (DIN 43653) with mounting brackets</b>						
	Size: 1					
	40	690 (IEC), 700 (UL)	200	aR	170M3058	170M3208
	50				170M3059	170M3209
	63				170M3060	170M3210
	80				170M3061	170M3211
	100				170M3062	170M3212
	125				170M3063	170M3213
	160				170M3064	170M3214
	200				170M3065	170M3215
	250				170M3066	170M3216
	315				170M3067	170M3217
	350				170M3068	170M3218
	400				170M3069	170M3219
	450				170M3070	170M3220
	500				170M3071	170M3221
	550				170M3072	170M3222
630	170M3073				170M3223	
Frame size: 1	200	690 (IEC), 700 (UL)	200	aR	170M4058	170M4208
	250				170M4059	170M4209
	315				170M4060	170M4210
	350				170M4061	170M4211
	400				170M4062	170M4212
	450				170M4063	170M4213
	500				170M4064	170M4214
	550				170M4065	170M4215
	630				170M4066	170M4216
	Frame size: 2				400	690 (IEC), 700 (UL)
450		170M5059	170M5209			
500		170M5060	170M5210			
550		170M5061	170M5211			
630		170M5062	170M5212			
Frame size: 3	500	690 (IEC), 700 (UL)	200	aR	170M6058	170M6208
	550				170M6059	170M6209
	630				170M6060	170M6210
Frame size: 2	250	1250 (IEC), 1300 (UL)	100	aR	-	170M5188
	280				-	170M5189
	315				-	170M5190
	350				-	170M5191
	400				-	170M5192
	450				-	170M5193
	500				-	170M5194
	550				-	170M5195
	630				-	170M5196
	250	1250 (IEC), 1300 (UL)	100	aR	-	170M5188
	280				-	170M5189
	315				-	170M5190
	350				-	170M5191
	400				-	170M5192
	450				-	170M5193
	500				-	170M5194
	550				-	170M5195
	630				-	170M5196



Rated current	Rated voltage	Operating class	-/80 visual indicator	-TN/80 T indicator for micro switches	
A	V/V AC		Part no.	Part no.	
<b>Square-body fuse links (DIN 43653) with mounting brackets</b>					
Breaking capacity: 200 kA (V AC), 50 kA (V DC) Frame size: 000					
	10 16 20 25 32 40 50 63 80 100 125 160 200 250 315	690 V AC (IEC), 700 V AC/V DC (UL)	gR         aR	170M1358 170M1359 170M1360 170M1361 170M1362 170M1363 170M1364  170M1365 170M1366 170M1367 170M1368 170M1369 170M1370 170M1371 170M1372	170M1408 170M1409 170M1410 170M1411 170M1412 170M1413 170M1414  170M1415 170M1416 170M1417 170M1418 170M1419 170M1420 170M1421 170M1422
Breaking capacity: 200 kA Frame size: 00					
	25 32 40 50 63 80 100 125 160 200 250 315 350 400	690 V AC (IEC)   690 V AC (IEC) / 700 V AC (UL)	gR      aR	170M2608 170M2609 170M2610 170M2611 170M2612 170M2613  170M2614 170M2615 170M2616 170M2617 170M2618 170M2619 170M2620 170M2621	170M2658 170M2659 170M2660 170M2661 170M2662 170M2663  170M2664 170M2665 170M2666 170M2667 170M2668 170M2669 170M2670 170M2671

# Bussmann series fuses

## North American fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	Part no.
	A	V	kA		
<b>Low-peak dual element fuses, time-delayed</b>					
	1	600 V AC/ 300 V DC	300 kA RMS sym. / 100 kA DC	Time-delayed	LPJ-1SP
	1.25				LPJ-1-1-4SP
	1.6				LPJ-1-6-10SP
	1.8				LPJ-1-8-10SP
	2				LPJ-2SP
	2.25				LPJ-2-1-4SP
	2.5				LPJ-2-1-2SP
	2.8				LPJ-2-8-10SP
	3				LPJ-3SP
	3.2				LPJ-3-2-10SP
	3.5				LPJ-3-1-2SP
	4				LPJ-4SP
	4.5				LPJ-4-1-2SP
	5				LPJ-5SP
	5.6				LPJ-5-6-10SP
	6				LPJ-6SP
	7				LPJ-7SP
	8				LPJ-8SP
	9				LPJ-9SP
	10				LPJ-10SP
	12				LPJ-12SP
	15				LPJ-15SP
	17.5				LPJ-17-1-2SP
	20				LPJ-20SP
	25				LPJ-25SP
	30				LPJ-30SP
	35				LPJ-35SP
	40				LPJ-40SP
	45				LPJ-45SP
	50				LPJ-50SP
60	LPJ-60SP				
70	LPJ-70SP				
80	LPJ-80SP				
90	LPJ-90SP				
100	LPJ-100SP				
110	LPJ-110SP				
125	LPJ-125SP				
150	LPJ-150SP				
175	LPJ-175SP				
200	LPJ-200SP				
225	LPJ-225SP				
250	LPJ-250SP				
300	LPJ-300SP				
350	LPJ-350SP				
400	LPJ-400SP				
450	LPJ-450SP				
500	LPJ-500SP				
600	LPJ-600SP				

Version as shown	Rated current	Rated voltage	Function	Part no.
	A	V DC		
<b>Class J modular fuse holders</b>				
1	30	600	1-pole	CH30J1
			1-pole with neon indicator	CH30J1I
			2-pole	CH30J2
			2-pole with neon indicator	CH30J2I
			3-pole	CH30J3
			3-pole with neon indicator	CH30J3I
2	60	600	1-pole	CH60J1
			1-pole with neon indicator	CH60J1I
			2-pole	CH60J2
			2-pole with neon indicator	CH60J2I
			3-pole	CH60J3
			3-pole with neon indicator	CH60J3I
<b>Modular knife-blade fuse blocks</b>				
3	70 - 100	600	1-pole	JM60100-1CR
			2-pole	JM60100-2CR
			3-pole	JM60100-3CR
4	110 - 200	600	1-pole	JM60200-1CR
			2-pole	JM60200-2CR
			3-pole	JM60200-3CR
5	225 - 400	600	1-pole	JM60400-1CR
			2-pole	JM60400-2CR
			3-pole	JM60400-3CR
6	450 - 600	600	1-pole	JM60600-1CR
			2-pole	JM60600-2CR
			3-pole	JM60600-3CR

### Notes



1



2



3



4



5



6



## T cam switches and P switch-disconnectors for safe switching, disconnection and control



Our powerful, rugged and compact T cam switches and P switch-disconnectors are found in many industrial, commercial and building applications. The surface-mounted switches and the switch front are equipped with IP65 protection, allowing them to be used in harsh environments. Ten basic switch types are available, featuring four different designs, a large number of standard circuits and a wide power range. We also offer customized designs in addition to standard ones, meaning the possibilities are almost unlimited. Our portfolio also includes a comprehensive range of accessories to match the needs of any application. All current paths are equipped with double-break contacts.

Using metal shaft extensions, our reliable P1 and P3 switches can be installed in control cabinets with a depth of up to 600 mm, while multiple handle and shaft options make it possible to find a solution for every application. The most common types are available as complete packages consisting of switch, shaft and handle.



Get more information



### T cam switches

Our T cam switches are based on a highly flexible, compact and rugged modular system. The power ratings TM, T0, T3, T5B, T5, T6, T8 are available in four different designs. The rated operational power of the T cam switches ranges from 6.5 kW to 132 kW as per AC 23 A at 400/415 V, 50-60 Hz. The rated uninterrupted current  $I_u$  is between 10 A and 315 A. Our T cam switches can be used in a wide range of applications. We also offer tailor-made designs based on customer specifications.



### P switch-disconnectors

Our P1 (up to 32 A), P3 (up to 100 A) and P5 (up to 315 A) switch-disconnectors feature a highly compact and rugged design. The manual drive acts directly on the contacts, which automatically open when the device is switched off. The P switch-disconnector can be used as a main switch with or without emergency-stop function, as an on/off switch, as a maintenance and repair switch or as a safety switch.



### Main switch with emergency-stop function<sup>1)</sup>

Machining and processing equipment requires a supply-disconnecting device according to EN 60204-1. In addition, it also needs to be ensured that machines are shut down in the event of an emergency. In the example of the textile processing machine shown on the left, these two functions are performed by a P3 switch-disconnector.

Emergency shutdown requirements:

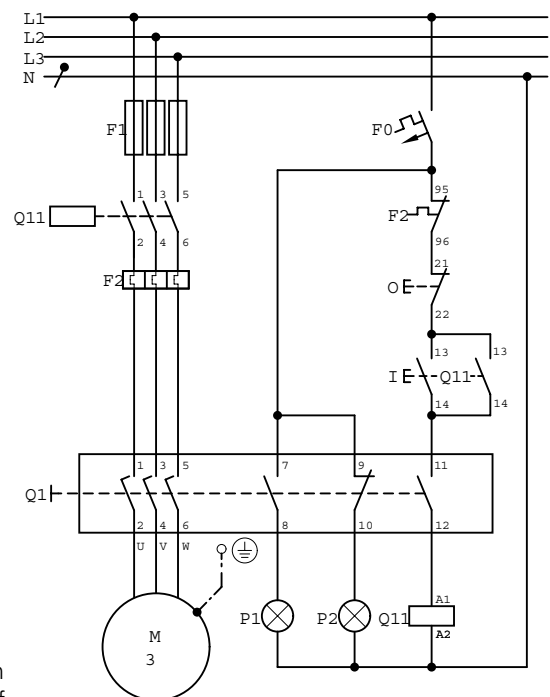
- Priority of the function and the option to activate it in all operating modes
- The ability to switch off any energy supply that leads to dangerous machine conditions as quickly as possible.

<sup>1)</sup> Our emergency-stop devices can also be used as emergency-off devices.



### Safety switch with load shedding and signaling

The P and T safety switches with load-shedding functionality are intended for use as maintenance and repair switches. Their main task is the safe disconnection of loads from the mains. Thanks to the load-shedding circuit, these switches are capable of handling the rated continuous current  $I_u$ . The switch will switch without any load, and the additional signal contacts can be used to signal the switch position. Integrating the switch properly in the application program of the system will increase its safety.









P1 = on  
P2 = off  
Q11 = load shedding



# Cam switches, switch-disconnectors

Main switches, maintenance switches, repair switches

Moeller series

Main-circuits/ poles	Auxilia- ry circuits	Rated uninter- rupted current  $I_u$ A	Surface-mounted		Flush-mounted		Rear-mounted		Rear-mounted With metal shaft for control cabinets with a depth of 400 mm IP65 at the front	
			Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
										
										
										

## Main switches, maintenance switches, repair switches

With red rotary handle and yellow locking ring

Note: All versions are also available with a black toggle → online catalog.

Lockable in the 0 (off) position

1	-	-	20	T0-1-8200/11/SVB	207145	T0-1-8200/EA/SVB	053110	T0-1-8200/V/SVB	057856	-	
			32	T3-1-8200/12/SVB	207200	T3-1-8200/EA/SVB	066576	T3-1-8200/V/SVB	007255	-	
			63	T5B-1-8200/14/SVB	207240	T5B-1-8200/EA/SVB	094279	T5B-1-8200/V/SVB	094273	-	
			100	-	-	T5-1-8200/EA/SVB	097224	T5-1-8200/V/SVB	097222	-	
2	-	-	20	T0-1-102/11/SVB	207143	T0-1-102/EA/SVB	091078	T0-1-102/V/SVB	095824	-	
			32	T3-1-102/12/SVB	207198	T3-1-102/EA/SVB	014374	T3-1-102/V/SVB	019120	-	
			63	T5B-1-102/14/SVB	207238	T5B-1-102/EA/SVB	094469	T5B-1-102/V/SVB	094463	-	
			100	T5-1-102/15/SVB	207273	T5-1-102/EA/SVB	098808	T5-1-102/V/SVB	098806	-	
3	-	-	20	T0-2-1/11/SVB	207147	T0-2-1/EA/SVB	038873	T0-2-1/V/SVB	043619	-	
			25	P1-25/12/SVB	207293	P1-25/EA/SVB	041097	P1-25/V/SVB	055335	P1-25/M4/SVB	172875
			32	P1-32/12/SVB	207314	P1-32/EA/SVB	081438	P1-32/V/SVB	095676	P1-32/M4/SVB	172865
			63	P3-63/14/SVB	207343	P3-63/EA/SVB	031607	P3-63/V/SVB	048218	P3-63/M4/SVB	172784
			100	P3-100/15/SVB	207373	P3-100/EA/SVB	074320	P3-100/V/SVB	088558	P3-100/M4/SVB	172818
			125	DMM-125/3/15/P-R	172851	P5-125/EA/SVB	280898	P5-125/V/SVB	280914	DMM-125/3/M4/P-R	6094964
			160	DMM-160/3/15/P-R	172794	P5-160/EA/SVB	280922	P5-160/V/SVB	280928	DMM-160/3/M4/P-R	6094965
			250	-	-	P5-250/EA/SVB	280936	P5-250/V/SVB	280942	DMV-250/3/M4/P-R	6094966
			315	-	-	P5-315/EA/SVB	280950	P5-315/V/SVB	280956	-	-
			400	-	-	-	-	-	-	DMV-400/3/M4/P-R	6094967
3 + N	-	-	20	T0-2-8900/11/SVB	207151	-	-	-	-	-	
			25	P1-25/12/SVB/N	207298	P1-25/EA/SVB/N	081587	P1-25/V/SVB/N	086333	P1-25/M4/SVB/N	172877
			32	P1-32/12/SVB/N	207319	P1-32/EA/SVB/N	091079	P1-32/V/SVB/N	095825	P1-32/M4/SVB/N	172867
			63	P3-63/14/SVB/N	207349	P3-63/EA/SVB/N	010398	P3-63/V/SVB/N	015144	P3-63/M4/K2-PR/N	172812
			100	P3-100/15/SVB/N	207379	P3-100/EA/SVB/N	019890	P3-100/V/SVB/N	024636	P3-100/M4/K2-PR/N	172828
			125	DMM-125/4/15/P-R	172854	P5-125/EA/SVB/N	280910	P5-125/V/SVB/N	280916	DMM-125/4/M4/P-R	6094968
			160	DMM-160/4/15/P-R	172797	P5-160/EA/SVB/N	280924	P5-160/V/SVB/N	280930	DMM-160/4/M4/P-R	6094969
			250	-	-	P5-250/EA/SVB/N	280938	P5-250/V/SVB/N	280944	DMV-250/4/M4/P-R	6094970
			315	-	-	P5-315/EA/SVB/N	280952	P5-315/V/SVB/N	280958	-	-
			400	-	-	-	-	-	-	DMV-400/4/M4/P-R	6094971
3	1	0	20	T0-2-15679/11/SVB	207149	T0-2-15679/EA/SVB	081588	T0-2-15679/V/SVB	086334	-	
3	1	1	25	P1-25/12/SVB/HI11	207297	P1-25/EA/SVB/HI11	091080	P1-25/V/SVB/HI11	095826	P1-25/M4/SVB/HI11	172767
			32	P1-32/12/SVB/HI11	207318	P1-32/EA/SVB/HI11	072567	P1-32/V/SVB/HI11	015145	P1-32/M4/SVB/HI11	172869
			63	P3-63/14/SVB/HI11	207348	P3-63/EA/SVB/HI11	019891	P3-63/V/SVB/HI11	024637	P3-63/M4/SVB/HI11	172788
			100	P3-100/15/SVB/HI11	207378	P3-100/EA/SVB/HI11	029383	P3-100/V/SVB/HI11	034129	P3-100/M4/SVB/HI11	172822
3 + N	1	1	20	T0-3-15680/11/SVB	207153	T0-3-15680/EA/SVB	038875	T0-3-15680/V/SVB	043621	-	
			25	-	-	P1-25/EA/SVB/N/HI11	048367	P1-25/V/SVB/N/HI11	053113	P1-25/M4/SVB/N/HI11	172769
			32	T3-3-15680/12/SVB	207202	P1-32/EA/SVB/N/HI11	057859	P1-32/V/SVB/N/HI11	062605	P1-32/M4/SVB/N/HI11	172871
			63	P3-63/14/SVB/N/HI11	207350	P3-63/EA/SVB/N/HI11	067351	P3-63/V/SVB/N/HI11	072097	P3-63/M4/K2-PR/N/HI11	172816
100	P3-100/15/SVB/N/HI11	207380	P3-100/EA/SVB/N/HI11	076843	P3-100/V/SVB/N/HI11	081589	P3-100/M4/K2-PR/N/HI11	172832			
3	2	1	20	T0-3-15683/11/SVB	207157	T0-3-15683/EA/SVB	015571	T0-3-15683/V/SVB	015634	-	
6	-	-	20	T0-3-8342/11/SVB	207159	T0-3-8342/EA/SVB	029382	T0-3-8342/V/SVB	034128	-	
			32	T3-3-8342/12/SVB	207208	T3-3-8342/EA/SVB	071326	T3-3-8342/V/SVB	076072	-	
			63	T5B-3-8342/14/SVB	207242	T5B-3-8342/EA/SVB	092308	T5B-3-8342/V/SVB	092300	-	
			100	T5-3-8342/15/SVB	207279	T5-3-8342/EA/SVB	096383	T5-3-8342/V/SVB	096381	-	

