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Controlling & Switching
Busbar Systems
Other Accessories

Catalog

Powering Business Worldwide

* 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.

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Powering Business Worldwide

We make what matters work.

SG10611

SG83911

SG82911

Description

– Switches
– Installation Contactors
– Relays
– Signalling Devices
– Transformers

SG10611

SG10711

SG10811

SG10911

Rated current (A)	Poles	Type Designation	Article No.	Units per package
Main Load Disconnector Switch (Isolator) IS				
16	1	IS-16/1	276254	12/120
16	2	IS-16/2	276255	1/60
16	3	IS-16/3	276256	1/40
16	4	IS-16/4	276257	1/30
20	1	IS-20/1	276258	12/120
20	2	IS-20/2	276259	1/60
20	3	IS-20/3	276260	1/40
20	4	IS-20/4	276261	1/30
25	1	IS-25/1	276262	12/120
25	2	IS-25/2	276263	1/60
25	3	IS-25/3	276264	1/40
25	4	IS-25/4	276265	1/30
32	1	IS-32/1	276266	12/120
32	2	IS-32/2	276267	1/60
32	3	IS-32/3	276268	1/40
32	4	IS-32/4	276269	1/30
40	1	IS-40/1	276270	12/120
40	2	IS-40/2	276271	1/60
40	3	IS-40/3	276272	1/40
40	4	IS-40/4	276273	1/30
63	1	IS-63/1	276274	12/120
63	2	IS-63/2	276275	1/60
63	3	IS-63/3	276276	1/40
63	4	IS-63/4	276277	1/30
80	1	IS-80/1	276278	12/120
80	2	IS-80/2	276279	1/60
80	3	IS-80/3	276280	1/40
80	4	IS-80/4	276281	1/30
100	1	IS-100/1	276282	12/120
100	2	IS-100/2	276283	1/60
100	3	IS-100/3	276284	1/40
100	4	IS-100/4	276285	1/30
125	1	IS-125/1	276286	12/120
125	2	IS-125/2	276287	1/60
125	3	IS-125/3	276288	1/40
125	4	IS-125/4	276289	1/30

sg01215

Description	Type Designation	Article No.	Units per package
Accessories			
Terminal cover	Z-IS/AK-1MU	276290	10/600

Switching interlock IS/SPE-1MU

- Without lock
- Also suitable for PFIM, PKNM

Terminal cover Z-IS/AK-1MU

- Can be sealed with leads
- Modular design, width 1 MU

Description Main Load Disconnector Switch (Isolator) IS

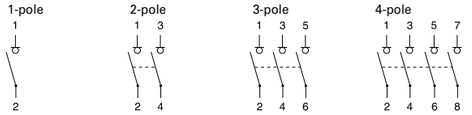
- Load circuit breaker with isolating function
- Design according to IEC/EN 60947-3
- Highly wear resistant contacts
- Quick make, black toggle
- Terminal capacity 50 mm²
- Compatible busbars with switchgear series xPole by use of the mouth terminal in combination with standard fork busbar

Technical Data

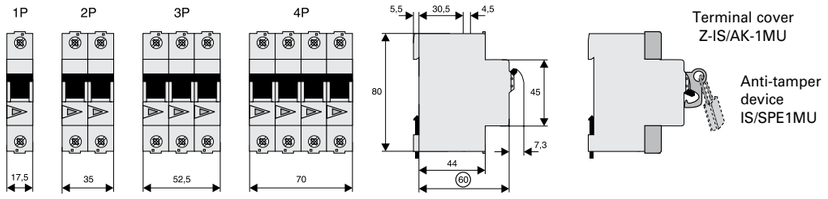
		IS-16	IS-20	IS-25	IS-32	IS-40	IS-63	IS-80	IS-100	IS-125
Electrical										
Design		according to IEC/EN 60947-3								
Rated voltage		240/415 V								
Frequency		50/60 Hz								
Rated insulation voltage	U_i	690 V~								
Rated peak withstand voltage	U_{imp}	6 kV								
Pollution degree		3								
Rated short-time withstand current	I_{cw}	2 kA								
Rated short-circuit making capacity	I_{cm}	2.8 kA								
Rated current 240/415 V, AC23A		16 A	20 A	25 A	32 A	40 A	63 A	80 A	100 A	125 A
Number of poles		1-, 2-, 3-, 4-pole								
Maximum back-up fuse		125 A gG								
Short-circuit current strength - with back-up fuse according to IEC/EN 60947-3		12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	10 kA	10 kA
Endurance										
operating cycles electrical components		≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 2,000
operating cycles mechanical components		≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 14,000

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm/pole
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Upper and lower terminals	Twin-purpose terminals
Terminal capacity	2.5 - 50 mm²
Busbar thickness	0.8 - 2 mm
Tightening torque of terminal screws	2.5 - 5 Nm
Function	irrespective of the position of installation

Connection diagram



Dimensions (mm)



Influence of ambient temperature on load carrying capacity (Temperature Derating)

	Ambient temperature °C								
Type	**-35**	**-25**	**-10**	**5**	**30**	**40**	**55**	**65**	**75**
IS-16	23.8	22.6	20.8	19.0	16	14.8	13.0	11.8	10.6
IS-20	29.8	28.3	26.0	23.8	20	18.5	16.3	14.8	13.3
IS-25	37.2	35.3	32.5	29.7	25	23.1	20.3	18.4	16.6
IS-32	47.6	45.2	41.6	38.0	32	29.6	26.0	23.6	21.2
IS-40	59.5	56.5	52.0	47.5	40	37.0	32.5	29.5	26.5
IS-63	93.7	89.0	81.9	74.8	63	58.3	51.2	46.5	41.7
IS-80	132	124	112	100	80	72.0	60.0	52.0	44.0
IS-100	165	155	140	125	100	90.0	75.0	65.0	55.0
IS-125	206	194	175	156	125	112	93.8	81.3	68.8

Values in the table display the nominal current (Ie) in ampere depending on the ambient temperature

NOTE: Actual current should not exceed the stated current for the respective ambient temperature

SG00912

Poles	Rated current (A)	Type Designation	Article No.	Units per package
Circuit Breaker ZP-A				
1	40	ZP-A40/1	248263	12 / 120
2	40	ZP-A40/2	248264	1 / 60
3	40	ZP-A40/3	248265	1 / 40
3+N	40	ZP-A40/3N	248266	1 / 30
1	63	ZP-A63/1	284906	12 / 120
2	63	ZP-A63/2	284907	1 / 60
3	63	ZP-A63/3	284908	1 / 40
3+N	63	ZP-A63/3N	284909	1 / 30

Description Circuit Breaker ZP-A

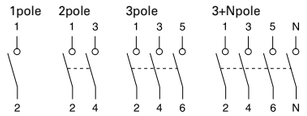
- Design according to IEC/EN 60947-1, -3
- Poles: 1, 2, 3, 3N
- Rated current: 40 A, 63 A
- Accessories for switchgear also for ZP-A usable!

Accessories:		
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Additional terminal 35 mm²	BB-UL-TEPA/35	169823
Anti-tamper device	Z-IS/SPE-1MU	274418

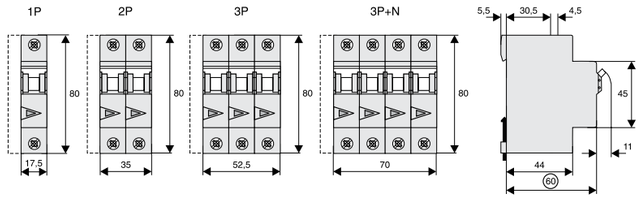
Technical Data

		ZP-A
Electrical		
Rated operational voltage	U_e	230/400 V AC
Rated frequency		50 Hz
Rated insulation voltage	U_i	440 V AC
Rated peak withstand voltage (1.2/50 µS)	U_{imp}	4 kV
Conventional thermal current	I_{th}	
ZP-A40		40 A
ZP-A63		63 A
Utilisation category AC22A		
Minimum voltage per contact	I_e	
ZP-A40		40 A AC
ZP-A63		63 A AC
Utilisation category AC23A		
Minimum voltage per contact	I_e	16 A AC
Short-circuit current strength with back-up fuse 40 A gG		3 kA (U = 240 V, cosφ = 0.87)
Endurance		
electrical components		≥ 8,000 switching operations
mechanical components		≥ 20,000 switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5 mm/pole
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274
Upper and lower terminals		lift terminals + guide for secure terminal
Terminal capacity		1.5-25 mm²
Terminal screws		M5 (Pozidrive) Z2
Tightening torque of terminal screws		max. 2.4 Nm

Connection diagram



Dimensions (mm)



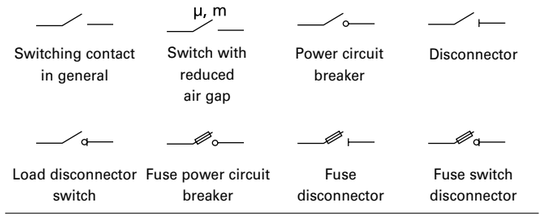
Practical Hint

e.g. 16(2)A .... Ratings for resistive/inductive consumers

..... Ratings for incandescent lamp load (AC 5b IEC 60947-4)

ÖVE-SN45, § 305

Practical Hint



ÖVE-SN45, § 207, IEC 60947-3

Auxiliary SWD Module for MCBs, RCCBs and RCBOs

	Description	Type Designation	Article No.	Units per package
SG00114, sg01515 	SWD Module	MCB-HK-SWD	177175	1
	Spare End Cap	SWD4-OS	178150	10

Description Auxiliary SWD Module

- Auxiliary module for the connection of an MCB, RCCB or RCBO to the SWD line
- Connection to an RCCB on the left side and to an MCB or RCBO on the right side
- Communication of on/off and trip status, trip indicator
- SWD connection on the top and bottom possible
- Integrated SWD-bus LED

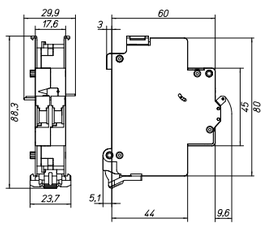
Technical Data

	MCB-HK-SWD
Pollution degree	2
Degree of protection	IP20
Power supply	via SWD line
Operation temperature	-25 up to +40°C
Dimensions	W x H x D = 17.5 x 88.3 x 77.3 mm

Combination with the following Types

RCCB	
Residual Current Devices FRCdM, digital	✔
Residual Current Devices FRCmM	✔
Residual Current Devices FRCmM-NA & NA-110	✔
Residual Current Devices FRCmM-125	–
RCBO	
Combined RCD/MCB Devices FRBdM, digital	✔
FI/LS-RCBO FRBmM, FRBm6, FRBm4	✔
Add-on Residual Current Protection Unit FBSmV	✔ (only on MCB side)
Add-on Residual Current Protection Unit FBHmV	–
MCB	
Miniature Circuit Breaker FAZ	✔
Miniature Circuit Breaker FAZ-PN	✔
Miniature Circuit Breaker FAZ-HS	✔
Miniature Circuit Breaker FAZ-T	✔
Miniature Circuit Breaker FAZ-DC	✔
Miniature Circuit Breaker FAZ-NA, FAZ-RT	–
Miniature Circuit Breaker FAZ-NA-DC	–
Miniature Circuit Breaker AZ	–
Main Load Disconnector Switch (Isolator) IS	–

Dimensions (mm)



Auxiliary Switch Z-HK, Z-AHK, Z-HD; Tripping Signal Switch Z-NHK

	For Protective Device / Function	Type Designation	Article No.	Units per package
Design: for screwing				
SG34812 	RCCB / 1NO+1NC	Z-HK	248432	4/120
SG60911 	MCB, RCBO (1+N, 3P, 3+N) / 1NO+1NC	Z-AHK	248433	4/120
SG61011 	MCB, RCBO, RCCB / 2CO	Z-NHK	248434	4/120
SG34412 	RCCB / 1CO+1NC	Z-HD	265620	1

Description Auxiliary Switch Z-HK, Z-AHK; Tripping Signal Switch Z-NHK

- Design according to IEC/EN 60947-5-1, IEC/EN 62019
- Can be mounted subsequently (screws) onto FRCmM, FRCdM
- The specified minimum voltages are per contact.
  Take into account particularly in case of series connection!

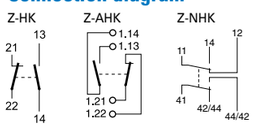
- **Z-AHK, Z-NHK:** Contact function with relative movement (selfcleaning contacts)
- Contact material and design particularly suitable for extra low voltage

- **Z-NHK:** The function of one of the two change-over contacts can be switched from “auxiliary switch” to “tripping signal switch”
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off
- Test key for contact function “electrical tripping”

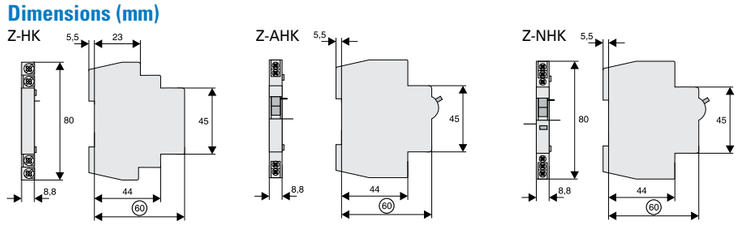
Technical Data

		Z-HK	Z-AHK	Z-NHK
Electrical				
Classified according to Current test marks as printed onto the device		IEC 61373, EN 45545-2		
Contact function		1NO + 1NC	1NO + 1NC	2CO
Rated voltage		250 V	250 V	250 V
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Rated current		8 A	4 A	4 A
Rated thermal current	I_{th}	8 A	4 A	4 A
Utilisation category AC13				
Rated operational current	I_e	6 A / 250 V AC 2 A / 440 V AC	3 A / 250 V AC –	3 A / 250 V AC –
Utilisation category AC15				
Rated operational current	I_e	–	2 A / 250 V AC	2 A / 250 V AC
Utilisation category DC12				
Rated operational current	I_e	–	0.5 A / 110 V DC	0.5 A / 110 V DC
Utilisation category DC13				
Rated operational current	I_e	0.5 A / 230 V DC 2 A / 110 V DC 4 A / 60 V DC	– – –	– – –
Rated insulation voltage	U_i	250 V AC	250 V AC	250 V AC
Minimum operational voltage per contact	U_{min}	24 V AC/DC	5 V DC	5 V DC
Minimum operational current	I_{min}	50 mA AC/DC	10 mA DC	10 mA DC
Rated impulse withstand voltage (1,2/50µ)	U_{imp}	2.5 kV	2.5 kV	2.5 kV
Conditional short circuit current with back-up fuse 6 A or FAZ-B4-HS		1 kA	1 kA	1 kA
Max. back-up fuse, overload and short circuit		6 A gL / FAZ-4/../B-HS	4 A gL / FAZ-4/../B-HS	4 A gL / FAZ-4/../B-HS
Mechanical				
Can be mounted from the left onto		RCCB	MCB, RCBO (1+N, 3P, 3+N)MCB, RCBO	
Can be mounted from the right onto		–	–	RCCB
Tripping indicator “electrical tripping”		–	–	blue/white
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		8.8 mm (0.5MU)	8.8 mm (0.5MU)	8.8 mm (0.5MU)
Mounting		onto switching device	onto switching device	onto switching device
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals		Lift terminals	Lift terminals	Lift terminals
Terminal capacity		0.5-2.5 mm²	0.5-2.5 mm²	0.5-2.5 mm²
Terminal screws		M3.5 (Pozidrive Z2)	M3 (Pozidrive Z1)	M3 (Pozidrive Z1)
Fastening torque of terminal screws		max. 0.8-1.0 Nm	max. 0.8-1.0 Nm	max. 0.8-1.0 Nm
Operation temperature		-5 °C up to +55 °C	-5 °C up to +55 °C	-5 °C up to +55 °C

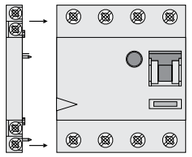
Connection diagram



Dimensions (mm)

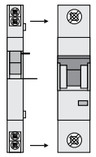


Example: Z-HK+FI



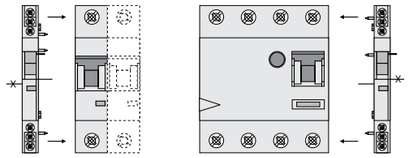
1NO+1NC 24 V, 50 mA min.

Example: Z-AHK+LS



1NO+1NC 5 V, 10 mA min.

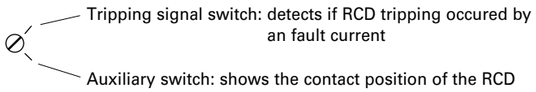
Example: Z-NHK+LS FI+Z-NHK



2CO 5 V, 10 mA min.

Description Auxiliary Switch Z-HD

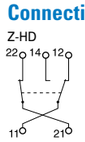
Function Auxiliary Switch Z-HD



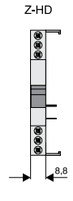
Technical Data

	Z-HD
Electrical	
Can be mounted from the left onto	FRCmM-125A
Contact functions	1CO + 1NC
Min. creeping distance	> 12.7 mm/50.8 mm (intern/external)
Load rating	
AC11	6 A / 230 V AC
DC11	1 A / 230 V DC
Mechanical	
Terminal capacity	up to 2.5 mm²

Connection diagram



Dimensions (mm)



	For Protective Device / Function	Type Designation	Article No.	Units per package
	Design: for snapping			
SG60811 	MCB, RCBO / 1NO+1NC	ZP-IHK	286052	4/120
SG34612 	MCB, RCBO / 1CO	ZP-WHK	286053	4/120
SG34512 	MCB, RCBO / 2CO	ZP-NHK	248437	4/120

Description Auxiliary Switch ZP-IHK, ZP-WHK; Tripping Signal Switch ZP-NHK

- Design according to IEC/EN 62019
- No screws required. Can be snapped onto MCBs and RCBOs subsequently

- **ZP-IHK, ZP-WHK:** Can be snapped on additionally one time onto itself or ZP-NHK can be snapped onto it.
- The specified minimum voltages are per contact. Take into account particularly in case of series connection!
- Contact material and design particularly suitable for extra low voltage.
- Contact function with relative movement (self-cleaning contacts)e)

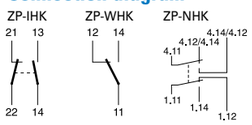
- **ZP-NHK:** The function of one of the two change-over contacts can be switched from “auxiliary switch” to „tripping signal switch“
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off

- **ZP-NHK:** The “Service button” is used to check whether or not the auxiliary switch is correctly wired in the tripping-signal-switch position. Activating the “service button” will mechanically simulate an electrical switch-off, so the mechanism for the electrical switchoff will disengage and can be checked. The main switchgear (MCB or combined MCB/RCD) connected to the ZP-NHK auxiliary switch does not need to trip as well during an inspection through the service button.

Technical Data

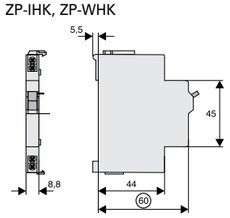
		ZP-IHK	ZP-WHK	ZP-NHK
Electrical				
Classified according to Current test marks as printed onto the device		IEC 61373, EN 45545-2		
Contact function		1NO + 1NC	1CO	2CO
Rated voltage		250 V	250 V	250 V
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Rated current		6 A	6 A	4 A
Rated thermal current	I_{th}	6 A	6 A	4 A
Utilisation category AC13				
Rated operational current	I_e	3 A / 250 V AC	3 A / 250 V AC	3 A / 250 V AC
Utilisation category AC15				
Rated operational current	I_e	2 A / 250 V AC	2 A / 250 V AC	2 A / 250 V AC
Utilisation category DC12				
Rated operational current	I_e	0.5 A / 110 V DC	0.5 A / 110 V DC	0.5 A / 110 V DC
Rated insulation voltage	U_i	250 V AC	250 V AC	250 V AC
Minimum operational voltage per contact	U_{min}	5 V DC	5 V DC	5 V DC
Minimum operational current	I_{min}	10 mA DC	10 mA DC	10 mA DC
Rated impulse withstand voltage (1,2/50µ)	U_{imp}	2.5 kV	2.5 kV	2.5 kV
Conditional short circuit current with back-up fuse 6 A or FAZ-B4-HS		1 kA	1 kA	1 kA
Max. back-up fuse, overload and short circuit		6 A gL / FAZ-4/../B-HS	6 A gL / FAZ-4/../B-HS	6 A gL / FAZ-4/../B-HS
Mechanical				
Can be mounted from the left onto		MCB, RCBO	MCB, RCBO	MCB, RCBO
Accessories		ZP-ASA	ZP-ASA	ZP-ASA
Tripping indicator “electrical tripping”		–	–	blue/white
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		8.8 mm (0.5MU)	8.8 mm (0.5MU)	8.8 mm (0.5MU)
Mounting		onto switching device	onto switching device	onto switching device
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals		Lift terminals	Lift terminals	Lift terminals
Terminal capacity		0.5-2.5 mm²	0.5-2.5 mm²	0.5-2.5 mm²
Terminal screws		M4 (Pozidrive Z2)	M4 (Pozidrive Z2)	M3 (Pozidrive Z1)
Fastening torque of terminal screws		max. 1.2 Nm	max. 1.2 Nm	max. 0.8-1.0 Nm
Operating temperature range		-5 °C to 55 °C	-5 °C to 55 °C	-5 °C to 55 °C

Connection diagram

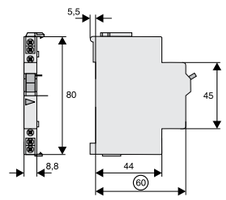


Dimensions (mm)

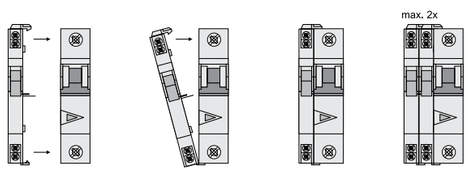
ZP-IHK, ZP-WHK



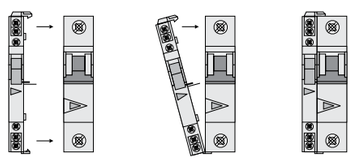
ZP-NHK



Example: ZP-IHK/(ZP-WHK)+LS



Example: ZP-NHK+LS



Function	Type Designation	Article No.	Units per package
Auxiliary Switch Z-LHK			
1NO+1NC	Z-LHK	248440	10/100

SG16111

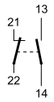
Description Auxiliary Switch Z-LHK

- Auxiliary switch according to IEC 947-5-1
- Can be mounted subsequently on PLHT or AZ circuit breakers