## Molded-case switch (UL/CSA) as a main switch according to NFPA 79

3	-	-	30	-	P3-30/EA/SVB-MCS	237892	P3-30/V/SVB-MCS	237894	-
				-	P3-30/EA/SVB-SW-MCS <sup>1)</sup>	237893	P3-30/V/SVB-SW-MCS	237895	-

Notes

<sup>1)</sup> With black handle

## Enclosed switch-disconnectors with pre-mounted EMC shield plate



Electromagnetic compatibility (EMC) indicates that a device is able to function properly despite the presence of electromagnetic interference, and without causing any electromagnetic interference itself.

Due to the introduction of variable frequency drives, the use of three-phase motors is on the rise, which significantly increases electromagnetic interference (EMI).

If such interference cannot be prevented, the ideal preventive measure for complying with EMC specifications is to clamp the shielded cables (shielding) to a shielding plate.

We have expanded our proven CI-K portfolio with an EMC switch-disconnector series that comes with pre-mounted shielding plates. This new enclosed product range is available with rated currents from 20 A to 63 A and can be used for motor applications up to 30 kW (AC-23A) at a rated current of 415 V.

### Features

- Proven and reliable Eaton switchgear
- Rugged and compact polycarbonate housing with IP65 degree of protection
- Cable terminals ensure safe and interference-free connection to the shielding plates
- Standard cable terminals for almost all cable cross-sections
- Wide range of auxiliary switch options to match any customer needs
- Red/yellow or black handle options, lockable

### Complete devices

Max. Rated current	Rated operational power	Description	Part no.	Article no.
AC-23 A, 415 V				
20 A	5.5 kW	3-pole, red/yellow handle	<b>T0-2-1/12H/MBS/SVB</b>	182425
		3-pole, black handle	<b>T0-2-1/12H/MBS/SVB-SW</b>	182426
		3-pole + N, red/yellow handle	<b>T0-2-8900/12H/MBS/SVB</b>	182427
		3-pole + N, black handle	<b>T0-2-8900/12H/MBS/SVB-SW</b>	182428
		3-pole + 1 N/O, red/yellow handle	<b>T0-2-15679/12H/MBS/SVB</b>	182429
		3-pole + 1 N/O, black handle	<b>T0-2-15679/12H/MBS/SVB-SW</b>	182430
		3-pole + N + 1 N/O / 1 N/C, red/yellow handle	<b>T0-3-15680/12H/MBS/SVB</b>	182431
		3-pole + N + 1 N/O / 1 N/C, black handle	<b>T0-3-15680/12H/MBS/SVB-SW</b>	182432
		3-pole + 2 N/O / 1 N/C, red/yellow handle	<b>T0-3-15683/12H/MBS/SVB</b>	182433
		3-pole + 2 N/O / 1 N/C, black handle	<b>T0-3-15683/12H/MBS/SVB-SW</b>	182434
		6-pole + 1 N/O / 1 N/C, red/yellow handle	<b>T0-4-15682/12H/MBS/SVB</b>	182435
		6-pole + 1 N/O / 1 N/C, black handle	<b>T0-4-15682/12H/MBS/SVB-SW</b>	182436
25 A	11 kW	3-pole, red/yellow handle	<b>P1-25/12H/MBS/SVB</b>	182413
		3-pole, black handle	<b>P1-25/12H/MBS/SVB-SW</b>	182414
		3-pole + 1 N/O / 1 N/C, red/yellow handle	<b>P1-25/12H/MBS/SVB-HI11</b>	182415
		3-pole + 1 N/O / 1 N/C, black handle	<b>P1-25/12H/MBS/SVB-SW/HI11</b>	182416
32 A	15 kW	3-pole, red/yellow handle	<b>P1-32/12H/MBS/SVB</b>	182417
		3-pole, black handle	<b>P1-32/12H/MBS/SVB-SW</b>	182418
		3-pole + 1 N/O / 1 N/C, red/yellow handle	<b>P1-32/12H/MBS/SVB/HI11</b>	182419
		3-pole + 1 N/O / 1 N/C, black handle	<b>P1-32/12H/MBS/SVB-SW/HI11</b>	182420
63 A	30 kW	3-pole, red/yellow handle	<b>P3-63/14/MBS/SVB</b>	182421
		3-pole, black handle	<b>P3-63/14/MBS/SVB-SW</b>	182422
		3-pole + 1 N/O / 1 N/C, red/yellow handle	<b>P3-63/14/MBS/SVB/HI11</b>	182423
		3-pole + 1 N/O / 1 N/C, black handle	<b>P3-63/14/MBS/SVB-SW/HI11</b>	182424

Note: Emergency-stop switches must have a red handle and a type SVB yellow locking ring (in accordance with IEC/EN 60204 / VDE 0113); otherwise, a black handle must be used (devices ending in "SVB-SW").











### Accessories












Description	Part no.	Article no.
Empty enclosure with shield plate for T0-1	<b>CI-K2H-T0-1-MBS</b>	182408
Empty enclosure with shield plate for T0-2	<b>CI-K2H-T0-2-MBS</b>	182409
Empty enclosure with shield plate for T0-3, T0-4	<b>CI-K2H-T0-4-MBS</b>	182410
Empty enclosure with shield plate for T3-1, T3-2	<b>CI-K2H-T3-2-MBS</b>	182411
Empty enclosure with shield plate for T3-3, T3-4	<b>CI-K2H-T3-4-MBS</b>	182412
Metal shield plate for CI-K2	<b>MBS-I2</b>	290191
Metal shield plate for CI-K4	<b>MBS-I4</b>	118742

# Cam switches, switch-disconnectors

On/off switches, changeover switches, reversing switches

Moeller series

Front-plate no.	Main-circuits/ poles	N/O contact	N/C contact										
				IP65 at the front <b>Part no.</b> Article no.	IP65 at the front <b>Part no.</b> Article no.	IP65 <b>Part no.</b> Article no.	IP30 at the front <b>Part no.</b> Article no.	IP65 at the front <b>Part no.</b> Article no.					
<b>On/off switches</b>													
 FS 908	1	-	-	<b>T0-1-8200/E</b> 067352	<b>T0-1-8200/EZ</b> 069725	<b>T0-1-8200/I1</b> 207074	<b>T0-1-8200/IVS</b> 074471	<b>T0-1-8200/Z</b> 076844					
	2	-	-	<b>T0-1-102/E</b> 088709	<b>T0-1-102/EZ</b> 091082	<b>T0-1-102/I1</b> 207061	<b>T0-1-102/IVS</b> 015147	<b>T0-1-102/Z</b> 095828					
	3	-	-	<b>T0-2-1/E</b> 024639	<b>T0-2-1/EZ</b> 027012	<b>T0-2-1/I1</b> 207081	<b>T0-2-1/IVS</b> 031758	<b>T0-2-1/Z</b> 036504					
	3	1	0	<b>T0-2-15679/E</b> 029387	<b>T0-2-15679/EZ</b> 031760	<b>T0-2-15679/I1</b> 207094	<b>T0-2-15679/IVS</b> 036506	<b>T0-2-15679/Z</b> 041252					
	3 + N	-	-	<b>T0-2-8900/E</b> 207398	<b>T0-2-8900/EZ</b> 207402	<b>T0-2-8900/I1</b> 207109	<b>T0-2-8900/IVS</b> 207403	<b>T0-2-8900/Z</b> 207407					
<b>Changeover switches</b>													
 FS 684	1	-	-	<b>T0-1-8210/E</b> 012742	<b>T0-1-8210/EZ</b> 048337	<b>T0-1-8210/I1</b> 207076	<b>T0-1-8210/IVS</b> 074440	<b>T0-1-8210/Z</b> 019862					
	2	-	-	<b>T0-2-8211/E</b> 022234	<b>T0-2-8211/EZ</b> 053083	<b>T0-2-8211/I1</b> 207102	<b>T0-2-8211/IVS</b> 076813	<b>T0-2-8211/Z</b> 029354					
	3	-	-	<b>T0-3-8212/E</b> 029353	<b>T0-3-8212/EZ</b> 057829	<b>T0-3-8212/I1</b> 207123	<b>T0-3-8212/IVS</b> 079186	<b>T0-3-8212/Z</b> 036473					
	4	-	-	<b>T0-4-8213/E</b> 031726	<b>T0-4-8213/EZ</b> 062575	<b>T0-4-8213/I1</b> 207136	<b>T0-4-8213/IVS</b> 081559	<b>T0-4-8213/Z</b> 043592					
 FS 943	1	-	-	<b>T0-1-8220/E</b> 031728	<b>T0-1-8220/EZ</b> 095799	<b>T0-1-8220/I1</b> 207078	<b>T0-1-8220/IVS</b> 055459	<b>T0-1-8220/Z</b> 086312					
	2	-	-	<b>T0-2-8221/E</b> 038847	<b>T0-2-8221/EZ</b> 010372	<b>T0-2-8221/I1</b> 207104	<b>T0-2-8221/IVS</b> 057832	<b>T0-2-8221/Z</b> 074450					
	3	-	-	<b>T0-3-8222/E</b> 048339	<b>T0-3-8222/EZ</b> 015118	<b>T0-3-8222/I1</b> 207124	<b>T0-3-8222/IVS</b> 060205	<b>T0-3-8222/Z</b> 088686					
	4	-	-	<b>T0-4-8223/E</b> 050712	<b>T0-4-8223/EZ</b> 019864	<b>T0-4-8223/I1</b> 207137	<b>T0-4-8223/IVS</b> 062578	<b>T0-4-8223/Z</b> 086315					
 FS 4011	1	-	-	<b>T0-1-8214/E</b> 019863	<b>T0-1-8214/EZ</b> 076815	<b>T0-1-8214/I1</b> 207077	<b>T0-1-8214/IVS</b> 045967	<b>T0-1-8214/Z</b> 050720					
	2	-	-	<b>T0-2-8215/E</b> 022236	<b>T0-2-8215/EZ</b> 081561	<b>T0-2-8215/I1</b> 207103	<b>T0-2-8215/IVS</b> 048340	<b>T0-2-8215/Z</b> 053093					
	3	-	-	<b>T0-3-8216/E</b> 024609	<b>T0-3-8216/EZ</b> 086307	<b>T0-3-8216/I1</b> 207434	<b>T0-3-8216/IVS</b> 050713	<b>T0-3-8216/Z</b> 055466					
<b>Reversing switches</b>													
 FS 684	3	-	-	<b>T0-3-8401/E</b> 091047	<b>T0-3-8401/EZ</b> 093420	<b>T0-3-8401/I1</b> 207132	<b>T0-3-8401/IVS</b> 098166	<b>T0-3-8401/Z</b> 010366					