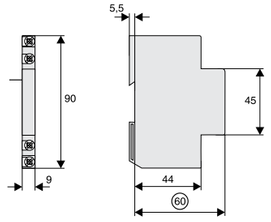
Technical Data

		Z-LHK
Electrical		
Classified according to Current test marks as printed onto the device		IEC 61373, EN 45545-2
Contact function		1NO + 1NC
Rated voltage		250 V
Frequency		50/60 Hz
Rated current		8 A
Rated thermal current	I_{th}	8 A
Utilisation category AC13		
Rated operational current	I_e	6 A / 250 V AC 2 A / 440 V AC
Utilisation category AC15		
Rated operational current	I_e	–
Utilisation category DC12		
Rated operational current	I_e	–
Utilisation category DC13		
Rated operational current	I_e	0.5 A / 230 V DC 2 A / 110 V DC 4 A / 60 V DC
Rated insulation voltage	U_I	250 V AC
Minimum operational voltage per contact	U_{min}	24 V AC/DC
Minimum operational current	I_{min}	50 mA AC/DC
Rated impulse withstand voltage (1,2/50µ)	U_{imp}	2.5 kV
Conditional short circuit current with back-up fuse 6 A or FAZ-B4-HS		1 kA
Max. back-up fuse, overload and short circuit		6 A gL / FAZ-4/../B-HS
Mechanical		
Can be mounted from the left onto		AZ
Can be mounted from the right onto		–
Tripping indicator “electrical tripping”		–
Frame size		45 mm
Device height		80 mm
Device width		8.8 mm (0.5MU)
Mounting		onto switching device
Degree of protection, built-in		IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274
Terminals		Lift terminals
Terminal capacity		0.5-2.5 mm^2
Terminal screws		M3.5 (Pozidrive Z2)
Fastening torque of terminal screws		max. 0.8-1.0 Nm

Connection diagram



Dimensions (mm)



	For Protective Device	Type Designation	Article No.	Units per package
SG16011 	RCCB	Z-FAM	248293	1/60
SG16211 	RCBO	Z-KAM	248294	1/60

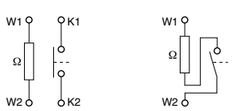
Description RCCB Tripping Module Z-FAM, Z-KAM

- For remote switch-off of RCCBs, standard and electronic combined RCD/MCB devices
- Remote switch-off by one or several parallel potential-free contacts, e.g. pushbutton max. rated current 3 A at 250 V, take into account maximum pushbutton voltage
- Remote tripping test by means of remote testing module Z-FW
- Can be mounted subsequently, to be wired according to connection diagram with the respective terminals of the RCCB
- No undesired voltage rise in the consumer system during remote switch-off thanks to integrated breaker contact K1-K2

Technical Data

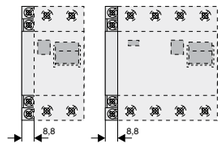
		Z-FAM	Z-KAM
Electrical			
Classified according to Current test marks as printed onto the device		IEC 61373, EN 45545-2	
Rated voltage		230(400) V AC	230(400) V AC
Frequency		50/60 Hz	50/60 Hz
Rated tripping current	$I_{\Delta n}$	0.01 - 0.3 A	0.01 - 0.3 A
Function		1NO	1NO
Mechanical			
Tripping module for		RCCB	RCBO
Frame size		45 mm	45 mm
Device height		80 mm	80 mm
Device width		8.8 mm (0.5MU)	8.8 mm (0.5MU)
Degree of protection, built-in		IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274	
Terminal capacity		1 - 2x2.5 mm²	1 - 2x2.5 mm²

Connection diagram

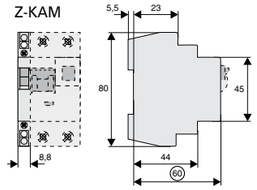


Dimensions (mm)

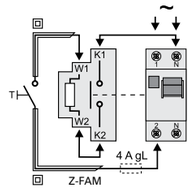
Z-FAM



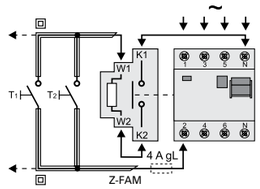
Z-KAM



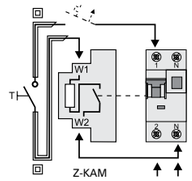
Connection examples: Lay lines to the switching devices with double insulation and overload protection, e.g. 4A gL or CLS6-4..-HS



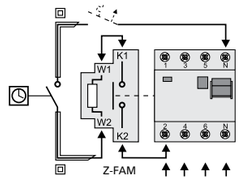
Connection diagram:
RCCB-2p, RCCB feed above



Connection diagram:
RCCB-4p, RCCB feed above



Connection diagram:
RCBO-2p, RCBO feed below



Connection diagram:
RCCB-4p, RCCB feed below

SG54312

Poles	Rated Breaking Capacity (kA)	Type Designation	Article No.	Units per package
MCB for Auxiliary Switch Circuits PLSM-B4/.-HS,				
1	10	PLSM-B4-HS	247221	2 / 120
1+N	10	PLSM-B4/1N-HS	236722	2 / 80
2	10	PLSM-B4/2-HS	247222	1 / 60

Description MCB for Auxiliary Switch Circuits PLSM-B4/.-HS

- Design according to EN 60898-1, 4 A, Characteristic B
- Very low let-through energy in order to prevent contact welding in auxiliary switches of any and all switchgear, as well as thermostats control devices, timers, etc.
- Busbar connection to PFIM, PKN, ...

Technical Data

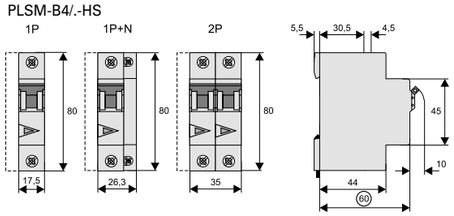
	PLSM-B4/.-HS
Electrical	
Number of poles	1-, 1+N-, 2pole
Rated voltage	230/400 V
Frequency	50/60 Hz
Rated current	4 A
Rated breaking capacity	10 kA
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm (1MU) / 26.3 mm / 35 mm (2MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Terminals	Twin-purpose terminals
Terminal capacity	1-25 mm^2
Terminal screws	M3 (Pozidrive)
Tightening torque of terminal screws	0.8-1.0 Nm
Busbar thickness	0.8 - 2 mm

Connection diagram

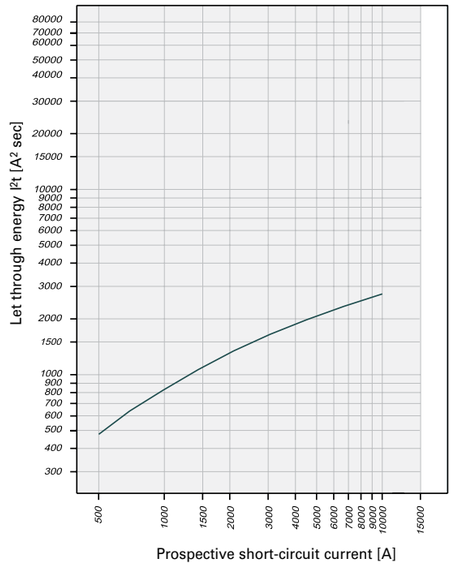
e.g. 1pole

Dimensions (mm)

PLSM-B4/.-HS



Let-through Energy PLSM-B4-HS, Characteristic B, 1pole



Practical Hint

Even auxiliary switches must be predected against overload and short circuit by means of suitable back-up fuses according to manufacturer specification. According to IEC 60947-5 a maximum back-up fuse is specified for conditional short circuit prevention up to 1,000 A. Therefore, connection of the auxiliary switch to the nearest MCB is not permitted. Danger of contact welding! The MCB for auxiliary switch circuits ...-HS offers a simple solution.

	Operational voltage range (V~)	Type Designation	Article No.	Units per package
	To be glued on			
SG00712 	12-110	Z-ASA/24	248286	1/60
	110-415	Z-ASA/230	248287	1/60
	To be snapped on			
SG00212 	12-110	ZP-ASA/24	248438	1/60
	110-415	ZP-ASA/230	248439	1/60

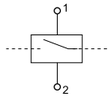
Description Shunt Trip Release Z-ASA, ZP-ASA

- Remote release for subsequent mounting onto PXL, PLI, PXK, FAZ, FRBmM-1N, Z-MS
- Module width 1MU
- Additional installation of standard auxiliary switch is possible
- Position indicator red - green
- Type ZP-ASA for snap-on mounting

Technical Data

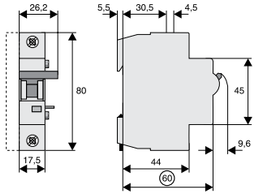
	Z-ASA24	Z-ASA230	ZP-ASA24	ZP-ASA230
Electrical				
Classified according to Current test marks as printed onto the device	IEC 61373, EN 45545-2			
Minimum pulse duration	15 ms	10 ms	15 ms	10 ms
Internal resistance	2,2 Ω	215 Ω	2,2 Ω	215 Ω
Duty cycle	100%	100%	100%	100%
Tripping time	< 20 ms	< 20 ms	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50µs)	2.5 kV	2.5 kV	2.5 kV	2.5 kV
Endurance	>4000 operating cycles	>4000 operating cycles	>4000 operating cycles	>4000 operating cycles
AC voltage range				
Operating limit	10 V	60 V	10 V	60 V
Operational voltage range	12-110 V	110-415 V	12-110 V	110-415 V
Maximum current consumption during switch-on	15 A	2.1 A	15 A	2.1 A
Current flow time at max. current consumption	10 ms	10 ms	10 ms	10 ms
DC voltage range				
Operating limit	9 V	72 V	9 V	72 V
Operational voltage range	10-60 V	110-220 V	10-60 V	110-220 V
Maximum current consumption during switch-on	21 A	1 A	21 A	1 A
Current flow time at max. current consumption	2 ms	2 ms	2 ms	2 ms
Mechanical				
Frame size	45 mm	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm	80 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	bonding	bonding	snap-on	snap-on
Degree of protection, built-in	IP40	IP40	IP40	IP40
Terminals above/below	open mouthed/lift	open mouthed/lift	open mouthed/lift with guide	open mouthed/lift with guide
Terminal capacity	1-25 mm^2	1-25 mm^2	1-25 mm^2	1-25 mm^2
Fastening torque of terminal screws	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm
Operating temperature range	-35 °C to 75 °C	-35 °C to 75 °C	-35 °C to 75 °C	-35 °C to 75 °C

Connection diagram

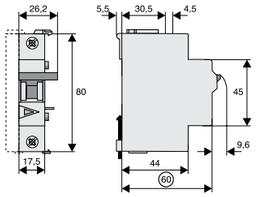


Dimensions (mm)

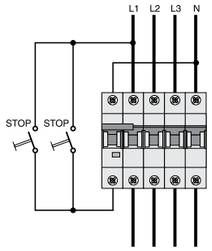
Z-ASA



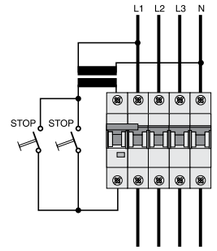
ZP-ASA



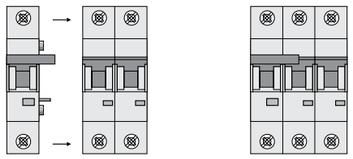
Connection Example 230 V



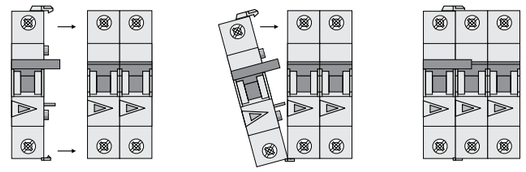
Connection Example 24 V



Example: Z-ASA + LS



Example: ZP-ASA + LS



Operational voltage range (V~)	Type Designation	Article No.	Units per package
Shunt Trip Release Kit Z-BHASA			
110-415	Z-BHASA/230	248445	8
12-60	Z-BHASA/24	248444	8

SG09411

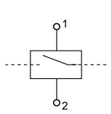
Description Shunt Trip Release Kit Z-BHASA

- Can be mounted subsequently
- Contact position indicator red - green
- Wide operational voltage range
- Suitable for AZ and PLHT circuit breakers
- Sufficient power of extra low voltage source must be ensured FBHmV-ASA/24: min. 90 VA
- Screws for mounting included FBHmV => Z-BHASA => PLHT or AZ

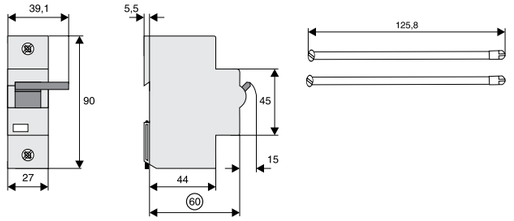
Technical Data

	Z-BHASA/24	Z-BHASA/230
Electrical		
Classified according to Current test marks as printed onto the device	IEC 61373, EN 45545-2	
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 Ω	130 Ω
Duty cycle	100%	100%
Tripping time	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50µs)	2 kV	2 kV
Endurance	>4000 operating cycles	>4000 operating cycles
AC voltage range		
Operating limit	8 V	70 V
Operational voltage range	12-60 V	110-415 V
Maximum current consumption during switch-on	14 A	3.4 A
Current flow time at max. current consumption	4.0 ms	4.0 ms
DC voltage range		
Operating limit	11 V	90 V
Operational voltage range	12-60 V	110-230 V
Maximum current consumption during switch-on	23.5 A typ.	1.7 A typ.
Current flow time at max. current consumption	2 ms	4 ms
Mechanical		
Frame size	45 mm	45 mm
Device height	90 mm	90 mm
Device width	27 mm	27 mm
Mounting	quick fastening on DIN rail IEC/EN 60715	
Degree of protection, built-in	IP40	IP40
Terminals above/below	Lift terminals	Lift terminals
Terminal capacity	2.5-30 mm^2	2.5-30 mm^2
Fastening torque of terminal screws	4 Nm	4 Nm

Connection diagram



Dimensions (mm)



Operational voltage range (V~)	Type Designation	Article No.	Units per package
Shunt Trip Release Z-LHASA			
110-415	Z-LHASA/230	248442	8
12-60	Z-LHASA/24	248441	8

SG09311

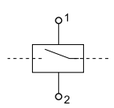
Description Shunt Trip Release Z-LHASA

- Can be mounted subsequently
- Contact position indicator red - green
- Wide operational voltage range
- Sufficient power of extra low voltage source must be ensured. Z-LHASA/24: min. 90 VA
- Suitable for AZ and PLHT circuit breakers

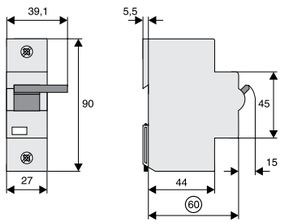
Technical Data

	Z-LHASA/24	Z-LHASA/230
Electrical		
Classified according to Current test marks as printed onto the device	IEC 61373, EN 45545-2	
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 Ω	130 Ω
Duty cycle	100%	100%
Tripping time	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50µs)	2 kV	2 kV
Endurance	>4000 operating cycles	>4000 operating cycles
AC voltage range		
Operating limit	8 V	70 V
Operational voltage range	12-60 V	110-415 V
Maximum current consumption during switch-on	14 A	3.4 A
Current flow time at max. current consumption	4.0 ms	4.0 ms
DC voltage range		
Operating limit	11 V	90 V
Operational voltage range	12-60 V	110-230 V
Maximum current consumption during switch-on	23.5 A typ.	1.7 A typ.
Current flow time at max. current consumption	2 ms	4 ms
Mechanical		
Frame size	45 mm	45 mm
Device height	90 mm	90 mm
Device width	27 mm	27 mm
Mounting	quick fastening on DIN rail IEC/EN 60715	
Degree of protection, built-in	IP40	IP40
Terminals above/below	Lift terminals	Lift terminals
Terminal capacity	2.5-30 mm^2	2.5-30 mm^2
Fastening torque of terminal screws	4 Nm	4 Nm

Connection diagram



Dimensions (mm)



SG78811

Operational voltage range (V~)	Function	Type Designation	Article No.	Units per package
To be screwed on				
115	undelayed	Z-USA/115	248288	1/60
230	undelayed	Z-USA/230	248289	1/60
400	undelayed	Z-USA/400	248290	1/60
115	delayed 0.4s	Z-USD/115	248292	1/60
230	delayed 0.4s	Z-USD/230	248291	1/60

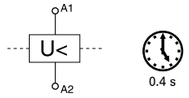
Description Undervoltage Release Z-USA, Z-USD

- Tripping:
  Instantaneous Z-USA
  Delayed Z-USD, typ. 0.4 s
- Voltage control indicator blue/white
- Service key for zero voltage switch-on for testing purposes
- Can be used with PXL, PLI, PXK, FAZ

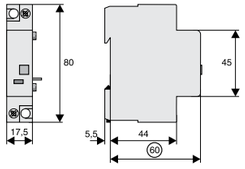
Technical Data

		Z-US./115	Z-US./230	Z-US./400
Electrical				
Classified according to		IEC 61373, EN 45545-2		
Current test marks as printed onto the device				
Rated voltage	U_n	115 V AC	230 V AC	400 V AC
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Making threshold		80% of U_n	80% of U_n	80% of U_n
Tripping threshold		30% of U_n	30% of U_n	30% of U_n
Mechanical				
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715		
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals		open mouthed/lift	open mouthed/lift	open mouthed/lift
Terminal capacity		1 - 2x2.5 mm²	1 - 2x2.5 mm²	1 - 2x2.5 mm²

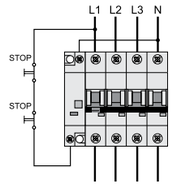
Connection diagram



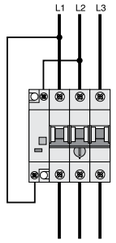
Dimensions (mm)



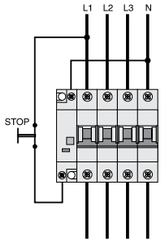
Connection Example Release



Connection Example 400 V and 230 V



Connection Example
Z-USA/400 + Z-MS



Connection Example
Z-USA/230 + LS

	Description	Type Designation	Article No.	Units per package
SG47812 	Switching interlock without lock for MCBs and Circuit Breaker ZP-A	Z-IS/SPE-1TE	274418	5/30

Description Switching Interlock IS/SPE-1TE, Z-IS/SPE-1TE

- without lock

Type Z-IS/SPE-1TE:
- for MCBs
- maximum usable diameter of the padlock: 4-5 mm

	Function	Type Designation	Article No.	Units per package
	Switching Interlock LH-SP			
SG02214 	Switching interlock	LH-SPL	285752	1
SG01014 	Switching interlock	LHSP-E	215999	1
SG01114 	Switchoff interlock	LHSP-A	216000	1

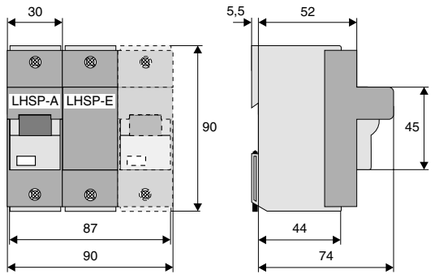
Description Switching Interlock LHSP-E, LH-SPL

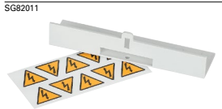
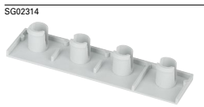
- Prevents undesired switching ON or OFF

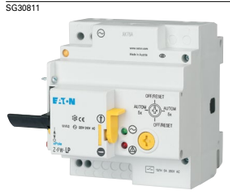
Description Switchoff interlock LHSP-A

- Prevents undesired switch-OFF

Dimensions (mm)



	Description	Type Designation	Article No.	Units per package
	Terminal Covers for RCDs			
SG82011 	2-poles	Z-RC/AK-2TE	285385	10
	4-poles	Z-RC/AK-4TE	101062	10
	Terminal Covers for Add-on Device			
SG02614 	2-poles	Z-TC/AO-2P	178097	10
	3+4-poles	Z-TC/AO-3-4P	178098	10
	Terminal Covers for MCB, RCBO			
SG02314 	2-poles	Z-TC/SD-2P	178099	10
	3-poles	Z-TC/SD-3P	178100	10
	4-poles	Z-TC/SD-4P	178101	10
	Terminal Cover for MCBs			
	1-pole	Z-TC/MCB-1P	178102	10

	Function	Type Designation	Article No.	Units per package
	Remote Control Device Z-FW			
SG30811 	Automatic restarting 230 VAC	Z-FW-LP	248296	1/20
	Automatic restarting 24-58 VDC	Z-FW-LPD	265244	1/20
	Restarting device, 220-240VAC	FAZ/FIP-XAWM	262514	1/20
	Restarting device, 48VDC	FAZ/FIP-XDWM	274404	1/20
SG30711 	+ Remote control module ON/OFF/TEST (only in connection with Z-FW-LP, -LPD from delivery date 2006!)	Z-FW-MO	284730	1

	Rated Fault Current	Type Designation	Article No.	Units per package
	Remote Testing Module Z-FW			
	• for Z-FW-LP./MO set use only			
SG12111 	0.01 A	Z-FW/001	248297	4/120
	0.03 A	Z-FW/003	248298	4/120
	0.1 A	Z-FW/010	248299	4/120
	0.3 A	Z-FW/030	248300	4/120
	0.5 A	Z-FW/050	248301	4/120

Description Remote Testing Module and Remote Control Device Z-FW

- Shape compatible switching device suitable for subsequent installation for automatic re-setting and remote control of MCBs, RCCBs and Z-MS
- Mechanical interlock, can be sealed with leads
- Mechanical switching capability up to max. RCCB-100/4p, MCB-100/4p
- Operating and alarm display by green and red LED
- Function extension with Switching Modul Z-FW-MO
  Operating and trouble display by LED pre-assembled only with Z-FW...

Technical Data

	Z-FW-LP	Z-FW-LPD	Z-FW-MO
Electrical			
Possible operating voltages	220-240 V AC	24-48 V DC	–
Frequency	50/60 Hz	–	–
Testing module (0.5MU) for remote testing of RCDs	Z-FW...	Z-FW...	–
Control voltage for remote control	–	–	24-230 V AC/DC
Relay output for tripping test with Z-FW	–	–	400 V AC max.
Relay output for alarm, potential-free	5 A / 250 V AC	5 A / 250 V AC	–
Functions	Automatic restarting	Automatic restarting	+ON/OFF/TEST
Function selector	Automatic 5x, OFF/RESET	Automatic 5x, OFF/RESET	ON, OFF/RESET
Remote control function via telephone with Telecommander	–	–	–
Mechanical			
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	70 mm	70 mm	35 mm
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		–
Degree of protection, built-in	IP40	IP40	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals	Lift terminals	Lift terminals	Lift terminals
Terminal capacity	2 x 1.5 mm² or 1 x 2.5 mm²	2 x 1.5 mm² or 1 x 2.5 mm²	4 x 1,5 mm² or 2 x 2.5 mm²
Scope of delivery	–	–	Coupling plug

Connection diagram

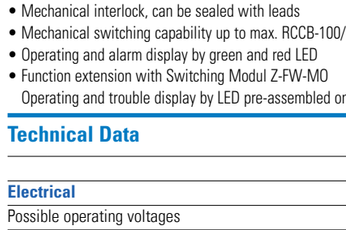
Z-FW-LP

Z-FW-LPD

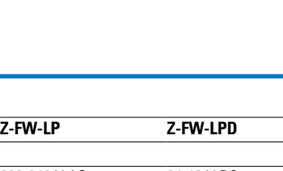
Z-FW-MO

Dimensions (mm)

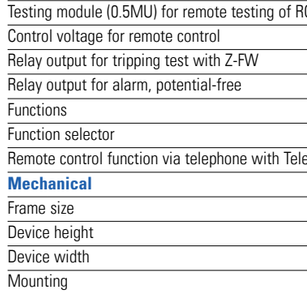
Z-FW-LP, -LPD

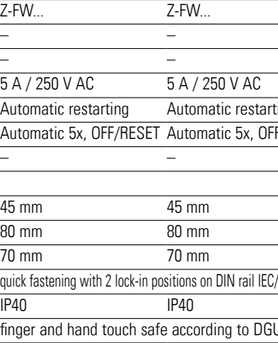


Z-FW-MO



Connection Example





Pushbutton Z-T/

SG37112

Colour	Pushbutton/Function	Type Designation	Article No.	Units per package
green	4NO	Z-T/4S-G	248328	12 / 120
black	3NO+1NC	Z-T/3S1O	248330	12 / 120

Control Switch Z-S/..