Front-plate no.		Main circuits/ poles					
			<b>Flush-mounted</b>	<b>Center-mounted</b>	<b>Surface-mounted</b>	<b>For mounting in distribution boards</b>	<b>Rear-mounted</b>
			IP65 at the front <b>Part no.</b> Article no.	IP65 at the front <b>Part no.</b> Article no.	IP65 <b>Part no.</b> Article no.	IP30 at the front <b>Part no.</b> Article no.	IP65 at the front <b>Part no.</b> Article no.
<b>On/off switches</b>							
 FS 415		1	<b>T0-1-15401/E</b> 038854	<b>T0-1-15401/EZ</b> 041227	<b>T0-1-15401/I1</b> 207067	<b>T0-1-15401/IVS</b> 045973	<b>T0-1-15401/Z</b> 048346
		2	<b>T0-1-15402/E</b> 053092	<b>T0-1-15402/EZ</b> 055465	<b>T0-1-15402/I1</b> 207068	<b>T0-1-15402/IVS</b> 060211	<b>T0-1-15402/Z</b> 062584
		3	<b>T0-2-15403/E</b> 067330	<b>T0-2-15403/EZ</b> 069703	<b>T0-2-15403/I1</b> 207088	<b>T0-2-15403/IVS</b> 074449	<b>T0-2-15403/Z</b> 076822
<b>Voltmeter selector switches</b>							
 FS 1410759		3 + N	<b>T0-3-8007/E</b> 095813	<b>T0-3-8007/EZ</b> 098186	<b>T0-3-8007/I1</b> 207120	<b>T0-3-8007/IVS</b> 012759	<b>T0-3-8007/Z</b> 015132
<b>Ammeter selector switches</b>							
 FS 9440		3	<b>T0-3-8048/E</b> 034116	<b>T0-3-8048/EZ</b> 036489	-	<b>T0-3-8048/IVS</b> 041235	<b>T0-3-8048/Z</b> 043608
<b>Step switches</b>							
 FS 606		1	<b>T0-2-8231/E</b> 012750	<b>T0-2-8231/EZ</b> 015123	<b>T0-2-8231/I1</b> 207106	<b>T0-2-8231/IVS</b> 019869	<b>T0-2-8231/Z</b> 022242
 FS 420		1	<b>T0-2-8241/E</b> 050716	<b>T0-2-8241/EZ</b> 053089	<b>T0-2-8241/I1</b> 207107	<b>T0-2-8241/IVS</b> 057835	<b>T0-2-8241/Z</b> 062581
<b>Changeover switches</b>							
 FS 1401		1	<b>T0-1-15431/E</b> 019872	<b>T0-1-15431/EZ</b> 022245	<b>T0-1-15431/I1</b> 207070	<b>T0-1-15431/IVS</b> 026991	<b>T0-1-15431/Z</b> 029364
		2	<b>T0-2-15432/E</b> 034110	<b>T0-2-15432/EZ</b> 036483	<b>T0-2-15432/I1</b> 207091	<b>T0-2-15432/IVS</b> 041229	<b>T0-2-15432/Z</b> 043602
		3	<b>T0-3-15433/E</b> 048348	<b>T0-3-15433/EZ</b> 050721	<b>T0-3-15433/I1</b> 207115	<b>T0-3-15433/IVS</b> 055467	<b>T0-3-15433/Z</b> 057840

## UL 98 R9 product range – switch-disconnectors up to 100 A



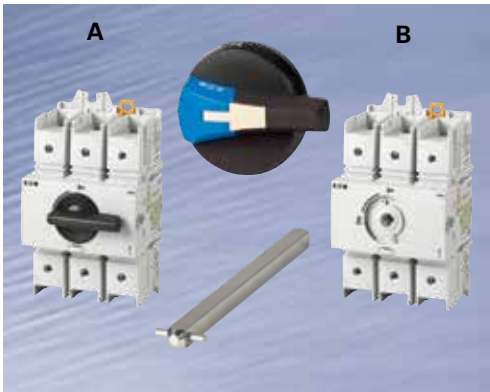
The compact, high-quality switch-disconnectors of the R9 series are tested and approved according to the stringent requirements of the UL 98 standard and offer extremely safe isolation. Versions with 30 A, 60 A and 100 A are available, with a short-circuit withstand rating of 100 kA. The switch-disconnectors of the R9 series have a small footprint and come with direct handles or handles that can be mounted on the control panel as required (including accessories) and thus offer a high degree of modularity and flexibility.

### Key features

- Market-leading SCCR: 30 A / 60 A = 100 kA @ 480 V / 600 V 100 A = 100 kA @ 480 V, 25 kA @ 600 V
- Can be mounted on a mounting plate or DIN rail
- Direct handle or door- and side-handle with metal shaft extension
- Interlock and rotary handles with NEMA 4X rating
- Modular accessories that can be quickly mounted, including auxiliary contacts and switchable fourth pole

### Benefits

- Modern UL 98 switches with an ultra-compact footprint
- The modular design and screwless accessory mounting system allow for easy installation
- Positive-break indication

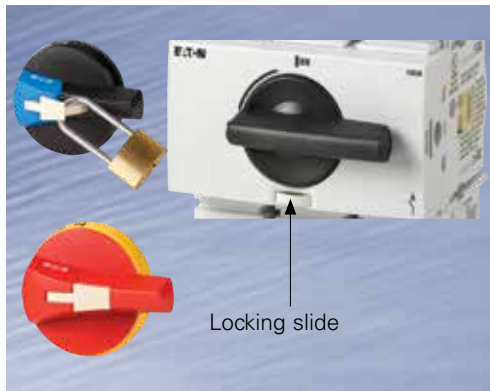


### Modular design

The R9 switch-disconnectors offer a compact solution consisting of three different amperage ratings and a matching range of accessories for quick and easy installation.

**A** Switch-disconnector and handle combination for **direct operation**

**B** Combination of switch, shaft and external handle for **external operation** from the right or the front of the control panel.



### Padlock for protection

#### Switch-disconnectors with external handles

The combination of external handle and metal shaft extension can be used for front or right-hand operation. If attached to a door, the interlock function prevents users from opening the enclosure while the switch is in the "ON" position. For personal safety and during maintenance work, the handles can be locked in the "OFF" position with up to three padlocks.

The door can be opened in the "ON" position if the locking function is unlocked by means of a tool (authorized persons only). The locking function will be restored once the door is closed again. Red/yellow and black handles are available, and thanks to their NEMA 4X rating, they provide excellent protection in harsh environments.

#### Direct-mount switch-disconnector

The direct-mount switch can be padlocked to protect operators and prevent accidental reactivation of the load.



### Accessories

#### Quick-mount accessories for a wide range of options

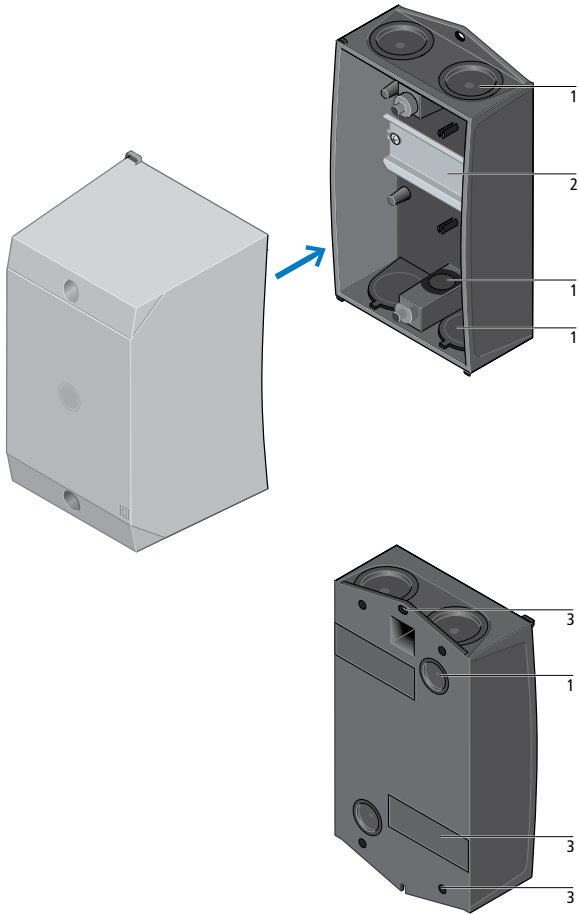
The modular design of the R9 series ensures quick and easy installation, with a wide range of accessories. To manage different cabinet depths, metal shafts with three different lengths (up to 320 mm) are available as standard.

#### Time savings thanks to quick mounting option

A switchable fourth pole can be mounted on the left- or right-hand side without any tools. Furthermore, up to two auxiliary switch modules can be added on the left or right simply by plugging them into the switch, saving installers valuable time.

Matching terminal covers simply snap into place and protect users against contact with active components.





**Degree of protection: IP65**

- 1 Metric cable entries:  
push-through diaphragm or hard knockouts
- 2 Mounting systems for basic enclosures:  
mounting rail or mounting plate
- 3 Installation:  
horizontal and vertical slots for wall mounting,  
captive cover screws,  
rubber feet to compensate for uneven walls  
(in case of CI-K1 and CI-K2)

	Width mm	Height mm	Depth mm	Cable entry	Part no.	Article no.	
<b>CI-K basic enclosures</b>							
<b>With mounting rail to IEC/EN 60715</b>							
	80	120	95	Push-through cable entry diaphragm	<b>CI-K1-95-TS</b>	206881	
	100	160	100		<b>CI-K2-100-TS</b>	206882	
	100	160	145		<b>CI-K2-145-TS</b>	206883	
	80	120	95	Hard knockout version	<b>CI-K1H-95-TS</b>	105853	
	100	160	100		<b>CI-K2H-100-TS</b>	229304	
	100	160	145		<b>CI-K2H-145-TS</b>	229305	
	120	200	125		<b>CI-K3-125-TS</b>	206884	
	120	200	160		<b>CI-K3-160-TS</b>	206885	
	160	240	125		<b>CI-K4-125-TS</b>	206886	
	160	240	160		<b>CI-K4-160-TS</b>	206890	
	200	280	125	<b>CI-K5-125-TS</b>	206891		
	200	280	160	<b>CI-K5-160-TS</b>	206892		
	<b>With adapter plate for small contactors with motor-protective relay</b>						
		100	160	145	Push-through cable entry diaphragm	<b>CI-K2-145-AD</b>	207632
	100	160	145	Hard knockout version	<b>CI-K2H-145-AD</b>	229308	
<b>With mounting plate</b>							
	100	160	100	Push-through cable entry diaphragm	<b>CI-K2-100-M</b>	206893	
	100	160	145		<b>CI-K2-145-M</b>	206894	
	100	160	100	Hard knockout version	<b>CI-K2H-100-M</b>	229306	
	100	160	145		<b>CI-K2H-145-M</b>	229307	
	120	200	125		<b>CI-K3-125-M</b>	206895	
	120	200	160		<b>CI-K3-160-M</b>	206896	
	160	240	125		<b>CI-K4-125-M</b>	206897	
	160	240	160		<b>CI-K4-160-M</b>	206898	
	200	280	125		<b>CI-K5-125-M</b>	206899	
	200	280	160	<b>CI-K5-160-M</b>	206900		



## Machine and system transformers – the right type of winding for every application



We offer a wide range of control transformers. All our transformers are built and tested according to IEC/EN 61558. Depending on the design, they can thus be used in accordance with the international IEC/EN 60204 assembly standard.

We also offer matching, ballast and performance transformers upon request.

In addition, we also offer a large selection of approved transformers for machine and system exports to North America.

Apart from voltage adjustment, transformers can also be used to change the network configuration.

### Information for export to North America



<b>Product standards</b>	UL 506; UL5085-1; UL 5085-2; CSA-C22.2 No. 66; CSA-C22.2 No. 66.1-06; CSA-C22.2 No. 66.2-06; IEC/EN 61558-2-2; CE marking
UL File No.	E167225
UL CCN	XPTQ2, XPTQ8
CSA File No.	UL report applies to both US and Canada
CSA Class No.	–
NA certification	UL recognized, certified by UL for use in Canada
Suitable for	branch circuits
Max. voltage rating	600 V AC
Degree of protection	IEC: IP00, UL/CSA type: –

# Transformers: easy to use, powerful performance.

All Eaton transformers are designed to comply with insulation class B according to IEC 85 and IEC 216, which ensures a highly reliable operation temperature of 130° C. In addition, all our transformers come with IP00 degree of protection and have an ambient temperature of -25° to +40° C without

derating. A resin coating protects our transformers against corrosion, improves heat dissipation and also significantly reduces humming. For challenging applications, we also offer a special coating that provides additional protection against humidity and corrosion.

## STN control transformers

Our single-purpose STN control transformers ensure reliable operating voltages for control and auxiliary circuits at all times.

Designed according to IEC/EN 61558-2-2, VDE 0570-2-, UL 5085-2 and CSA 22.2 No. 66, our STN control transformers are not only easy to commission and exceptionally reliable but also ensure maximum safety for machinery and systems.

## UTI multi-winding transformers

Our multi-winding transformers are the most adaptable models in their class and come with extensive approvals, making them ideal for global use. Multi-winding transformers offer the perfect combination of control,

## STI, STZ, DTZ control, isolation and safety transformers

Our STI, STZ and DTZ control, isolation and safety transformers are tested and built in accordance with IEC/EN 61558-2-2/2-4/2-6, UL 5085-2 and CSA 22.2 No. 66.

Transformers reduce the effects of short-circuits and provide safe electrical isolation in the event of a fault.

Typical applications include, among others, control circuits, protective isolation, PELV (protective extra-low voltage) circuits and FELV (functional extra-low voltage) circuits.

isolation and safety transformer in a single, adaptable device. Our transformers are tested and built according to IEC/EN 61558-2-2/2-4/2-6, UL 5085-2 and CSA 22.2 No. 66.