SG38912

Function	Type Designation	Article No.	Units per package
3NO	Z-S/3S	248334	12 / 120
4NO	Z-S/4S	248335	12 / 120
2NO+2NC	Z-S/SSOO	248337	12 / 120
3NO+1NC	Z-S/3S1O	248338	12 / 120

Changeover Switch Z-S/.W

SG39012

Function	Type Designation	Article No.	Units per package
1CO I-0-II	Z-S/WM	248345	12 / 120
2CO I-0-II	Z-S/2WM	248346	12 / 120
1CO DAY-0-NIGHT	Z-S/WTN	248347	12 / 120
2CO DAY-0-NIGHT	Z-S/2WTN	248348	12 / 120

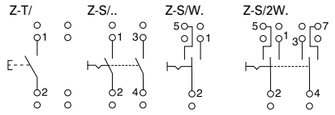
Description Pushbutton Z-T/; Control Switch Z-S/..; Changeover Switch Z-S/.W

- Design according to IEC 60669, IEC 60669-1
- Types Z-S/WM and /2WM with central position (0-position)
- Types Z-S/WTN and -2WTN with TAG-0-NACHT (DAY-0-NIGHT) printed onto the device

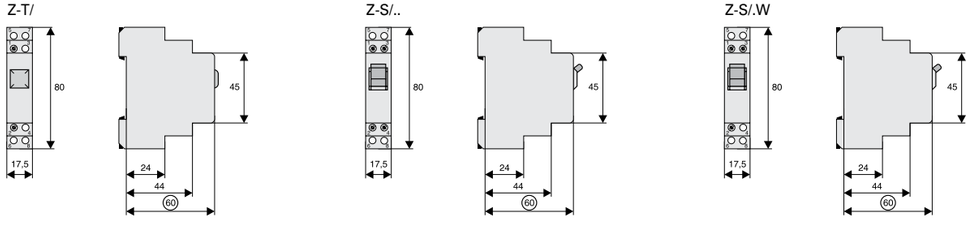
Technical Data

	Z-T/	Z-S/..	Z-S/.W
Electrical			
Rated voltage	230 V AC	240 V AC	240 V AC
Frequency	50 HZ	50 HZ	50 HZ
Rated current	16 A / 230 V~	20 A / 240 V~	20 A / 240 V~
Switching capacity	–	1.25 x I_n; 1.1 x U_n	1.25 x I_n; 1.1 x U_n
Short-circuit current strength	10 kA	10 kA	10 kA
Mechanical			
Switching toggle	–	black	black
Pushbutton colour	green - NO black - NO/NC	–	–
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		
Degree of protection, built-in	IP40	IP40	IP40
Upper and lower terminals	lift terminals	lift terminals	lift terminals
Terminal capacity (rigid wires only)	1-10 mm²	1-10 mm²	1-10 mm²
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274		
Resistance to climatic conditions	acc. to IEC/EN 60068	acc. to IEC/EN 60068	acc. to IEC/EN 60068
Load of self-ballasted lamp (SBL)		200 W cap. load	200 W cap. load
Operation temperature		-25° C .... +40° C	-25° C .... +40° C

Connection diagram



Dimensions (mm)



SG59911

Rated voltage LED	Function	Type Designation	Article No.	Units per package
Switch Z-SW, Z-SWL				
• Z-SWL: with LED • 16 A 250 VAC				
–	1NO	Z-SW/S	276300	2 / 120
–	2NO	Z-SW/SS	276301	2 / 120
–	1NO+1NC	Z-SW/SO	276302	2 / 120
–	1CO	Z-SW/W	276303	2 / 120
24 V AC/DC	2NO	Z-SWL24/SS	276304	2 / 120
24 V AC/DC	1NO+1NC	Z-SWL24/SO	276305	2 / 120
230 V AC/DC	1NO	Z-SWL230/S	292300	2 / 120
230 V AC/DC	2NO	Z-SWL230/SS	276306	2 / 120
230 V AC/DC	1NO+1NC	Z-SWL230/SO	276307	2 / 120
Additional LED colours, voltages and contact functions upon enquiry.				

wa_sg02512

Z-EK/25

Description	Type Designation	Article No.	Units per package
Busbar			
1pole angulated grey 10 mm²	Z-SV-10/1P-F/13	264918	10
1pole angulated blue 10 mm²	Z-SV-10/N-F/13	264919	10
1pole angulated grey 16 mm²	Z-SV-16/1P-1MU/F	269523	25
1pole angulated blue 16 mm²	Z-SV-16/N-1MU/F	269524	25
Extension terminal 25 mm² long, straight	Z-EK/25	264935	10 / 600
Extension terminal 25 mm² short, straight	Z-EK/25/K	269525	10 / 600
Extension terminal 25 mm² long, crosswise	Z-EK/25/QL	264937	10 / 600
Extension terminal 25 mm² short, crosswise	Z-EK/25/Q	264936	10 / 600

SG59211

Z-BEL/R230

Rated voltage LED	Colour	Type Designation	Article No.	Units per package
Signal Lamps				
Single Lamp Z-EL				
24 V AC/DC	orange	Z-EL/OR24	275444	2 / 120
24 V AC/DC	white	Z-EL/WH24	107493	2 / 120
230 V AC/DC	red	Z-EL/R230	284921	2 / 120
230 V AC/DC	green	Z-EL/G230	284922	2 / 120
230 V AC/DC	orange	Z-EL/OR230	275865	2 / 120
230 V AC/DC	blue	Z-EL/BL230	103131	2 / 120
230 V AC/DC	white	Z-EL/WH230	107494	2 / 120
Twin Lamp Z-DLD				
2 x 24 V AC/DC	red + green	Z-DLD/2/24	284926	2 / 120
2 x 230 V AC/DC	red + green	Z-DLD/2/230	284925	2 / 120
2 x 24 V AC/DC	white + white	Z-DLD/WH24	108897	2 / 120
2 x 230 V AC/DC	white + white	Z-DLD/WH230	108898	2 / 120
Universal Single Lamp - changeover function Z-UEL				
24 V AC/DC	red/green	Z-UEL24	284924	2 / 120
230 V AC/DC	red/green	Z-UEL230	284923	2 / 120
Universal Twin Lamp - changeover function Z-UDL				
2 x 24 V AC/DC	red/green	Z-UDL24	284928	2 / 120
2 x 230 V AC/DC	red/green	Z-UDL230	284927	2 / 120
Signal Lamp - with integrated flash function Z-BEL				
24 V AC/DC	red	Z-BEL/R24	284931	2 / 120
24 V AC/DC	green	Z-BEL/G24	284932	2 / 120
230 V AC/DC	red	Z-BEL/R230	284929	2 / 120
230 V AC/DC	green	Z-BEL/G230	284930	2 / 120

SG59811

Pushbutton Z-PU, Z-PUL

- Z-PUL: with LED
- 16 A 250 VAC

–	1NO	Z-PU/S	276291	2 / 120
–	2NO	Z-PU/SS	276292	2 / 120
–	1NO+1NC	Z-PU/SO	276293	2 / 120
–	2NC	Z-PU/OO	276294	2 / 120
24 V AC/DC	2NO	Z-PUL24/SS	276295	2 / 120
24 V AC/DC	1NO+1NC	Z-PUL24/SO	276296	2 / 120
230 V AC/DC	2NO	Z-PUL230/SS	276297	2 / 120
230 V AC/DC	1NO+1NC	Z-PUL230/SO	276298	2 / 120
230 V AC/DC	2NC	Z-PUL230/OO	276299	2 / 120

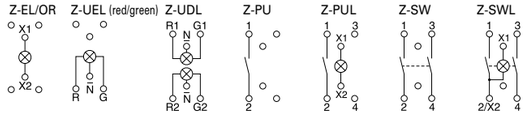
Description Pushbutton Z-T/; Control Switch Z-S/..; Changeover Switch Z-S/.W

- Design according to IEC/EN 60669, VDE 0632
- Low power loss
- Long service life
- Twin lamp with separate connections
- Colour red/green, can be selected by alternative wiring
- Flash option by usage of different terminals only, changeover option, no additional relay necessary (Z-BEL)
- Terminals with guide for secure terminal connection
- Identical terminal screws for coil and contacts

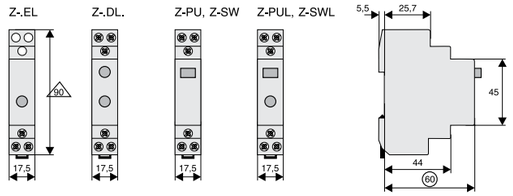
Technical Data

	Z-.EL, Z-.DLD, Z-BEL	Z-PU, Z-PUL	Z-SW, Z-SWL
Electrical			
Rated voltage	–	250 V AC	250 V AC
Frequency	–	50 HZ	50 HZ
Rated current	–	16 A	16 A
LED			
Rated voltage	230 V AC/DC 24 V AC/DC	230 V AC/DC 24 V AC/DC	230 V AC/DC 24 V AC/DC
Range of operational voltage	(50 V) 110-240 V AC/DC (5 V) 12-24 V AC/DC	(50 V) 110-240 V AC/DC (5 V) 12-24 V AC/DC	(50 V) 110-240 V AC/DC (5 V) 12-24 V AC/DC
Luminosity	15 mcd	15 mcd	15 mcd
Power loss	2 W / LED	2 W	2 W
Switching capacity (200 operations)	–	1.25 x I_n, 1.1 x U_n	1.25 x I_n, 1.1 x U_n
Contact function	–	1S, 2S, 1NO+1NC, 2Ö	1S, 2S, 1NO+1NC
Flashing frequency	typ. 2 Hz (Z-BEL)	–	–
Maximum back-up fuse, short circuit	–	20 A gG	20 A gG
Self-ballasted load	–	200 W cap. load	200 W cap. load
Mechanical			
LED-Colour	red, green, red + green, white + white, red/green, orange, blue, white	orange	orange
Button-Colour	–	green - NO red - NC black - NO/NC	black
Frame size	45 mm	45 mm	45 mm
Device height	90 mm	90 mm	90 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		
Degree of protection, built-in device	IP40	IP40	IP40
Upper and lower terminals	lift terminals with guides for secure connection		
Terminal capacity			
one- or more wire	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²
fine wires with wire end sleeve	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274		
Resistance to climatic conditions	acc. to IEC/EN 60068	acc. to IEC/EN 60068	acc. to IEC/EN 60068

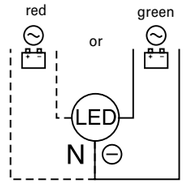
Connection diagram



Dimensions (mm)



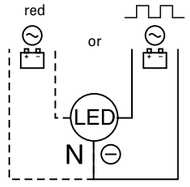
Connection example for LED red/green



L(+) ≡ L(+) –> same potential
N(–) = neutral conductor

Changing of colour by connecting either R- or G-connector terminal.