Single-phase control, isolation and safety transformer



Three-phase control, isolation and safety transformer



Single-phase control transformer



Single-phase multi-winding transformer

	Single-phase transformers				Three-phase transformers
	STN	STZ	STI	UTI	DTZ
Control transformer	X	X	X	X	X
Isolation transformer	-	X	X	X	X
Safety transformer	-	X	X	X	X
Multi-winding transformer	-	-	-	X	-
Preferred voltages	X	-	X	-	-
Selectable voltages	X	X	-	-	X
<b>Accessories*</b>					
IP23 enclosures	-	X see p. 6/79	-	-	X see p. 6/79
Screen winding	-	X	-	-	X
Inrush current limiters	-	X	X	-	-
Additional taps	-	X see p. 6/79	-	-	X see p. 6/79
<b>Additional windings</b>					
Secondary side	-	X	-	-	-
Primary side	-	Available on request	-	-	-
<b>Approvals</b>					
UL/CSA	X up to 4 kVA	X up to 4 kVA	X up to 4 kVA	X	X up to 6.3 kVA
DNV & Germanischer Lloyd	Available on request	Available on request	Available on request	Available on request	Available on request

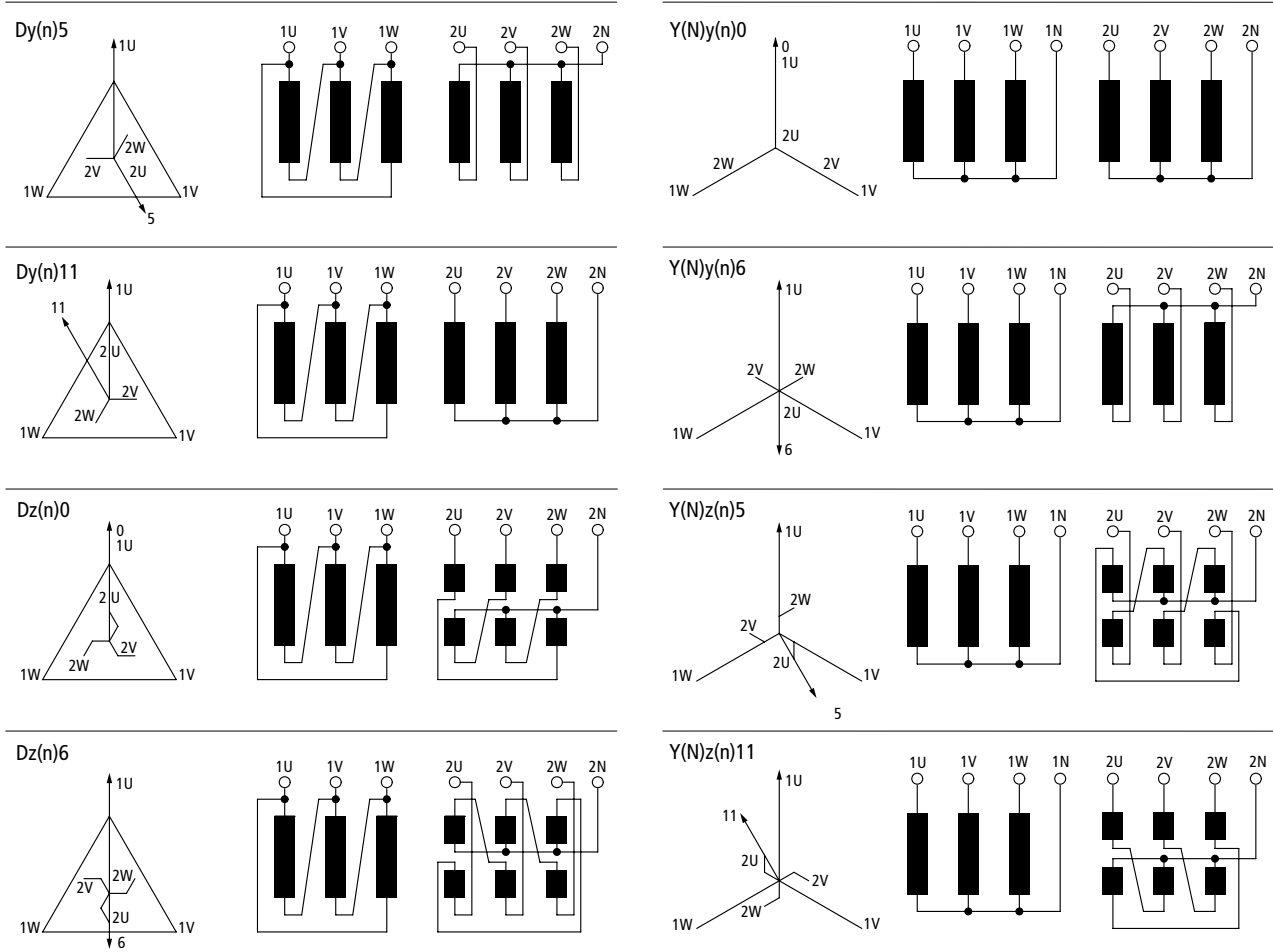
\*Additional accessories available at [www.eaton.eu](http://www.eaton.eu)

# Common configurations of three-phase transformers

Different primary and secondary winding circuits (star, delta or zigzag) result in various combination options, in line with the

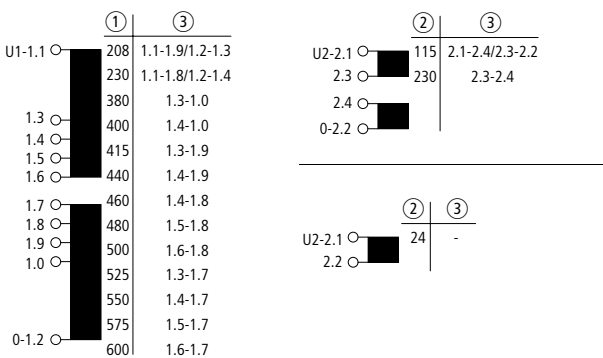
needs of the application at hand. These are divided into standardized configurations according to EN60076-1.

Weitere Schaltgruppen auf Anfrage.



Der herausgeführte Sternpunkt wird durch ein hinzugefügtes n sekundär (N primär) zur Schaltgruppe deutlich gemacht. Standard-Schaltung ist Yy0.

## Schaltung von Mehrwicklungstransformatoren



## Determining the continuous rating


The size of the control transformer must be such that it keeps voltage drop within reliable limits even under unfavorable conditions.


The transformer size is calculated by adding the holding powers of all loads that are switched on simultaneously and then multiplying the result by 0.8. If the size of the loads is approximately the same, the cumulative inrush currents of all loads that are switched on at the same time must be added to the cumulative holding currents and the result multiplied by 0.8.

## Determining the short-time rating

If large contactors need to be switched, the selection of the control transformer should be based on the short-time rating, which will reduce the required transformer power in most cases.

Care should be taken to ensure that the holding power does not exceed the continuous rating.

	Rated power	Short-time rating	Preferred voltage: 400/230 V		Preferred voltage: 400/24 V		Preferred voltage: 230/24 V	
	kVA	kVA	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
 <p>IEC/EN 61558-2-2 VDE 0570 Part 2-2 Rated input voltage 230 ± 5 % V, 400 ± 5 % V Rated output voltage 24 V, 230 V</p>	0.06	0.095	<b>STN0,06(400/230)</b>	204936	<b>STN0,06(400/24)</b>	204937	<b>STN0,06(230/24)</b>	204935
	0.1	0.16	<b>STN0,1(400/230)</b>	204942	<b>STN0,1(400/24)</b>	204943	<b>STN0,1(230/24)</b>	204941
	0.16	0.32	<b>STN0,16(400/230)</b>	204948	<b>STN0,16(400/24)</b>	204949	<b>STN0,16(230/24)</b>	204947
	0.2	0.38	<b>STN0,2(400/230)</b>	204977	<b>STN0,2(400/24)</b>	204978	<b>STN0,2(230/24)</b>	204976
	0.25	0.44	<b>STN0,25(400/230)</b>	204980	<b>STN0,25(400/24)</b>	221509	<b>STN0,25(230/24)</b>	221508
	0.315	0.6	<b>STN0,315(400/230)</b>	204982	<b>STN0,315(400/24)</b>	221511	<b>STN0,315(230/24)</b>	221510
	0.4	0.62	<b>STN0,4(400/230)</b>	204984	<b>STN0,4(400/24)</b>	221514	<b>STN0,4(230/24)</b>	221513
	0.5	0.88	<b>STN0,5(400/230)</b>	204986	<b>STN0,5(400/24)</b>	221516	<b>STN0,5(230/24)</b>	221515
	0.63	1.51	<b>STN0,63(400/230)</b>	204988	<b>STN0,63(400/24)</b>	221518	<b>STN0,63(230/24)</b>	221517
	0.8	2.25	<b>STN0,8(400/230)</b>	204990	<b>STN0,8(400/24)</b>	221520	<b>STN0,8(230/24)</b>	221519
	1	3.28	<b>STN1,0(400/230)</b>	204992	<b>STN1,0(400/24)</b>	221522	<b>STN1,0(230/24)</b>	221521
	1.3	4.8	<b>STN1,3(400/230)</b>	221523				
	1.6	3.98	<b>STN1,6(400/230)</b>	221524				
	2	5.75	<b>STN2,0(400/230)</b>	221525				
	2.5	7.24	<b>STN2,5(400/230)</b>	221526				
	3	8.36	<b>STN3,0(400/230)</b>	221527				
4	12.2	<b>STN4,0(400/230)</b>	221528					

	Rated power	Short-time rating	Part no.	Article no.
	kVA	kVA		
 <p>IEC/EN 61558-2-2/2-4/2-6 VDE 0570 Part 2-2, Part 2-6 (safety transformers), Part 2-4 (isolating transformers) Rated input voltage 50 – 950 ± 5 % V, Rated output voltage 12 – 1000 V</p>	0.06	0.13	<b>STZ0,06(*/*)</b>	914761
	0.1	0.24	<b>STZ0,1(*/*)</b>	914762
	0.16	0.36	<b>STZ0,16(*/*)</b>	914763
	0.2	0.44	<b>STZ0,2(*/*)</b>	914764
	0.25	0.6	<b>STZ0,25(*/*)</b>	914765
	0.315	0.75	<b>STZ0,315(*/*)</b>	914766
	0.4	1.1	<b>STZ0,4(*/*)</b>	914767
	0.5	1.6	<b>STZ0,5(*/*)</b>	914768
	0.63	1.7	<b>STZ0,63(*/*)</b>	914769
	0.8	2	<b>STZ0,8(*/*)</b>	914770
	1	2.8 kW	<b>STZ1,0(*/*)</b>	914771
	1.3	3.7	<b>STZ1,3(*/*)</b>	914772
	1.6	5.5	<b>STZ1,6(*/*)</b>	914773
	2	7	<b>STZ2,0(*/*)</b>	914774
	2.5	9	<b>STZ2,5(*/*)</b>	914775
	3	11.5	<b>STZ3(*/*)</b>	914776
4	15	<b>STZ4,0(*/*)</b>	914777	
5.3	13	<b>STZ5,3(*/*)</b>	201060	
8.3	21	<b>STZ8,3(*/*)</b>	201062	
13.3	34	<b>STZ13,3(*/*)</b>	201064	

### Ordering example

The following details must be added to the part number when ordering:

#### STZ0,06(\*/\*)

First place holder \* = rated input voltage  
Second place holder \* = rated output voltage

- Desired type: STZ0,06
- Desired rated input voltage: 230 V
- Desired rated output voltage: 12 V

The correct part no. is

#### STZ0,06(230/12)

#### Caution:

If devices with preferred voltages of 400/230 V, 400/24 V, 230/230 V and 230/24 V are ordered and no additional options (such as screen winding) are specified, the STI version will be supplied.



# Control, isolation and safety transformers

DTZ, STI

## DTZ three-phase control, isolation and safety transformers



IEC/EN 61558-2-2/2-4/2-6  
VDE 0570 Part 2-2,  
Part 2-6 (safety transformers),  
Part 2-4 (isolating transformers)  
Rated input voltage 50 – 950 ± 5 % V,  
Rated output voltage 18.5 – 1000 V

### Ordering example

The following details must be added to the part number when ordering:

#### DTZ0,1(\*/\*)

First place holder \* = rated input voltage  
Second place holder \* = rated output voltage

- Desired type: DTZ0,1
- Desired rated input voltage: 200 V
- Desired rated output voltage: 18.5 V

The correct part no. is

**DTZ0,1(200/18,5)DY(N)5**

Rated power	Short-time rating	Part no.	Article no.
kVA	kVA		
0.1	0.2	DTZ0,1(*/*)*	914799
0.16	0.32	DTZ0,16(*/*)*	914800
0.25	0.5	DTZ0,25(*/*)*	914801
0.4	0.8	DTZ0,4(*/*)*	914802
0.5	1	DTZ0,5(*/*)*	914803
0.63	1.38	DTZ0,63(*/*)*	914804
1	2.2	DTZ1,0(*/*)*	914805
1.6	3.5	DTZ1,6(*/*)*	914806
2	4.4	DTZ2,0(*/*)*	914807
2.5	5.5	DTZ2,5(*/*)*	914808
4	6.2	DTZ4,0(*/*)*	914809
6.3	15.7	DTZ6,3(*/*)*	914810
8	20	DTZ8,0(*/*)*	914811
10	25	DTZ10(*/*)*	914812
12.5	31	DTZ12,5(*/*)*	914813
16	40	DTZ16(*/*)*	914814
20	50	DTZ20(*/*)*	914815
25	62	DTZ25(*/*)*	914816


Rated power	Short-time rating	Preferred voltage: 400/230 V		Preferred voltage: 400/24 V		Preferred voltage: 230/230 V		Preferred voltage: 230/24 V	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.

## STI control, isolation and safety transformers



IEC/EN 61558-2-2/2-4/2-6  
VDE 0570 Part 2-2, Part 2-6  
(safety transformers), Part 2-4  
(isolating transformers)  
Rated input voltage  
230 ± 5 % V, 400 ± 5 % V  
Rated output voltage 24,  
230 V

0.06	0.13	STI0,06(400/230)	029975	STI0,06(400/24)	029971	STI0,06(230/230)	029968	STI0,06(230/24)	029977
0.1	0.24	STI0,1(400/230)	046630	STI0,1(400/24)	046631	STI0,1(230/230)	029976	STI0,1(230/24)	046629
0.16	0.36	STI0,16(400/230)	046633	STI0,16(400/24)	046634	STI0,16(230/230)	035247	STI0,16(230/24)	046632
0.2	0.44	STI0,2(400/230)	046636	STI0,2(400/24)	046637	STI0,2(230/230)	035248	STI0,2(230/24)	046635
0.25	0.6	STI0,25(400/230)	046638	STI0,25(400/24)	035249	STI0,25(230/230)	036400	STI0,25(230/24)	035262
0.315	0.75	STI0,315(400/230)	046639	STI0,315(400/24)	035250	STI0,315(230/230)	040641	STI0,315(230/24)	036292
0.4	1.1	STI0,4(400/230)	046640	STI0,4(400/24)	035251	STI0,4(230/230)	040642	STI0,4(230/24)	036393
0.5	1.6	STI0,5(400/230)	046641	STI0,5(400/24)	035252	STI0,5(230/230)	040643	STI0,5(230/24)	036394
0.63	1.7	STI0,63(400/230)	046883	STI0,63(400/24)	035253	STI0,63(230/230)	040644	STI0,63(230/24)	036395
0.8	2	STI0,8(400/230)	046889	STI0,8(400/24)	035254	STI0,8(230/230)	046641	STI0,8(230/24)	036396
1	2.8 kW	STI1,0(400/230)	046895	STI1,0(400/24)	035255	STI1,0(230/230)	026642	STI1,0(230/24)	036397
1.3	3.7	STI1,3(400/230)	046918			STI1,3(230/230)	025256		
1.6	5.5	STI1,6(400/230)	046952			STI1,6(230/230)	035257		
2	7	STI2,0(400/230)	035258			STI2,0(230/230)	036398		
2.5	9	STI2,5(400/230)	035259			STI2,5(230/230)	036399		
3	11.5	STI3,0(400/230)	035260						
4	15	STI4,0(400/230)	035261						