Connection example for Blinkfunktion



L(+) ≡ L(+) –> same potential
N(–) = neutral conductor

Changing of function by connecting either X2- or X3-connector terminal.

SG85211

Z-DSU1-102

SG85311

Z-DSA2-01-SL

Function	Position	Type Designation	Article No.	Units per package
Rotary Switch Z-DS				
1pole OFF	0 - 1	Z-DSA1-01	248868	1 / 40
1pole CO	1 - 0 - 2	Z-DSU1-102	248869	1 / 40
1pole CO	HA - 0 - AU	Z-DSU1-H0A	248870	1 / 40
1pole CO	TA - 0 - NA	Z-DSU1-T0N	248871	1 / 40
2pole OFF	0 - 1	Z-DSA2-01	248872	1 / 40
2pole OFF	0 - 1	Z-DSA2-01-SL	248873	1 / 40
2pole CO	1 - 2	Z-DSU2-12	248874	1 / 40
2pole CO	1 - 0 - 2	Z-DSU2-102	248875	1 / 40
2pole CO	HA - 0 - AU	Z-DSU2-H0A	248876	1 / 40
3pole CO	1 - 0 - 2	Z-DSU3-102	248877	1 / 40
Voltmeter L-N	L1 - N...	Z-DSV-LN	248878	1 / 40
Voltmeter L-L	L1 - L2...	Z-DSV-LL	248879	1 / 40
Voltmeter L+N	L1 - N3...	Z-DSV-LLLN	248880	1 / 40
Ammeter	0-1-2-3	Z-DSAM-0123	129712	1 / 40

Description Rotary Switch Z-DS

- Rotary switches of series Z-DS are of a modular design:
  The switch proper consists of the engaging work and the switching package. The switching cams (for which it is also called cam switch) are driven by a stable, torsion-proof aluminium shaft. The switching package consists of one or several switching cells with one or two independent contacts. Connections of adjoining switch terminals (necessary in case of voltmeter changeover switch Z-DSV) are contained in the pressed switch component. Consequently, there is no obstacle when connecting the connection lines.
- Application:
  Suitable for virtually any application, e.g. motor switch, garage doors, fans, shutters, heating system control, lighting fixtures, instrument switches, different control purposes, etc.

Technical Data

		Z-DS
Data according to		IEC 60947-3, IEC 60947-5-1, VDE 0660, EN 60947-3, SEV
Nominal thermal current		
open	I_{th}	20 A
hermetically enclosed	I_{thq}	20 A
Nominal operational voltage	U_e	690 V
Rated peak withstand voltage	U_{imp}	6 kV
Disconnector conditions according toÖVE, IEC met up to		440 V
Circuit breaking capacity	I_v	
3 x 220-440 V		160 A
3 x 500 V		100 A
3 x 660-690 V		80 A
Utilisation category AC21A, AC21B		
Switching resistive loads including low overloads		
Nominal operational current	I_n	20 A
Utilisation category AC23A, AC23B		
Switching motors and other highly inductive loads		
Nominal operational current 400 V	I_n	16 A
Nominal power 220-240 V		4 kW
3phase 3pole 380-440 V		7.5 kW
3phase 3pole 500 V		7.5 kW
3phase 3pole 660-690 V		7.5 kW
Star-delta starting switch		
for squirrel cage motors		
Nominal power		
3phase 3pole 220-240 V		3.7 kW
3phase 3pole 380-415 V		7.5 kW
Utilisation category AC3		
Switching of 3phase AC motors		
Nominal operational current 400 V	I_n	12 A
Nominal power 220-240 V		3 kW
3phase 3pole 380-440 V		5.5 kW
3phase 3pole 500 V		5.5 kW
3phase 3pole 660-690 V		5.5 kW
Utilisation category AC15		
Switching of electromagnetic drives, contactors, valves, pull-type electromagnets		
Nominal operational current to 240 V	I_n	6 A
Nominal operational current 380-440 V	I_n	4 A
2pole disconnection 500 V		5 A
Utilisation category DC21A, DC21B		
Switching of resistive loads, time constant L/R ≤ 1 ms		
Nominal operational current	I_n	
1pole 30 V		20 A
1pole 60 V		4 A
1pole 110 V		0.6 A
1pole 220 V		0.3 A
1pole 440 V		–
Utilisation category DC3 - DC5		
Switching of shunt motors and series motors, time constant L/R ≤ 15 ms		
Nominal operational current	I_n	
1pole 30 V		8 A
1pole 60 V		1 A
1pole 110 V		0.3 A
Terminal capacity		
one or several wires		1 - 2.5 mm^2
fine-wire		0.75 - 2.5 mm^2
fine wires with wire end sleeve		0.75 - 1.5 mm^2
terminal screw		M3.5
number of conductors per terminal		2

Technical Data (continue page)

		Z-DS
Switching of capacitive load		
maximum making capacity up to 500 V		140 A
Degree of protection from behind		IP20
Short circuit protection		
max. fuse gL (gG)		20 A
Rated short-time withstand current (1 second current)		250 A
Conditional rated short circuit current		10 $kA_{r.m.s.}$
Short-time load capacity		
Load duration (values applicable to already closed contacts only)		
3 s		100 A
10 s		60 A
30 s		35 A
60 s		25 A

Rotary Switch Z-DS for Lighting Systems

		Z-DS
Utilisation category AC1		
Rated operational current 60 °C	I_{eAC1}	20 A
Utilisation category AC5a		
Rated operational power cosφ 0.5		1.1 kW
Rated operational power 220-240 V~ cosφ 0.9		0.4 A
Rated operational power DUO		3 kW
Utilisation category AC5b		
Rated operational power 220-240 V~		1.4 kW

Incandescent Lamps

Fluorescent Tubes, Mercury Arc Lamps

Utilisation category AC5a	Power	Current	Capacitor	Z-DS
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz
Fluorescent tubes without compensation or with series compensation	11	0.16	-	60
	18	0.37	2.7	25
	24	0.35	2.5	25
	36	0.43	3.4	20
	58	0.67	5.3	14
	65	0.67	5.3	13
	85	0.8	-	11
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 100
	18	0.11	-	2 x 50
	24	0.14	-	2 x 40
	36	0.22	-	2 x 30
	58	0.35	-	2 x 20
	65	0.35	-	2 x 15
	85	0.47	-	2 x 10
Fluorescent tubes with parallel compensation	11	0.16	2.0	30
	18	0.37	2.0	20
	24	0.35	3.0	15
	36	0.43	4.5	10
	58	0.67	7.0	6
	65	0.67	7.0	5
	85	0.8	8.0	4
Fluorescent tubes with electronic ballast	18	0.09	-	40
	36	0.16	-	20
	58	0.25	-	15
	2 x 18	0.17	-	2 x 20
	2 x 36	0.32	-	2 x 10
	2 x 58	0.49	-	2 x 7
Mercury arc lamps, high pressure without compensation e.g.: HQL, HPL	50	0.61	-	16
	80	0.8	-	12
	125	1.15	-	8
	250	2.15	-	4
	400	3.25	-	3
	700	5.4	-	1
	1000	7.5	-	1
Mercury arc lamps, high pressure with compensation e.g.: HQL, HPL	50	0.28	7	7
	80	0.41	8	5
	125	0.65	10	3
	250	1.22	18	2
	400	1.95	25	1
	700	3.45	45	1
	1000	4.8	60	-

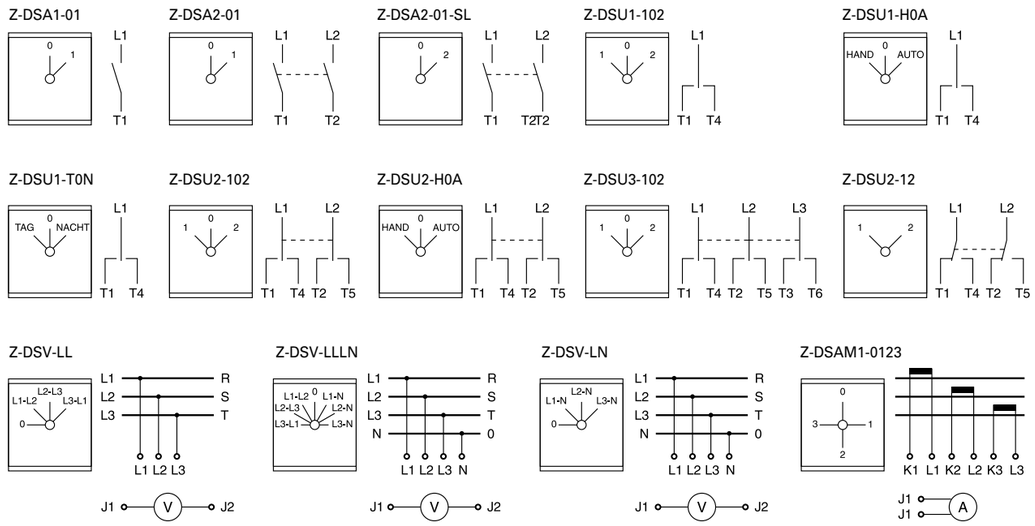
Metal Halide Lamps

	Power	Current	Capacitor	**Z-DS**
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz
Metal halide lamps without compensation e.g. HQI, HPI	35	0.53	-	22
	70	1	-	12
	150	1.8	-	6
	250	3	-	4
	400	3.5	-	3
	1000	9.5	-	1
	2000	16.5	-	-
Metal halide lamps with compensation e.g. HQI, HPI	35	0.25	6	8
	70	0.45	12	4
	150	0.75	20	2
	250	1.5	33	1
	400	2.1	35	1
	1000	5.8	95	-
	2000	11.5	148	-
Transformers for low-voltage halogen lamps	20	-	-	40
	50	-	-	20
	75	-	-	13
	100	-	-	10
	150	-	-	7
	200	-	-	5
	300	-	-	3

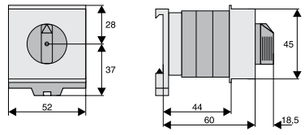
Sodium Vapour Lamps

	Power	Current	Capacitor	**Z-DS**
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz
Sodium vapour lamps low-pressure without compensation	35	1.5	-	7
	55	1.5	-	7
	90	2.4	-	4
	135	3.5	-	3
	150	3.3	-	3
	180	3.3	-	3
	200	3.3	-	3
Sodium vapour lamps low-pressure with compensation	35	0.31	20	3
	55	0.42	20	2
	90	0.63	30	1
	135	0.94	45	1
	150	1	40	1
	180	1.16	40	1
	200	1.32	25	1
Sodium vapour lamps high-pressure without compensation	150	1.8	-	5
	250	3	-	4
	330	3.7	-	3
	400	4.7	-	2
	1000	10.3	-	1
Sodium vapour lamps high pressure with compensation	150	0.83	20	2
	250	1.5	33	2
	330	2	40	1
	400	2.4	48	1
	1000	6.3	106	-

Connection diagram



Dimensions (mm)



Control Voltage	Function	MU	Type Designation	Article No.	Units per package

Installation Relays Type Z-TN

- with manual pre-selection of functions - permanently ON / AUTOM / OFF
- 20 A 250 V AC

SG59711

Z-TN230/SO

230 V, 50 Hz	2NO	1	Z-TN230/SS	265574	2 / 120
230 V, 50 Hz	3NO	2	Z-TN230/3S	265576	1 / 60
230 V, 50 Hz	4NO	2	Z-TN230/4S	265579	1 / 60
230 V, 50 Hz	1NO+1NC	1	Z-TN230/1S1O	267975	2 / 120
230 V, 50 Hz	2NO+2NC	2	Z-TN230/2S2O	103168	1 / 60
24 V, 50 Hz	2NO	1	Z-TN24/SS	267976	2 / 120
24 V, 50 Hz	3NO	2	Z-TN24/3S	267977	1 / 60
24 V, 50 Hz	4NO	2	Z-TN24/4S	267978	1 / 60
24 V, 50 Hz	1NO+1NC	1	Z-TN24/1S1O	267979	2 / 120

SG60111

Z-TN230/3S

Description	Type Designation	Article No.	Units per package

Accessories

Spacer 0.5MU	Z-DST	248949	10

Description Installation Relays Z-TN

Installation relays Z-TN are suitable for switching 1-phase or 3-phases consumers up to 20 A. These devices for universal use in building installations and systems permit implementation of the following applications and control functions:

- Switching lighting systems and electrical heating systems
- Switching ventilation and air conditioning systems, fans
- Switching heat pumps
- Switching electrically controlled roller doors/gates, and blinds
- Switching incandescent lamps and gas discharge lamps

The installation relays of series Z-TN meet the requirements of standards EN/IEC 60947 and EN/IEC 1095.