	Rated power kVA	Rated input vol- tage V	Rated output voltage V	Part no.	Article no.
 <p>(Universal) control, isolation and safety transformers according to VDE 0550, IEC/EN 61558-2-2/2-4/2-6 VDE 0570 Part 2-2, Part 2-6 (safety transformers), Part 2-4 (isolating transformers)</p>	0.1	208 - 600	2 x 115	<b>UT10,1-115</b>	206923
	0.2			<b>UT10,2-115</b>	206924
	0.315			<b>UT10,315-115</b>	206925
	0.5			<b>UT10,5-115</b>	206926
	0.63			<b>UT10,63-115</b>	206927
	0.8			<b>UT10,8-115</b>	206928
	1			<b>UT11,0-115</b>	206929

## Accessories


Current range	For use with	Part. no. suffix	Notes
A		Article number if ordered together with base unit	

### Additional taps

If the rated input or output voltage deviates by more than  $\pm 10\%$ :

- Ask about the size of the transformer
- Indicate the power split in addition to the tap

< 16	STZ	Primary side	Single-phase transformers	<b>+ZA16P(*)</b> 931897	<b>Selecting the correct tap</b> Ordering example for single-phase transformers: • Selected transformer: STZ0,25(400/24) • Required voltage of the additional tap: 22 V • The current for selecting the tap is calculated as follows: $I = S/U$ I = current S = apparent power U = tap voltage $I = 250/22 = 11.4 \text{ A} \rightarrow +ZA16$ The correct part-number suffix for the secondary-side tap is the following: <b>+ZA16S(22)</b> An additional tap on the primary side must be determined in the same way.
< 16	STZ	Secondary side	Single-phase transformers	<b>+ZA16S(*)</b> 931895	
< 16	DTZ	Primary side	Three-phase transformers	<b>+DZA16P(*)</b> 930200	<b>Selecting the correct tap</b> Ordering example for three-phase transformers: • Selected transformer: DTZ0,25(400/24) • Required voltage of the additional tap: 22 V • The current for selecting the tap is calculated as follows: $I = S/(\sqrt{3} \times U)$ I = current S = apparent power U = tap voltage $I = 250/(\sqrt{3} \times 22) = 6.6 \text{ A} \rightarrow +DZA16$ The correct part-number suffix for the secondary-side tap is the following: <b>+DZA16S(22)</b> An additional tap on the primary side must be determined in the same way.
< 16	DTZ	Secondary side	Three-phase transformers	<b>+DZA16S(*)</b> 200406	

	For use with	Part. no. suffix	Article no.	Notes
	STZ0,06 ... STZ0,16	<b>+IP23/01</b>	200618	These enclosures can be used with primary or secondary voltages > 110 V; smaller voltages available on request
	STZ0,2 ... STZ0,5	<b>+IP23/02</b>	200623	
	STZ0,63 ... STZ1,3	<b>+IP23/03</b>	200624	
	STZ1,6 ... STZ2,0	<b>+IP23/04</b>	226100	
	STZ5,3 ... STZ8,3	<b>+IP23/05</b>	200648	
	STZ13,3	<b>+IP23/06</b>	200649	
	STZ2,5 ... STZ4,0	<b>+IP23/32A</b>	200763	These enclosures can be used with primary or secondary voltages from 42 V to max. 1000 V including taps.
	DTZ1,0 ... DTZ2,0	<b>+IP23/30</b>	200706	
	DTZ0,1 ... DTZ0,16	<b>+IP23/31</b>	200753	
	DTZ0,25 ... DTZ0,63	<b>+IP23/33</b>	200754	
	DTZ2,5 ... DTZ6,3	<b>+IP23/34</b>	200755	
	DTZ8,0 ... DTZ25			



## CS sheet-steel wall-mount enclosures – safe, reliable and efficient

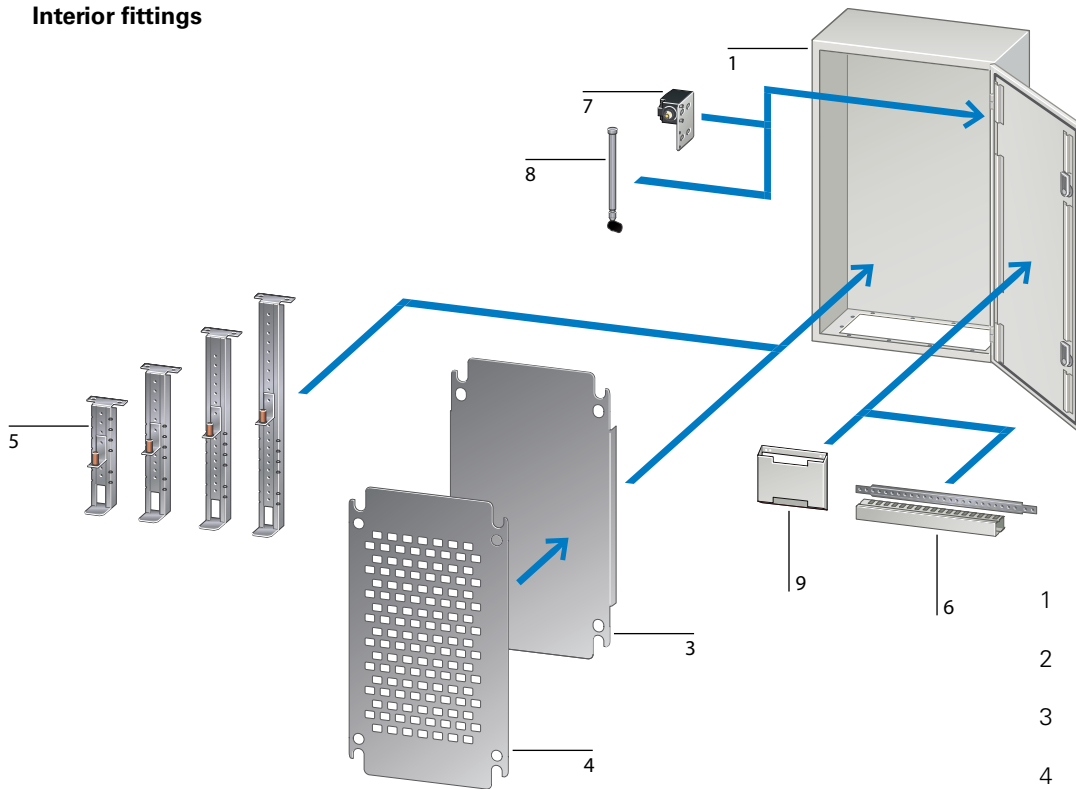


The second generation of our CS sheet steel enclosure series is characterized by maximum stability and can be used wherever special protection is required, be it effective protection against direct contact with active parts or protection of installed equipment against harmful external factors such as liquids. The high degree of protection (IP66, UL/CSA Types 1, 4, 12) provided by a continuous polyurethane foam gasket prevents water, oil and dirt from entering the enclosures. This makes the CS enclosure series ideal for sub-distribution boards in control systems in industrial and functional buildings as well as machine-building applications. The rugged sheet-steel enclosure meets the requirements of IEC/EN 62208 and is approved for use in switchgear and controlgear assemblies in accordance with IEC/EN 61439-2.



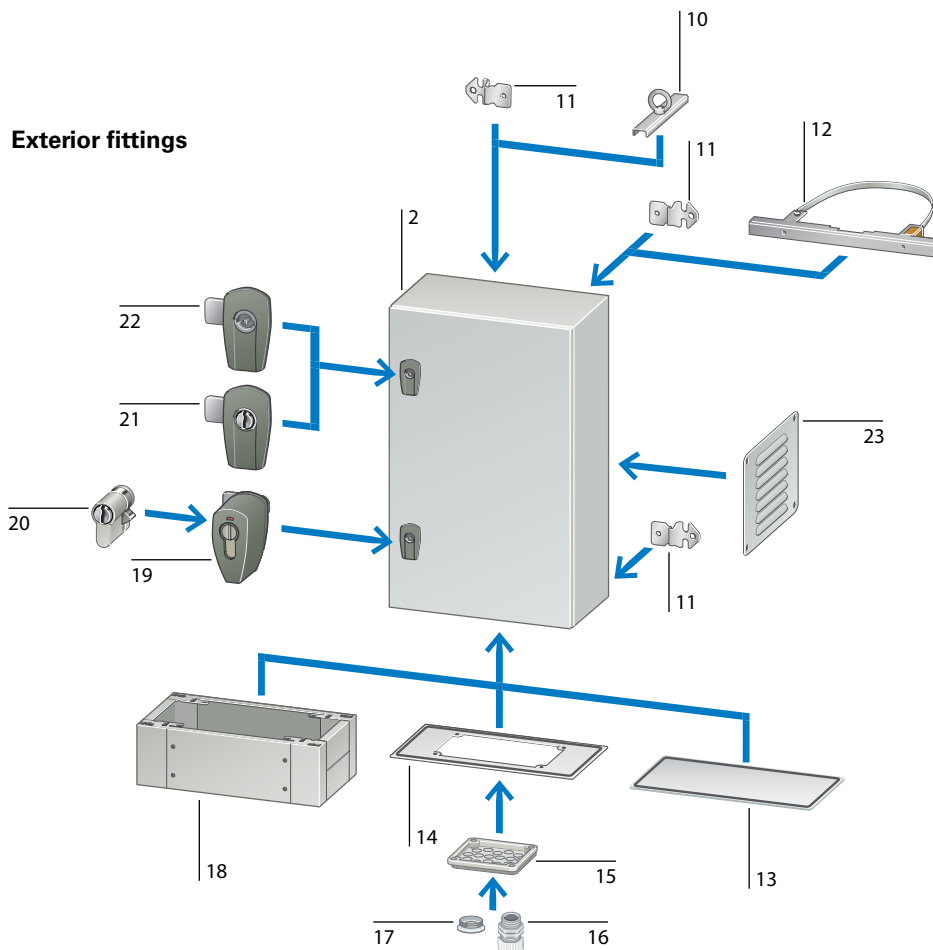
Get more information

### Interior fittings



- 1 CSsheet steel wall-mount enclosure (interior fittings)
- 2 CS sheet steel wall-mount enclosure (exterior fittings)
- 3 Mounting plate, unperforated, galvanized
- 4 Mounting plate, perforated, galvanized, for cage nuts
- 5 Depth adjustment elements for mounting plates
- 6 Mounting bars for door rails and cable ducts
- 7 Universal brackets for door-contact switches and cable-conduit holders
- 8 Quick-change hinge pin
- 9 Circuit diagram pocket made from insulating material

### Exterior fittings



- 10 Lift eye kit with rail bracket
- 11 Wall-mounting brackets
- 12 Pole attachment
- 13 Bottom plates without apertures
- 14 Bottom plates with apertures for F3A flanges
- 15 F3A flanges
- 16 Metric cable gland metric ventilation cable gland
- 17 Metric diaphragm grommet, cable grommet
- 18 Cable interconnect frame
- 19 Bolt for half-cylinder lock, with comfort rotary handle
- 20 Cylinder lock
- 21 Lock with insert and lock cylinder
- 22 Lock with insert and two-way key bit
- 23 Ventilation louver

# Overview of technical advantages

1 Gutter rail



2 Continuous foam gasket



3 Sturdy enclosure design



4 Wall-mounting brackets



12 RAL 7035



5 Standardized locking system



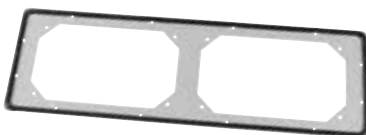
11 Mounting plate



6 PHZ-A comfort rotary handle



10 Flange plates



7 Door rail



9 Quick-change hinge pin



8 Accessories





## 1 Gutter rail

The continuous polyurethane foam gasket ensures that the enclosure is tightly sealed. A gutter rail around the edges prevents the ingress of liquids such as water or oil and protects against dirt when the door is opened.

## 2 Continuous foam gasket

The high degree of protection (IP66) ensures full safety of the equipment inside the enclosure under almost all environmental conditions, thanks in part to the continuous polyurethane foam gasket.

## 3 Sturdy enclosure design

The sturdy enclosures are made from solid, high-quality sheet steel and provide effective protection against direct contact with active parts. The rear panel is equipped with 10 mm holes for wall mounting, while two M6 threaded weld studs on the inside can be used for protective earth connections. Thanks to the IK09 impact rating according to EN 62262, the cabinet interior is effectively protected against mechanical damage. Choose from a selection of 45 enclosure sizes ranging from 250 x 200 x 150 mm to 1200 x 1200 x 250 mm. Since the enclosure is designed so that it can be rotated by 180° when mounted, the cables can be inserted either from above or below.

## 4 Wall-mounting brackets

The innovative WFB-SET-CS wall mounting bracket also makes it possible to attach the control cabinet to any wall, both vertically and horizontally.

## 5 Standardized locking system

In addition, the new impact-resistant latches, which are made entirely of metal, provide even more safety.

## 6 PHZ-A comfort rotary handle

One of the highlights is the PHZ-A comfort rotary handle with lock position indicator, which can accommodate all standard half cylinder locks. Another noteworthy feature is the lock-position indicator, which makes it possible to see from the outside whether the cylinder is in the open or locked position. The PHZ-A can also be quickly retrofitted without having to remove the standard lock of the CS wall-mount enclosure, thereby avoiding the labor-intensive use of swing levers.

## 7 Door rail

The door rail comes with perforations at 25 mm intervals, which can be used to fasten DIN mounting rails or to fix conduits and cables. The precision-fit mounting bars for door rails enable the fastening of cable ducts without any drilling.

## 8 Accessories

The CS wall-mount enclosures offer maximum versatility, thanks to the useful range of accessories, including depth adjustment elements for adjusting the height of the mounting plate.

Included accessories:

- Mounting plate with fasteners
- Flange plate with fasteners
- Sealing plugs for closing the wall mounting holes
- Fasteners for protective earth connection
- 1 key

## 9 Quick-change hinge pin

The new quick-change hinge pins can be quickly replaced, as each metal pin can be easily removed without any tools, thereby preventing damage to the door gasket.

## 10 Flange plates

The large flange-plate apertures enable greater flexibility. Thanks to the foam gasket, the flange plates also eliminate the tedious and time-consuming process of gluing on foam rubber gaskets, thereby saving valuable time. Both the flange and mounting plates are integrated into the grounding system, which eliminates the need for an additional protective earth connection. As a special service, we also offer tailor-made solutions to meet specific customer requirements.

## 11 Mounting plate

The three-millimeter mounting plate is made from galvanized sheet steel and thus ensures safe installation of the switchgear and basic electromagnetic compatibility protection. The two-millimeter mounting plate for small enclosures, which can be inserted quickly and without jamming, enables safe installation of the switchgear as well as basic EMC protection.



## 12 RAL 7035

A powder-coated finish (textured surface) in RAL 7035 provides surface and corrosion protection both inside and out.


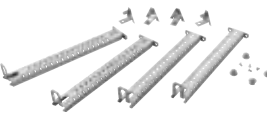
# CS sheet-steel wall-mount enclosures







CS wall-mount enclosures


Moeller series


	Dimensions			Locks	Door rail	Flange plates		Mounting plates		Part no. Article no.
	Height mm	Width mm	Depth mm	Quantity	Quantity	Width mm	Depth mm	Height mm	Width mm	
<b>Wall-mount enclosures with mounting plate</b>										
Degree of protection: IP66 Continuous polyurethane foam gasket Impact resistance: IK09 to EN 62262 Sheet-steel mounting plate Bottom plate with foam gasket Single door; door stop on the right; door opening angle: 120° Quick-change door hinge pins Standardized locking system with sash fastener RAL 7035 powder-coated both inside and out										
	250	200	150	1	1	112	167	220	150	<b>CS-2520/150</b> 111646
	300	200	150	1	1	112	167	270	150	<b>CS-32/150</b> 111647
	300	300	150	1	2	112	232	270	250	<b>CS-33/150</b> 111648
	300	300	200	1	2	172	262	270	250	<b>CS-33/200</b> 111649
	300	400	200	1	2	172	332	270	350	<b>CS-34/200</b> 111680
	400	300	150	1	2	112	232	370	250	<b>CS-43/150</b> 111681
	400	300	200	1	2	172	262	370	250	<b>CS-43/200</b> 111682
	400	400	150	1	2	112	332	370	350	<b>CS-44/150</b> 111683
	400	400	200	1	2	172	332	370	350	<b>CS-44/200</b> 111684
	400	600	200	1	2	172	532	370	550	<b>CS-46/200</b> 111685
	400	600	250	1	2	172	532	370	550	<b>CS-46/250</b> 111686
	400	600	300	1	2	172	532	370	550	<b>CS-46/300</b> 111687
	500	400	150	2	2	112	332	470	350	<b>CS-54/150</b> 111688
	500	400	200	2	2	172	332	470	350	<b>CS-54/200</b> 111689
	500	400	250	2	2	172	332	470	350	<b>CS-54/250</b> 111690
	500	500	250	2	2	172	432	470	450	<b>CS-55/250</b> 111691
	600	400	150	2	2	112	332	570	350	<b>CS-64/150</b> 111692
	600	400	200	2	2	172	332	570	350	<b>CS-64/200</b> 111693
	600	400	250	2	2	172	332	570	350	<b>CS-64/250</b> 111694
	600	500	150	2	2	112	332	570	450	<b>CS-65/150</b> 111695
	600	500	200	2	2	172	432	570	450	<b>CS-65/200</b> 111696
	600	500	250	2	2	172	432	570	450	<b>CS-65/250</b> 111697
	600	600	200	2	2	172	532	570	550	<b>CS-66/200</b> 111698
	600	600	250	2	2	172	532	570	550	<b>CS-66/250</b> 111699
	600	600	300	2	2	172	532	570	550	<b>CS-66/300</b> 111700
	600	800	300	2	2	172	732	570	750	<b>CS-68/300</b> 111701
	700	500	200	2	2	172	432	670	450	<b>CS-75/200</b> 111702
	700	500	250	2	2	172	432	670	450	<b>CS-75/250</b> 111703
800	400	200	2	2	172	332	770	350	<b>CS-84/200</b> 111704	
800	400	250	2	2	172	332	770	350	<b>CS-84/250</b> 111705	









	Dimensions			Locks	Door rail	Flange plates		Mounting plates		Part no. Article no.
	Height mm	Width mm	Depth mm	Quantity	Quantity	Width mm	Depth mm	Height mm	Width mm	
<b>Wall-mount enclosures with mounting plate</b>										
	800	600	200	2	2	172	532	770	550	<b>CS-86/200</b> 111706
	800	600	250	2	2	172	532	770	550	<b>CS-86/250</b> 111707
	800	600	300	2	2	172	532	770	550	<b>CS-86/300</b> 111708
	800	800	200	2	2	172	732	770	750	<b>CS-88/200</b> 111709
	800	800	300	2	2	172	732	770	750	<b>CS-88/300</b> 111710
	800	1000	300	2	2	172	932	770	950	<b>CS-810/300</b> 111711
	1000	600	250	1 (3-point)	2	172	532	970	550	<b>CS-106/250</b> 111712
	1000	600	300	1 (3-point)	2	172	532	970	550	<b>CS-106/300</b> 111713
	1000	800	250	1 (3-point)	2	172	732	970	750	<b>CS-108/250</b> 111714
	1000	800	300	1 (3-point)	2	172	732	970	750	<b>CS-108/300</b> 111715
	1000	1000	300	1 (3-point)	2	172	932	970	950	<b>CS-1010/300</b> 111716
	1200	600	250	1 (3-point)	2	172	532	1170	550	<b>CS-126/250</b> 111717
	1200	800	300	1 (3-point)	2	172	732	1170	750	<b>CS-128/300</b> 111718
	1200	1000	300	1 (3-point)	2	172	932	1170	950	<b>CS-1210/300</b> 111719
	1200	1200	250	1 (3-point)	2	2 x 172	532	1170	1150	<b>CS-1212/250</b> 111720

	For use with enclosures Width mm	Depth mm	Part no. Article no.
<b>Mounting bars for door rails and cable ducts</b>			
For mounting on vertical door rails For screwless mounting of KL... cable ducts; snaps onto the back of cable duct covers M6 fixing holes every 25 mm Galvanized sheet steel			
	300	-	<b>MTR-D3-CS</b> 140530
	400	-	<b>MTR-D4-CS</b> 140531
	500	-	<b>MTR-D5-CS</b> 140532
	600	-	<b>MTR-D6-CS</b> 140533
	800	-	<b>MTR-D8-CS</b> 140534
<b>Depth adjustment elements</b>			
Depth can be adjusted in 25 mm increments Galvanized sheet steel Includes fasteners			
	-	150	<b>DAS-SET/150-CS</b> 138656
	-	200	<b>DAS-SET/200-CS</b> 138657
	-	250	<b>DAS-SET/250-CS</b> 138658
	-	300	<b>DAS-SET/300-CS</b> 138659

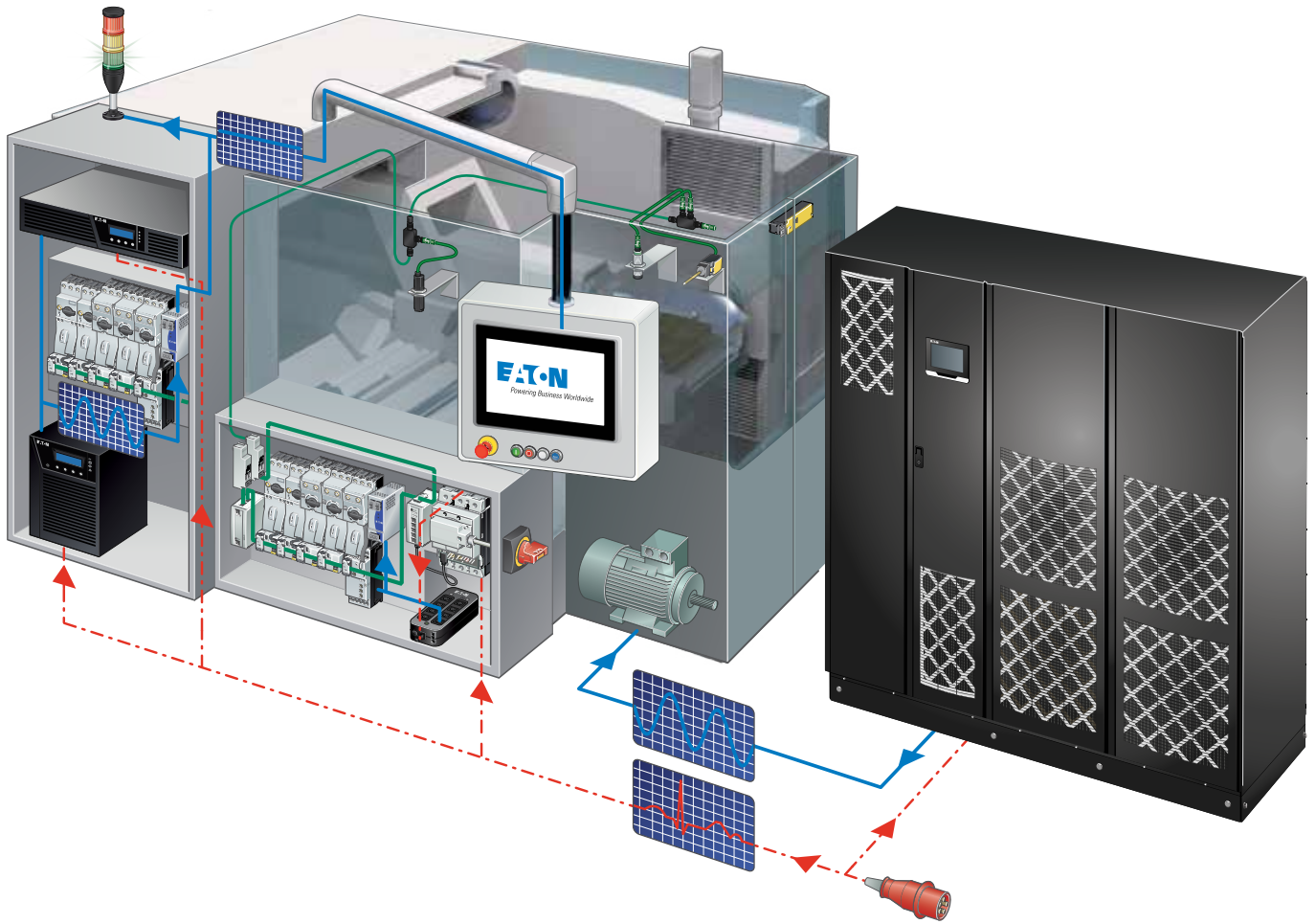
Description	Part no. Article no.
<p><b>Wall-mounting bracket kit</b></p> <p>For mounting the enclosure on a wall For vertical or horizontal mounting Galvanized sheet steel, 3 mm thick Each kit contains four wall-mounting brackets including fasteners and an IP66 gasket</p>	
	<p><b>WFB-SET-CS</b> 112639</p>
<p><b>Comfort rotary handles</b></p> <p>Rotary handle that can accommodate all standardized cylinder locks Complete kit With integrated lock-position indicator Suitable for all LC-... universal locks Handle made from high-grade, impact-resistant pressure-cast zinc For standardized 22.5 x 20.4 mm door cutouts Dusty grey RAL 7037, powder-coated</p>	
	<p>Complete kit, cylinder locks must be ordered separately</p> <p><b>PHZ-A-COMP</b> 133105</p>
	<p>Retrofit kit, cylinder locks must be ordered separately</p> <p><b>PHZ-A-ADD-ON</b> 133106</p>
<p><b>Cylinder locks for comfort rotary handles</b></p> <p>For use with comfort rotary and toggle handles Lock cylinder to DIN 18252 and DIN EN 1303 10/30-cylinder lock with nickel-silver tumblers Lock bit with eight adjustable positions, five pin pairs</p>	
	<p>Keyed alike</p> <p><b>PHZ-E10/30-GS</b> 138574</p>
	<p>Keyed different</p> <p><b>PHZ-E10/30-VS</b> 138575</p>
<p><b>Spare key for half-cylinder locks</b></p> <p>PHZ-E...-GS half-cylinder locks</p>	
	<p>Single-key for cylinder locks PHZ-E10/30-GS</p> <p><b>KEY-E10/30-GS</b> 138576</p>

	For use with enclosures		Flange apertures Quantity	Part no.	Article no.
	Width mm	Depth mm			
<b>Bottom plates with flange apertures</b>					
For F3A flanges Can also be used as a top plate by turning the enclosure by 180° Not suitable for CS-.../150 enclosures Material: sheet steel Surface finish: RAL 7035 powder-coated					
	300	-	1	<b>AFP-3-CS</b>	112914
	400	-	1	<b>AFP-4-CS</b>	112915
	500	-	1	<b>AFP-5-CS</b>	112916
	600	-	2	<b>AFP-6-CS</b>	112917
	800	-	3	<b>AFP-8-CS</b>	112918
	1000	-	3	<b>AFP-10-CS</b>	112919
	1200	-	2 x 2	<b>AFP-12-CS</b>	112920

	For use with enclosures		Flange apertures Quantity	Part no.	Article no.
	Width mm	Depth mm			
<b>Cable marshalling bases</b>					
Height: 200 mm Sheet steel, RAL 7035 powder-coated With removable front and side panels Includes fasteners					
	600	250	-	<b>PLI-6/250-200-CS</b>	140472
	600	300	-	<b>PLI-6/300-200-CS</b>	140473
	800	250	-	<b>PLI-8/250-200-CS</b>	140474
	800	300	-	<b>PLI-8/300-200-CS</b>	140475
	1000	300	-	<b>PLI-10/300-200-CS</b>	140476
	1200	250	-	<b>PLI-12/250-200-CS</b>	140477

	Material	Description	Cable entry	Part no.	Article no.
<b>Flanges</b>					
	Insulating material	Blank plate	-	<b>F3A-0</b>	074182
	Insulating material	With metric cable-entry knockouts	6 x M25/16; 8 x M32/20, 4 x M16	<b>F3A-4</b>	081301
	Insulating material	With metric cable-entry knockouts	2 x M20 8 x M25/16 4 x M32/20 1 x M50/32	<b>F3A-8</b>	091468
	Insulating material	With metric cable-entry knockouts	12 x M20, 2 x M16 2 x M40/25 2 x M50/32	<b>F3A-12</b>	076555
	Insulating material	With metric cable-entry knockouts	24 x M16 13 x M20	<b>F3A-34</b>	078928
	Insulating material	With cable grommets	Two cables with cross-sections up to 70 mm	<b>F3A-KTD</b>	083674
	Insulating material	Foam-rubber flange	40 cables, Ø 10 - 13 mm Four cables, Ø 17 - 21 mm Two cables, Ø 27 - 30 mm	<b>F3A-D</b>	010145
	Sheet steel	Blank plate, 2 mm, RAL 7035 powder-coated, foam gasket	-	<b>F3A-XP</b>	113426





## Using UPS systems to increase machine availability



Performance software supports the intelligent monitoring, management and soft shutdown of distributed UPSs. Visit [www.eaton.com/intelligentpower](http://www.eaton.com/intelligentpower) to watch our demo videos and download the software.

For most companies in the manufacturing sector, maintaining the availability of machinery and equipment is a top priority. Downtime, data loss and the need to reset machines and systems represent a significant cost in terms of both time and money.