EN/IEC 1095 deals with „Electromechanical contactors for household and similar purposes." Compliance with this standard means meeting very high demands in terms of safety for humans and property.
EN/IEC 60947 deals with „Electromagnetic contactors in electrical system manufacturing".

Security:

- Manual operation
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Main contacts can be connected to standard pin busbar
- Made of hardly flammable materials and plastics free from chlorine and halogens
- Finger and hand touch safe according to VBG4

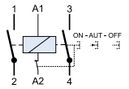
Advantages:

- Low switching noise
- Easy to connect thanks to large terminals supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil feed connection
- Version with mechanical pre-selection of functions ON/AUTO/OFF
  ON/permanently ON: Contact permanently ON until a control pulse is switched on and OFF again. Then, the relay reverts to the AUT position.
  AUT/AUTOMATIC: Standard relay function by control voltage at the coil.
  OFF/permanently OFF: Contacts permanently OFF, independently of the control voltage at the coil.
- Only in AC

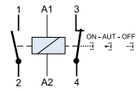
Connection diagrams

1MU

"SS"
2 NO

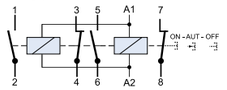


"SO"
1 NO / 1 NC



2MU

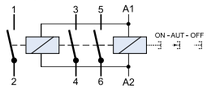
"2S2O"
2 NO / 2 NC



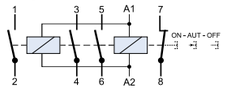
Versions
with mech.
pre-selection

2MU

"3S"
3 NO

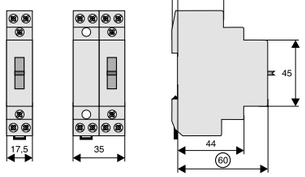


"4S"
4 NO

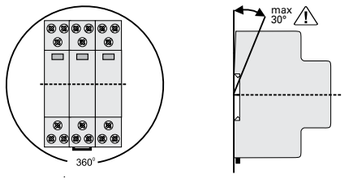


Dimensions (mm)

1MU 2MU

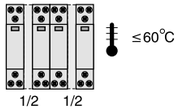


Permitted installation positions



Packing density

Spacers recommended! (Z-DST)



Technical Data

		Z-TN
Electrical		
Standard according		IEC/EN 60947
Rated voltage		250 V, 240/415 V AC
Rated current 250 V AC		20 A
Rated current AC1	I_e	20 A —/⊢
Rated operational power	P_e	4.6 kW 415 V
Number of poles		1 to 4
Main contacts		
NO/NC		1/2 (1MU), 3/4 (2MU)
EMC-Environment		B
Control circuit		
Rated control feed voltage	U_s	
AC		24, 230 V
Rated frequency		50 Hz
Operating range		0.85-1.1 x U_s
Maximum power of coils		
pick-up		10-13 VA, 6-8 W
retaining		3.4-4.0 VA, 2.0-2.4 W
Minimum command duration		> 50 ms
Operating noise		low noise
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	2 kV
Duty		100%
Load Circuit		
Rated operational voltage	U_e	
1p, 2p		250 VAC
3p, 4p		240/415 VAC
Minimum operational voltage	U_{min}	24 V AC/DC (U_s 8-110 V)
Rated insulation voltage	U_i	500 V
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	4 kV
Conventional thermal current	I_{th}	20 A AC
Rated operational current	I_e	20 A AC
Rated constant current	I_u	20 A AC
Rated current DC	I_e	
24 V		16 A
48 V		12.5 A
230 V		1 A
Conditional rated short circuit current	I_q	10 kA (with 20 A gL/gG)
Duration of bouncing		< 10 ms (typ. < 5 ms)
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP20
Mounting position		works in any position, however not hanging
Upper and lower terminals		lift terminals (captive)
Terminal capacity		
Contact and coil		0.5 - 10 mm^2 one- or more wire
		0.5 - 6 mm^2 fine wires with wire end sleeve
Temperature range		-20 to +45 °C
Total contact gap		> 5 mm / independent contacts
Contact material		does not contain cadmium
Endurance		
electrical components		≥ 40x10^3 switching operations
mechanical components		≥ 1x10^6 switching operations

Utilisation categories 1MU, 2MU (except 3 NO, 4 NO)		**Z-TN**
AC-1 -⊠- *)		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-1		4000 W (cosφ = 0.8), 5000 VA
AC-3 Ⓜ		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		4000 W (cosφ = 0.45), 2000 VA
AC-5a ⊗		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W (cosφ = 0.45), 2500 VA
AC-5b ⊗		
Rated operational voltage	U_e	230 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
AC-7a (according toEN 61095) -■-		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-7a		4000 W (cosφ = 0.8), 5000 VA

Utilisation categories 2MU (3 NO, 4 NO)		
AC-1 -⊠- *)		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-1		4000 W (cosφ = 0.8), 5000 VA
AC-3 Ⓜ		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		900 W (cosφ = 0.45), 2000 VA
AC-5a ⊗		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W (cosφ = 0.45), 2500 VA
AC-5b ⊗		
Rated operational voltage	U_e	230/400 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
AC-7a (according toEN 61095) -■-		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-7a		4000 W (cosφ = 0.8), 5000 VA
AC-7b (according toEN 61095) Ⓜ		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-7b		1125 W (cosφ = 0.8), 2500 VA

—/⊢ *) suitable for insulation, tested on AC-1

Max. number of lamps

Lamp Types	Power W	Current A	Capacitor µF	Z-TN max. number of lamps per current path at 230 V, 50 Hz
Incandescent Lamps	60	0.27	-	33
Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer	20	0.09	-	55
	50	0.22	-	22
	75	0.33	-	14
	100	0.43	-	11
	150	0.65	-	7
	200	0.87	-	5
	300	1.3	-	3
Fluorescent tubes without compensation or with series compensation	11	0.16	1.3	62
	18	0.37	2.7	27
	24	0.35	2.5	27
	36	0.43	3.4	24
	58	0.67	5.3	15
	65	0.67	5.3	14
	85	0.8	5.3	12
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 71
	18	0.11	-	2 x 45
	24	0.14	-	2 x 35
	36	0.22	-	2 x 22
	58	0.35	-	2 x 14
	65	0.35	-	2 x 14
	85	0.47	-	2 x 10
Fluorescent tubes with parallel compensation	11	0.16	3.0	34
	18	0.37	4.0	26
	24	0.35	4.0	26
	36	0.43	4.0	26
	58	0.67	7.0	14
	85	0.8	8.0	13
Fluorescent tubes with electronic ballast	18	0.09	-	32
	36	0.16	-	16
	58	0.25	-	12
	2 x 18	0.17	-	16
	2 x 36	0.32	-	8
	2 x 58	0.49	-	6

Installation Contactors, 20A

U_c	Rating	Function	Type Designation	Article No.	Units per package
AC types					
230 V AC	20 A	1NO	CR2010230A	EP-502131	2 / 120
230 V AC	20 A	2NO	CR2020230A	135182	2 / 120
230 V AC	20 A	1NC	CR2001230A	EP-502132	2 / 120
230 V AC	20 A	2NC	CR2002230A	135170	2 / 120
230 V AC	20 A	1NO + 1NC	CR2011230A	135174	2 / 120
24 V AC	20 A	1NO	CR2010024A	EP-502133	2 / 120
24 V AC	20 A	2NO	CR2020024A	135178	2 / 120
24 V AC	20 A	2NC	CR2002024A	135168	2 / 120
24 V AC	20 A	1NO + 1NC	CR2011024A	135172	2 / 120
AC/DC types					
230 V AC/DC	20 A	2NO	CR2020230	135181	2 / 120
230 V AC/DC	20 A	2NC	CR2002230	135169	2 / 120
230 V AC/DC	20 A	1NO + 1NC	CR2011230	135173	2 / 120
24 V AC/DC	20 A	1NO	CR2010024	EP-502134	2 / 120
24 V AC/DC	20 A	2NO	CR2020024	135177	2 / 120
24 V AC/DC	20 A	2NC	CR2002024	176469	2 / 120
24 V AC/DC	20 A	1NO + 1NC	CR2011024	135171	2 / 120
12 V AC/DC	20 A	2NO	CR2020012	135175	2 / 120
12 V AC/DC	20 A	2NC	CR2002012	193907	2 / 120
12 V AC/DC	20 A	1NO + 1NC	CR2011012	193906	2 / 120
8 V AC/DC	20 A	2NO	CR2020008	193908	2 / 120
8 V AC/DC	20 A	1NO + 1NC	CR2011008	193909	2 / 120

Accessories

U_c	Type Designation	Article No.	Units per package
Auxiliary contacts 1NO + 1NC, 6 A	CRA611	135215	3
Auxiliary contacts 2NO, 6 A	CRA620	135216	3
Spacer 0.5MU	Z-DST	248949	10
Sealing cover (1 MU) for CR20	CRC20	135217	10

Description Installation Contactors CR20

Contactors are frequently applied for switching of lamp loads, fans or pumps in both utility as well as industrial areas. All contactors with AC/DC coils ensure silent operation which is further enhanced by a low power consumption. Optimal contacts and low heat dissipation guarantee a long lifetime of the contactor.