To mitigate these issues, we offer safety and monitoring systems that prevent and counteract power interruptions and power failures.

Particularly in view of the increasing use of green power and the associated reduction in power quality, safety and monitoring systems are required to bridge power fluctuations and power failures and automatically take emergency measures.

The purpose of these systems is to shorten start-up and process runtimes while reducing energy consumption and increasing efficiency.



# Eaton UPS systems ensure comprehensive protection at all times

## Ensuring the reliability of production processes

- Preventing downtime
- Reducing start-up times

## Protecting employees

- Maintaining the functionality of safety functions and circuit breakers
- Increasing operational machine safety

## Protection of machines

- Protecting sensitive electronic components from power outages and “dirty” power

## Protection of products

- Maintaining the functionality of cooling and refrigeration systems until the back-up power comes on

## Environmental protection

- Increasing machine effectiveness and energy savings
- Due to growth in the use of renewable energy sources, the power grid is expected to become less stable. Our UPS systems “clean” and secure the voltage and bridge periods of power outage. This is our contribution to making your power grid more stable and environmentally friendly.

## Protection of buildings


- Maintaining the functionality of safety-related measures such as process monitoring in biogas plants or the monitoring buildings.

## Data protection

- Preventing data loss due to power failures
- Lower operating costs -> higher economic efficiency







For more information about our high-quality power technology products, visit [Eaton.com/powerquality](http://Eaton.com/powerquality).

Type of power quality issue	Solution	Topology	Product details
Power outage	Series 3 single-phase UPSs	Offline	<ul style="list-style-type: none"> <li>• Cost-effective</li> <li>• Compact design</li> <li>• Plug with protective contact (SCHUKO)</li> <li>• Replaceable batteries</li> <li>• 500 – 1600 VA</li> </ul>
Voltage dip			
Overvoltage peaks			
Undervoltage (voltage drop)	Series 5 single-phase UPSs	Line interactive	<ul style="list-style-type: none"> <li>• Highly compact design</li> <li>• Graphic LCD display</li> <li>• Energy consumption metering</li> <li>• Up to 99 % efficiency</li> <li>• Replaceable batteries</li> <li>• 500 – 3000 VA</li> </ul>
Overvoltage			
Electrical interference	Series 9 single- and three-phase UPSs	Online	<ul style="list-style-type: none"> <li>• Maximum voltage protection</li> <li>• Multi-language graphic display</li> <li>• Remote monitoring</li> <li>• 700 VA – 1200 kVA</li> </ul>
Frequency instability			
Peaks caused by switching operations			
Harmonic distortion (harmonics)			








# Uninterruptible power supplies (UPSs)

## Single-phase UPSs

	UPS rating	UPS rating	Input connection	Output connections	Article no.	
	VA	W	Type	Quantity / type		
<b>Eaton 5P line-interactive UPS</b>						
Connectivity: USB, serial port, slot for optional management cards Remote power off, remote on/off Output contacts: three optocouplers						
	650	420	IEC320 10 A	4 x IEC320 10 A	<b>5P650i</b>	
	850	600		6 x IEC320 10 A	<b>5P850i</b>	
	1150	770		8 x IEC320 10 A	<b>5P1150i</b>	
	1550	1100			<b>5P1550i</b>	
	650	420	IEC320 10 A	4 x IEC320 10 A	<b>5P650iR</b>	
	850	600			<b>5P850iR</b>	
	1150	770		6 x IEC320 10 A	<b>5P1150iR</b>	
	1550	1100			<b>5P1550iR</b>	
<b>Eaton 5PX line-interactive UPS</b>						
Connectivity: USB, serial port, slot for optional management card (network management card included with 5PX3000iRTN) Remote power off, remote on/off Output contacts: three optocouplers						
	1500	1350	IEC320 10 A	8 x IEC320 10 A	<b>5PX1500iRT</b>	
	2200	1980	IEC320 16 A	8 x IEC320 10 A, 1 x IEC320 16 A	<b>5PX2200iRT</b>	
	3000	2700			<b>5PX3000iRTN</b>	
	3000	2700	IEC320 16 A	8 x IEC320 10 A, 1 x IEC320 16 A	<b>5PX3000iRT3U</b>	
<b>Eaton 9SX Online double conversion UPS</b>						
Connectivity: USB, serial port, slot for optional management cards Remote power off, remote on/off Output contacts: two optocouplers, one relay One programmable input contact (DB9)						
	700	630	IEC320 10 A	6 x IEC320 10 A	<b>9SX700I</b>	
	1000	900				<b>9SX1000I</b>
	1500	1350				
	2000	1800	8 x IEC320 10 A, 1 x IEC320 16 A	<b>9SX2000I</b>		
	3000	2700	IEC320 16 A		<b>9SX3000I</b>	
	5000	4500	Hard-wired	Hard-wired	<b>9SX5KI</b>	
	6000	5400			<b>9SX6KI</b>	
	1000	900	IEC320 10 A	6 x IEC320 10 A	<b>9SX1000iR</b>	
	1500	1350			<b>9SX1500iR</b>	
	2000	1800	IEC320 16 A	8 x IEC320 10 A, 1 x IEC320 16 A	<b>9SX2000iR</b>	
	3000	2700			<b>9SX3000iR</b>	

# Uninterruptible power supplies (UPSs)

Single-phase UPSs, three-phase UPSs

	UPS rating	UPS rating	Input connection	Output connections	Article no.			
	VA	W	Type	Quantity / type				
<b>Eaton 9PX online double-conversion UPS</b>								
Connectivity: USB, serial port, slot for optional management cards Remote power off, remote on/off Output contacts: four relays Maintenance bypass switch								
1:1 topology								
	1000	1000	IEC 320 10A	8 x IEC320 10 A	9PX1000IRT2U			
	1500	1500			9PX1500IRT2U			
	2200	2200	IEC 320 16A	8 x IEC320 10 A, 2 x IEC320 16 A	9PX2200IRT3U			
	3000	3000			9PX3000IRT3U			
	5000	4500	Hard-wired	3 x IEC320 10 A, 2 x IEC320 16 A, hard-wired	9PX5KiBP			
	6000	5400			9PX6KiBP			
1:1 topology								
	8000	7200	Hard-wired	4 x IEC320 16 A, hard-wired	9PX8KiBP			
	11000	10000			9PX11KiBP			
3:1 topology								
	6000	5400	Hard-wired	4 x IEC320 16 A, hard-wired	9PX6KiBP31			
	8000	7200			9PX8KiBP31			
	11000	10000			9PX11KiBP31			
	UPS rating	UPS rating	Maintenance bypass switch	Input switch	With integrated batteries	Battery breaker	Type	Article no.
	kVA	kW						
<b>Eaton 93E online UPS, 15-18 kVA</b>								
	15	13.5	✓	✓	-	✓	93E 15 kVA	93E15KMBSB
			✓	✓	✓	✓	93E 15 kVA 1 x 9 Ah	93E15KMBSBI
			✓	✓	✓	✓	93E 15 kVA 2 x 9 Ah	93E15KMBSBI
	20	18	✓	✓	-	✓	93E 20 kVA	93E20KMBSB
			✓	✓	✓	✓	93E 20 kVA 2 x 9 Ah	93E20KMBSBI
	30	27	✓	✓	-	✓	93E 30 kVA	93E30KMBSB
			✓	✓	✓	✓	93E 30 kVA 3 x 9 Ah	93E30KMBSBI
	40	36	✓	✓	-	✓	93E 40 kVA	93E40KMBSB
			✓	✓	✓	✓	93E 40 kVA 4 x 9 Ah	93E40KMBSBI
	60	54	✓	✓	-	-	93E 60 kVA	93E60KMBSN
	80	72	✓	✓	-	-	93E 80 kVA	93E80KMBSN
	<b>Eaton 93E G2 online UPS, 100-200 kVA</b>							
	100	90	-	-	-	-	93E G2 100 kVA	93E100K-G2
	100	90	✓	✓	-	-	93E G2 100kVA MBS	93E100KMBS-G2
	120	108	-	-	-	-	93E G2 120kVA	93E120K-G2
	120	108	✓	✓	-	-	93E G2 120kVA MBS	93E120KMBS-G2
	160	144	-	-	-	-	93E G2 160kVA	93E160K-G2
	200	180	-	-	-	-	93E G2 200kVA	93E200K-G2



# Uninterruptible power supplies (UPSs)

## Three-phase UPSs

### Eaton 91PS & 93PS online UPS, 8-40 kVA





Input connections		UPS rating		Integrated batteries	Type	Article no.
Input phases	Output phases	kVA	kW	Quantity (blocks or strings), capacity		
1 or 3	1	8	8	0	91PS-8(10)-0-MBS	91PS8MBS
1 or 3	1	8	8	1 x 9 Ah	91PS-8(10)-1x9Ah-MBS	91PS8MBSI
1 or 3	1	10	10	0	91PS-10(10)-0-MBS	91PS10MBS
1 or 3	1	10	10	1 x 9 Ah	91PS-10(10)-1x9Ah-MBS	91PS10MBSI
3	1	15	15	0	91PS-15(15)-15-0-MBS-6	BG51A0306A01100000
3	1	15	15	1 x 9 Ah	91PS-15(15)-15-1x9Ah-MBS-6	BG51AA306A01100000
3	1	15	15	2 x 9 Ah	91PS-15(15)-15-2x9Ah-MBS-6	BG51AB306A01100000
3	1	20	20	0	91PS-20(30)-30-0-MBS-6	BK02A0306A01100000
3	1	20	20	2 x 9 Ah	91PS-20(30)-30-2x9Ah-MBS-6	BK02AB306A01100000
3	1	20	20	3 x 9 Ah	91PS-20(30)-30-3x9Ah-MBS-6	BK02AC306A01100000
3	1	20	20	4 x 9 Ah	91PS-20(30)-30-4x9Ah-MBS-6	BK02AD306A01100000
3	1	30	30	0	91PS-30(30)-30-0-MBS-6	BK03A0306A01100000
3	1	30	30	3 x 9 Ah	91PS-30(30)-30-3x9Ah-MBS-6	BK03AC306A01100000
3	1	30	30	4 x 9 Ah	91PS-30(30)-30-4x9Ah-MBS-6	BK03AD306A01100000
3	3	8	8	0	93PS-8(10)-0-MBS	93PS8MBS
3	3	8	8	1 x 9 Ah	93PS-8(10)-1x9Ah-MBS	93PS8MBSI
3	3	10	10	0	93PS-10(10)-0-MBS	93PS10MBS
3	3	10	10	1 x 9 Ah	93PS-10(10)-1x9Ah-MBS	93PS10MBSI
3	3	15	15	0	93PS-15(20)-15-0-MBS-6	BA51A0306A01100000
3	3	15	15	1 x 9 Ah	93PS-15(20)-15-1x9Ah-MBS-6	BA51AA306A01100000
3	3	15	15	2 x 9 Ah	93PS-15(20)-15-2x9Ah-MBS-6	BA51AB306A01100000
3	3	20	20	0	93PS-20(20)-20-0-MBS-6	BA02A0306A01100000
3	3	20	20	2 x 9 Ah	93PS-20(20)-20-2x9Ah-MBS-6	BA02AB306A01100000
3	3	30	30	0	93PS-30(40)-30-0-MBS-6	BD03A0306A01100000
3	3	30	30	3 x 9 Ah	93PS-30(40)-30-3x9Ah-MBS-6	BD03AC306A01100000
3	3	30	30	4 x 9 Ah	93PS-30(40)-30-4x9Ah-MBS-6	BD03AD306A01100000
3	3	40	40	0	93PS-40(40)-40-0-MBS-6	BD04A0306A01100000
3	3	40	40	3 x 9 Ah	93PS-40(40)-40-3x9Ah-MBS-6	BD04AC306A01100000
3	3	40	40	4 x 9 Ah	93PS-40(40)-40-4x9Ah-MBS-6	BD04AD306A01100000

	UPS rating	UPS rating	Maintenance bypass switch	Battery breaker	Type	Article no.
	kVA	kW				
Eaton 93PM G2 online UPS, 50-360 kVA	50	50	✓	✓	93PM-G2-50(200)-BB-MBS-6	GA20A2736A03100000
	60	54	✓	✓	93PM-G2-60(240)-BB-MBS-6	GB24A2736A03100000
	100	100	✓	✓	93PM-G2-100(200)-BB-MBS-6	GA20A2736A03200000
	120	108	✓	✓	93PM-G2-120(240)-BB-MBS-6	GB24A2736A03200000
	150	150	✓	✓	93PM-G2-150(200)-BB-MBS-6	GA20A2736A03300000
	180	162	✓	✓	93PM-G2-180(240)-BB-MBS-6	GB24A2736A03300000
	200	200	✓	✓	93PM-G2-200(200)-BB-MBS-6	GA20A2736A03400000
	240	216	✓	✓	93PM-G2-240(240)-BB-MBS-6	GB24A2736A03400000
	250	250	-	✓	93PM-G2-250(300)-BB-6	GC30A2636A03500000
	300	300	-	✓	93PM-G2-300(300)-BB-6	GC30A2636A03600000
	300	270	-	✓	93PM-G2-300(360)-BB-6	GD36A2636A03500000
	360	324	-	✓	93PM-G2-360(360)-BB-6	GD36A2636A03600000





# Uninterruptible power supplies (UPSs)

	UPS rating		Maintenance bypass switch	Input switch	With integrated batteries	Battery breaker	Type	Article no.
	kVA	kW						
<b>Eaton 93PM online UPS, 30-500 kVA</b>								
	30	30	-	✓	-	✓	93PM-30(50)-IS-BB-0-6	AA03AA206A03000000
	30	30	-	✓	✓	✓	93PM-30(50)-IS-BB-6x9Ah-6	AA03A8206A03000000
	30	30	✓	✓	-	✓	93PM-30(50)-IS-BB-0-MBS-6	AA03AA306A03000000
	30	30	✓	✓	✓	✓	93PM-30(50)-IS-BB-6x9Ah-MBS-6	AA03A8306A03000000
	40	40	-	✓	-	✓	93PM-40(50)-IS-BB-0-6	AA04AA206A03000000
	40	40	-	✓	✓	✓	93PM-40(50)-IS-BB-6x9Ah-6	AA04A8206A03000000
	40	40	✓	✓	-	✓	93PM-40(50)-IS-BB-0-MBS-6	AA04AA306A03000000
	40	40	✓	✓	✓	✓	93PM-40(50)-IS-BB-6x9Ah-MBS-6	AA04A8306A03000000
	50	50	-	✓	-	✓	93PM-50(50)-IS-BB-0-6	AA05AA206A03000000
	50	50	-	✓	✓	✓	93PM-50(50)-IS-BB-6x9Ah-6	AA05A8206A03000000
	50	50	✓	✓	✓	✓	93PM-50(50)-IS-BB-0-MBS-6	AA05AA306A03000000
	50	50	✓	✓	-	✓	93PM-50(50)-IS-BB-6x9Ah-MBS-6	AA05A8306A03000000
	60	60	-	✓	-	✓	93PM-60(60)-IS-BB-0-6	AA06AA206A03002000
	60	60	-	✓	✓	✓	93PM-60(60)-IS-BB-6x9Ah-6	AA06A8206A03002000
	60	60	✓	✓	✓	✓	93PM-60(60)-IS-BB-0-MBS-6	AA06AA306A03002000
	60	60	✓	✓	-	✓	93PM-60(60)-IS-BB-6x9Ah-MBS-6	AA06A8306A03002000
	80	80	-	-	-	-	93PM-80(100)-6	AE08A0206A03000000
	80	80	✓	✓	-	-	93PM-80(100)-IS-MBS-6	AE08A0306A03000000
	80	80	-	✓	-	✓	93PM-80(100)-IS-BB-6	AE08AA206A03000000
	80	80	✓	✓	-	✓	93PM-80(100)-IS-BB-MBS-6	AE08AA306A03000000
	100	100	-	-	-	-	93PM-100(100)-6	AE10A0206A03000000
	100	100	✓	✓	-	-	93PM-100(100)-IS-MBS-6	AE10A0306A03000000
	100	100	-	✓	-	✓	93PM-100(100)-IS-BB-6	AE10AA206A03000000
	100	100	✓	✓	-	✓	93PM-100(100)-IS-BB-MBS-6	AE10AA306A03000000
	100	100	-	-	-	-	93PM-100(400)-0	D010A0200A03000000
	150	150	-	-	-	-	93PM-150(400)-0	D115A0200A03000000
200	200	-	-	-	-	93PM-200(400)-0	D220A0200A03000000	
250	250	-	-	-	-	93PM-250(400)-0	D325A0200A03000000	
300	300	-	-	-	-	93PM-300(400)-0	D430A0200A03000000	
350	350	-	-	-	-	93PM-350(400)-0	D535A0200A03000000	
400	400	-	-	-	-	93PM-400(400)-0	D640A0200A03000000	
450	427	-	-	-	-	93PM-450(500)-0	D645A0200A03001000	
500	450	-	-	-	-	93PM-500(500)-0	D650A0200A03002000	
<b>Power Xpert 9395P online UPS, 250-1200 kVA</b>								
	300	275	-	-	-	-	9395P-300(300)	FA3030621002000000
	300	275	✓	-	-	-	9395P-300(300)-MBS	FA30306B1002000000
	600	550	-	-	-	-	9395P-600(600)	FC6030621002001000
	750	750	-	-	-	-	9395P-750(900)	FE7530621001002000
	900	825	-	-	-	-	9395P-900(900)	FE9030621001002000
	1000	1000	-	-	-	-	9395P-1000(1200)	FH1030621001003000
	1200	1100	-	-	-	-	9395P-1200(1200)	FH1230621001003000



# Global export of machines and systems

The European machine building sector is heavily export-oriented. Even companies that are not yet exporting their machines therefore need to be prepared. Eaton offers switchgear and protective devices that cover all essential approvals and certifications for machine building and system engineering. In most countries, these approvals are the only prerequisite for successful export, as components are uniformly evaluated and processed in accordance with the established IEC guidelines, which are the global standard. The European CE marking serves as a passport for exports, and not only within Europe.



## Devices that are suitable for global use

Most Moeller series switchgear and protective devices from Eaton are suitable for global use. The standard versions of these devices come with all the necessary approvals and certifications. These universal devices can thus be used around the world.

including our

- pilot devices, position switches
- contactors and various time and special relays
- motor-protective circuit breakers and relays
- electronic components and systems.

Eaton offers IEC circuit breakers and switch-disconnectors, which can be used in the vast majority of countries around the world, as well as NA circuit breakers with almost the same dimensions and accessories for the North American market. This simplifies the selection of equipment, given that the technical data can vary considerably due to the different North American standards.

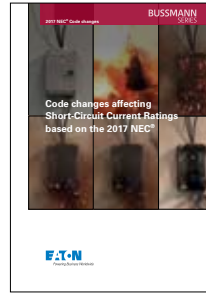


Get more information

# The standards for electrical products and their applications are not internationally harmonized.

The most significant deviations from the IEC standards are found in North America, i.e. in the U.S.A. and Canada. Many newcomers to the export business are initially surprised by the different opinions and solutions that prevail in different countries.

For example, for export to North America, special components are sometimes required, such as dedicated handles for main switches that can only be actuated by deliberately operating an additional handle when the control cabinet door is open. Likewise, European motor-protective circuit breakers are only accepted in combination with an upstream protective device (such as a UL248 fuse) or with increased air and creepage distances at the input terminals. Eaton is your expert partner for all matters related to export.



## Notes on the changes to the 2020 NEC and 2017 NEC

This publication covers all major “chapters,” “articles” and “parts” of the NEC 2020. Each code section is labeled “REVISION” or “NEW,” followed by an explanation of its significance and references to the relevant NEC sections, with information about what to look out for in order to determine if a machine is code-compliant, including a detailed explanation of the standard where necessary.

## Accurate information is an important key to success

kühlstoffgehäuse obenventil offen, HxBxT=236x234x150mm, NA-Ausführung		EATON Powering Business Worldwide
Typ	C22-135-NA	
Art.-Nr.	002234	
<b>Lieferprogramm</b>		
Serienum.		Isolierstoffgehäuse C für Normsterile
Grundfunktion		Leergehäuse
Produktfunktion		Vorriegelgehäuse für Normsterile
Einzelteil/Komponente		Vorriegelgehäuse mit Circuit und Funktion
Schalter		Einzelgerät
Beschreibung		IP65
Ausführung Detail		in allen 4 Seiten mit ablenkbaren glatten Flanschen bestückt
Überflächeneigenschaften		Behältergehäuse für Wundheilung
Abmessungen		produziertes Druckverförmige
Bräute	mm	234
Höhe	mm	206
Tiefe	mm	160
Einheitsmaß	mm	125
Ausführung Unterarm		Sekundärseite mit glatten Flanschen
Ausführung Unterarm		Sekundärseite mit ablenkbaren glatten Flanschen
<b>Approbationen</b>		
Product Standards	UL 508A, CSA-C22.2 No.94, IEC/EN60529, CE marking	
UL File No.	29429, E337418	
UL Category Control No.	NITW	
CSA File No.	27130	
CSA Class No.	3211-07	
North America Certification	UL listed, CSA certified	
Specially designed for North America	Yes	
Suitable for	Industrial Control Panels	
Current Limiting Circuit-Breaker	No	
Degree of Protection	IEC: IP65; UL/CSA Types 1, 12, 13, 4X, indoor only	
<b>Allgemeines</b>		
Normen und Bestimmungen	IEC 60529 UL 508A UL 508B UL 508C UL 508D UL 508E UL 508F UL 508G UL 508H UL 508I UL 508J UL 508K UL 508L UL 508M UL 508N UL 508O UL 508P UL 508Q UL 508R UL 508S UL 508T UL 508U UL 508V UL 508W UL 508X UL 508Y UL 508Z	
Klimatyp	Feuchte Wärme, Standard, nach IEC 60529-2-10	
Umgebungsparameter	Feuchte Wärme, optional, nach IEC 60529-2-10	
Temperatur	40 - 100	
Schalter	IP65	

The Eaton online catalog provides reliable information about the North American approvals of our components. For each product, you will find information about the applicable product standard, the e-file number, the category control number or the CSA class number. You can incorporate this information into your parts lists and documentation to ensure that you are well prepared for acceptance testing.

Approbationen	
Product Standards	UL 508A; CSA-C22.2 No.94; IEC/EN60529; CE marking
UL File No.	E54120, E337418
UL Category Control No.	NITW
CSA File No.	27130
CSA Class No.	3211-07
North America Certification	UL listed, CSA certified
Specially designed for North America	Yes
Suitable for	Industrial Control Panels
Current Limiting Circuit-Breaker	No
Degree of Protection	IEC: IP65; UL/CSA Types 1, 12, 13, 4X, indoor only

Up to 13 different pieces of information are listed for each product, for example, whether the product is suitable for use in feeders or branch circuits, the maximum operating voltage or the respective North American protection class, for example UL/CSA Type 4X.



The approvals and certifications for each component type are available at [Eaton.com/documentation](https://www.eaton.com/documentation), with information about the available certificates and – depending on the authority – also the product report. The same information can also be found in the databases maintained by the respective authorities.

Taking advantage of the large number of Eaton publications on the topic of exports to North America will help you to avoid unpleasant surprises. These publications explain the implementation of the applicable codes and standards and the different local practices.

You can access our white papers at Eaton.com, search for „export“ where they can be downloaded free of charge.

# Comprehensive services for your machine control system

Powering business: For Eaton, this promise is about more than providing reliable products and technologies. By means of expert advice and specialized services, we aim to provide you with engineering solutions that are perfectly tailored to your specifications, enabling us to act as one-stop shop for your success.

## Engineering services for your machine control system

From the initial idea to the implementation of the application – Eaton supports you with expert advice at every step along the path to the development of your machine. In conjunction with the expertise of our Lean Solution Partners, the innovative Eaton products will give you a decisive competitive advantage when it comes to technological leadership.

Eaton supports you in selecting the right products, advises you on the electrical and hydraulic design of your machines and assists you with the implementation and commissioning of your applications and programs. The combination of these services with Eaton components ensures that the resulting solution will be precisely tailored to your needs.

## Solutions for successful export to North America

Our long-standing business partnership with the SAE Schaltanlagenbau Erfurt, a certified manufacturer of control cabinets for use in North America, enables us to offer our customers solutions that are fully equipped for export to the U.S. and Canada. In addition to offering products and control cabinets manufactured in accordance with UL508A and NFPA79, the partnership between Eaton and SAE also extends to expert seminars to support the successful export of electrical machinery and equipment to North America.





## Value Added Services (VAS) – your partner for a more profitable business



**Our Value Added Services team will support you in the following areas:**

- Optimization of procurement and ordering processes
- Improved product assembly and configuration
- Optimization of design processes
- Lower total costs
- Integrated solutions from a single source

**How can we create added value for you?  
Contact us at [VAS-EMEA@eaton.com](mailto:VAS-EMEA@eaton.com)**

### Kitting

Our VAS offers a kitting service to streamline production flows and processes, avoid unnecessary procedures and reduce packaging. All the required items can be ordered using the same part number and come in a single package.



### Assembly solutions

To reduce the time required for installing combinations of devices, VAS offers a plug-and-play solution. The Value Added Services Team can pre-assemble products for you and mount them on DIN rails, mounting plates or even using third-party components. In addition, the items can also be pre-wired using either conventional cables or our innovative SmartWire-DT system.

### Warehouse services

To increase efficiency and avoid wasting valuable time, all items can also be delivered in big packs, so that no repackaging is necessary. Eaton's VAS can also apply customized labels/barcodes and ship all ordered items in customer-specific packages, including Kanban containers.



### Software upload

The VAS Team can thus help you to reduce the time needed to set up a PLC, for example, by delivering the product together with pre-installed software and the corresponding user manual. Thanks to the pre-installed software and drivers, the PLC can then be quickly commissioned.



# How to find the right contact person



At Eaton, we believe that building and maintaining strong relationships with our customers is something that deserves our undivided attention.

This is why you can rest assured knowing that you will be able to count on us for every project from the very start. To find out whom to contact for your needs, please visit our website:

In just a few steps, we will get you the contact information for the person or team in charge of support for your specific industry in your region.

To find the right contact person anywhere in the world, visit:

→ [Eaton.com/EatonCare](https://www.eaton.com/EatonCare)

## Questions regarding uninterrupted power supplies (UPS)?

Our Technical Service staff will be more than glad to assist you if you are experiencing any difficulties with an Eaton UPS, DC power supply system, or any other Power Quality product.

Our Technical Support staff is there to answer any questions you may have regarding our products.

To find the right contact person anywhere in the world, please visit [www.eaton.eu/contact](https://www.eaton.eu/contact)

## Do you have any questions about our filtration solutions

Please contact the European headquarters of the Filtration Division and you will be put through to the appropriate contact person.

### **Customer Service:**

Eaton Technologies GmbH  
Auf der Heide 2  
53947 Nettersheim  
Germany

Tel.: +49 2486 809-0

Fax: +49 2486 809 800

[info-filtraton@eaton.com](mailto:info-filtraton@eaton.com)

## Eatons After Sales Service

Eaton is known for its unparalleled after-sales support for all low-voltage switchgear, switchgear systems, and services.

For more detailed information, as well as to view our terms and conditions, please visit [www.eaton.eu/aftersales](https://www.eaton.eu/aftersales)

## Europe, Middle East, Africa 24/7 Hotline

For immediate support please call +49 (0) 180 5 223822\* (24/7). You will receive competent and fast, round the clock assistance, with unplanned machine and system stand stills, system malfunctions and device failures.

## Helpdesk

Eaton specialists: +49 (0) 228 602 3640 (Monday – Friday from 08:00 – 16:00 CET) or contact your local Eaton representative.

We offer extensive support from commissioning to application queries as well as in the area of fault analysis, which can also include remote diagnostics.

We can also offer you an individual consulting service contract which is tailor-made to suit your requirements. If you would like to communicate your service queries in writing, please use the following e-mail address:

[AfterSalesEGBonn@eaton.com](mailto:AfterSalesEGBonn@eaton.com)



We make what matters work.\*

\*At Eaton, we believe that power is a fundamental part of just about everything people do. That's why we're dedicated to helping our customers find new ways to manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. To improve people's lives, the communities where we live and work, and the planet our future generations depend upon. Because this is what really matters. And we're here to make sure it works.

**To learn more go to:**  
**[Eaton.com/whatmatters](https://www.eaton.com/whatmatters)**

**EATON**

*Powering Business Worldwide*

**We make what matters work.**

We make what matters work.\*

\*We at Eaton believe that energy is an essential part of everything people do. Technology, transportation, energy and infrastructure – these are all things the world relies on every day. At Eaton, we are committed to helping our customers find new ways to manage electrical, hydraulic and mechanical energy more efficiently, safely and sustainably. We do this to improve people's lives, the communities in which we live and work, and the planet on which future generations depend. Because that is what really matters. And we are here to make sure it gets done.

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**Eaton Industries GmbH**

Hein-Moeller-Str. 7–11  
D-53115 Bonn/Germany

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