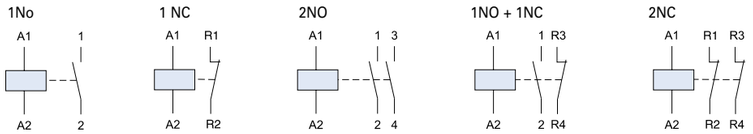
Technical characteristics:

- Designed according to IEC 60947-4-1 and IEC 61095 standards
- Suitable for applications in general control, heating & lighting applications
- Available in 20 A rating with 1 or 2-pole contacts
- Coil voltages: 8 V AC/DC, 12 V AC/DC, 24 V AC/DC and 230 V AC/DC
- Optional add-on auxiliary contact available
- DIN modular profile
- Spacers available to extend lifetime (it is recommended to use 1 spacer between every 2 contactors installed)

Advantages:

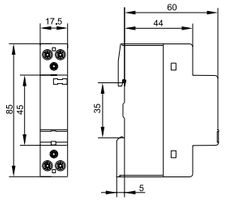
- Low inrush power for all AC/DC types
- Availability of combined AC/DC type contactors ensure silent operation (hum-free)
- Contactors of AC/DC coil type are operable on both AC and DC voltage. The versions are also available with an AC only coil type
- All combined AC/DC type versions are equipped with surge protection on the operating coil
- Equipped with contact indication
- Optimal quality of contacts and low heat dissipation ensure a long life time

Connection diagrams

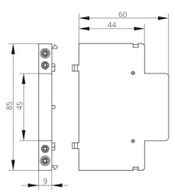


Dimensions (mm)

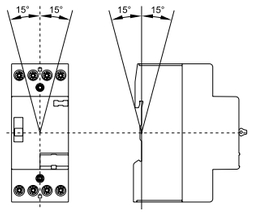
CR20



CRA



Permitted installation positions



Packing density

Spacers recommended! (Z-DST)

Technical Data

CR		Contactors	Aux. contact
Rating		**20 A**	**6 A**
General			
Standards		IEC 60947-4-1, IEC 61095	IEC 60947-5-1
Nominal operating voltage	U_e	400 V[1/2]	230 / 400 V
Mechanical endurance (switching cycles)		3,000,000[4] /10,000,000[3]	3,000,000
Protection class (according to DIN 40 050, IEC 529)		IP20	IP20
Permissible ambient temperature		-15 °C up to +55 °C	-25 °C up to +55 °C
Storage temperature		-40 °C up to +80 °C	-30 °C up to +80 °C
Contact rating			
Rated insulation voltage	U_i	440 V	500 V
Frequency	f	50 / 60 Hz	50 / 60 Hz
Rated impulse withstand voltage	U_{imp}	4 kV	4 kV
Rated thermal current	I_{th}	20 A	6 A
Power dissipation per contact at I_n		1.7 W	0.3 W
AC1 / AC7a Rated operational current	I_e	20 A	
AC1 / AC7a Operational power rating at U_e = 230 VAC	P_e	4 kW	
AC3 / AC7b Operational power rating at U_e = 230 VAC	P_e	NO: 1.3 kW; NC: 0.75 kW	
AC-15 Rated operational current	I_e		
Single phase 230 V			6A
Single phase 400 V			4A
DC-1 (L/R ≤ 1 ms) Rated operational current	I_e		
1-pole:			
at U_e = 24 V DC		20 A	
at U_e = 110 V DC		6 A	
at U_e = 220 V DC		0,6 A	
2-poles in series:			
at U_e = 24 V DC		20 A	
at U_e = 110 V DC		10 A	
at U_e = 220 V DC		6 A	
DC-13 Rated operational current	I_e		
1-pole:			
at U_e = 24 V DC			6 A
at U_e = 110 V DC			0.3 A
at U_e = 220 V DC			0,05 A
2-poles in series:			
at U_e = 24 V DC			6 A
at U_e = 110 V DC			1 A
at U_e = 220 V DC			0.1 A
Contact material		AgNi (80% Ag, 20% Ni)	
Opening distance		3.6 mm	
Electrical endurance			
AC-1 / AC-7a Application (maximum operating cycles)		200,000	
AC-3 / AC-7b Application (maximum operating cycles)		300,000	
AC-1/AC-3/AC-5b/AC-6b/AC-15 (max. op. cycles/hour)		600	
AC-15 / DC-13 (maximum operating cycles)			50,000
Operating coil			
Coil inrush power (for all voltage ratings)		1.2 VA/1.0 W[4] / 2.1 VA/2.1 W[3]	
Coil consumption operation (for all voltage ratings)		2.8 VA/1.2 W[4] / 2.1 VA/2.1 W[3]	
Closing delay		15 – 25 ms[4] / 15 – 45 ms[3]	
Opening delay		10 – 30 ms[4] / 20 – 50 ms[3]	
Range of control voltage	U_c	85 up to 110%	
Kind of voltage		AC, AC / DC	
Frequency (AC)		50/60 Hz[4] / 40 .. 500 Hz[3]	
Dimensions			
Width		17.5 mm	9 mm
Height		85 mm	85 mm
Depth		65 mm	60 mm
Terminals for main			
Terminal capacity - fine stranded wire		1 to 6 mm^2	
Terminal capacity - solid wire		1 to 10 mm^2	
Terminal screw size		M3,5	
Terminal screw head type (Pozidrive)		PZ Size 1	
Maximum torque		1.2 Nm	
Terminals for operating coils			
Terminal capacity - fine stranded wire		1 to 2.5 mm^2	
Terminal capacity - solid wire		1 to 2.5 mm^2	
Terminal screw size		M3	
Terminal screw head type (Pozidrive)		PZ Size 1	
Maximum torque		0.6 Nm	
Terminals for auxiliary circuit			
Terminal capacity - fine stranded wire			1 to 2.5 mm^2
Terminal capacity - solid wire			1 to 2.5 mm^2
Terminal screw size			M3
Terminal screw head type (Pozidrive)			PZ Size 1
Maximum torque			0.8 Nm

1) Rated operational voltage between two line (phases) conductors
2) Rated operational voltage for versions of contacts 1NC, 1NO is 230V
3) For combined AC/DC types only (not for AC only types)
4) For AC only types

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V. 50 Hz
Lamps Type	W	A	µF	CR20
Incandescent lamps	11	0.05	-	182
and	15	0.07	-	133
halogen lamps	18	0.08	-	111
	20	0.09	-	100
	25	0.11	-	80
	28	0.12	-	71
	30	0.13	-	67
	33	0.14	-	61
	35	0.15	-	57
	40	0.17	-	50
	42	0.18	-	48
	46	0.2	-	43
	48	0.21	-	42
	50	0.22	-	40
	53	0.23	-	38
	57	0.25	-	35
	60	0.26	-	33
	70	0.3	-	29
	75	0.33	-	27
	77	0.34	-	26
	80	0.35	-	25
	100	0.44	-	20
	116	0.5	-	17
	120	0.52	-	17
	150	0.65	-	13
	160	0.7	-	13
	200	0.87	-	10
	205	0.89	-	10
	230	1	-	9
	300	1.3	-	7
	400	1.74	-	5
	500	2.17	-	4
	750	3.26	-	3
	1000	4.35	-	2
	1500	6.52	-	1
	2000	8.7	-	1
Transformators for low-voltage halogen	10	0.04	-	100
lamps	20	0.09	-	50
(electromagnetic and electronic)	30	0.13	-	33
	40	0.17	-	25
	50	0.22	-	20
	60	0.26	-	17
	70	0.3	-	14
	80	0.35	-	13
	90	0.39	-	11
	100	0.44	-	10
	150	0.65	-	7
	200	0.87	-	5
	300	1.3	-	3
	400	1.74	-	3
Compact fluorescent lamps with internal	3	0.04	-	150
ballasts	5	0.06	-	90
	6	0.07	-	75
	7	0.08	-	64
	8	0.09	-	56
	9	0.1	-	50
	10	0.11	-	45
	11	0.12	-	41
	12	0.13	-	38
	13	0.14	-	35
	14	0.15	-	32
	15	0.16	-	30
	16	0.18	-	28
	17	0.19	-	26

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz
	18	0.2	-	25
	20	0.21	-	23
	21	0.22	-	21
	22	0.23	-	20
	23	0.24	-	20
	24	0.25	-	19
	25	0.26	-	18
	26	0.27	-	17
	27	0.124	-	17
	30	0.15	-	15
	33	0.155	-	14
	35	0.164	-	13
	40	0.2	-	11
	50	0.24	-	9
	70	0.312	-	6
Compact fluorescent lamps with external	5	0.05	-	84
electromagnetic ballasts	2x5	0.07	-	60
- uncorrected	7	0.05	-	84
	2x7	0.07	-	60
	9	0.06	-	70
	2x9	0.08	-	53
	10	0.07	-	60
	11	0.08	-	53
	13	0.08	-	53
	16	0.1	-	42
	18	0.12	-	35
	2x18	0.21	-	20
	21	0.12	-	35
	22	0.2	-	21
	24	0.15	-	28
	26	0.15	-	28
	28	0.15	-	28
	32	0.22	-	19
	36	0.21	-	20
	38	0.21	-	20
	40	0.21	-	20
	58	0.32	-	13
Compast fluorescent lamps with external	5	0.05	2	15
electromagnetic ballasts	2x5	0.07	2	15
- parallel corrected	7	0.05	2	15
	2x7	0.07	2	15
	9	0.06	2	15
	2x9	0.08	2	15
	10	0.07	2	15
	11	0.08	2	15
	13	0.08	2	15
	16	0.1	2	15
	18	0.12	4,5	7
	2x18	0.21	4	8
	21	0.12	3	10
	22	0.2	4,5	7
	24	0.15	4,5	7
	26	0.15	4,5	7
	28	0.15	3,5	9
	32	0.22	4	8
	36	0.21	4,5	7
	38	0.21	4,5	7
	40	0.21	4,5	7
	58	0.32	7	4
Compact fluorescent lamps with external	5	0.03	-	75
electronic ballasts	7	0.04	-	56
	9	0.05	-	45
	2x9	0.09	-	25
	10	0.05	-	45
	2x10	0.09	-	25
	11	0.07	-	32

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz
	2x11	0.12	-	19
	13	0.07	-	32
	2x13	0.12	-	19
	14	0.08	-	28
	2x14	0.15	-	15
	16	0.07	-	32
	17	0.1	-	23
	2x17	0.18	-	13
	18	0.09	-	25
	2x18	0.17	-	13
	22	0.13	-	17
	2x22	0.21	-	11
	24	0.12	-	19
	2x24	0.23	-	10
	3x24	0.32	-	7
	4x24	0.43	-	5
	26	0.12	-	19
	2x26	0.24	-	9
	28	0.14	-	16
	32	0.16	-	14
	2x32	0.31	-	7
	36	0.16	-	14
	2x36	0.31	-	7
	38	0.17	-	13
	2x38	0.35	-	6
	40	0.2	-	11
	2x40	0.39	-	6
	42	0.2	-	11
	2x42	0.41	-	5
	55	0.27	-	8
	2x55	0.52	-	4
	57	0.28	-	8
	2x57	0.57	-	4
	60	0.31	-	7
	2x60	0.61	-	4
	70	0.34	-	7
	80	0.38	-	6
	2x80	0.76	-	3
	85	0.42	-	5
	100	0.46	-	5
	120	0.58	-	4
	150	0.69	-	3
Fluorescent lamps with external electromagnetic ballasts - uncorrected	4	0.17	-	52
	6	0.16	-	55
	8	0.15	-	59
	10	0.17	-	52
	11	0.16	-	55
	13	0.17	-	52
	14	0.4	-	22
	15	0.33	-	27
	16	0.2	-	44
	18	0.37	-	24
	20	0.38	-	23
	22	0.37	-	24
	25	0.29	-	30
	30	0.37	-	24
	32	0.43	-	20
	36	0.43	-	20
	38	0.43	-	20
	40	0.43	-	20
	58	0.67	-	13
	65	0.67	-	13
	75	0.67	-	13
	80	0.8	-	11
	85	0.8	-	11
	100	0.96	-	9
	125	0.94	-	9

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz
Fluorescent lamps with external electromagnetic ballasts - parallel corrected	4	0.09	2	15
	6	0.08	2	15
	8	0.08	2	15
	10	0.09	2	15
	11	0.08	2	15
	13	0.09	2	15
	14	0.2	4,5	7
	15	0.17	4,5	7
	16	0.1	2,5	12
	18	0.19	4,5	7
	20	0.19	4,5	7
	22	0.19	5	6
	25	0.15	3,5	9
	30	0.24	4,5	7
	32	0.29	5	6
	36	0.29	4,5	7
	38	0.29	4,5	7
	40	0.29	4,5	7
	58	0.46	7	4
	65	0.46	7	4
	75	0.46	6	5
	80	0.57	7	4
	85	0.57	8	4
	100	0.66	10	3
	125	0.65	18	2
Series circuit for two fluorescent lamps with external electromagnetic ballast - uncorrected	2x4	0.34	-	26
	2x6	0.32	-	28
	2x8	0.3	-	29
	2x10	0.34	-	26
	2x11	0.32	-	28
	2x13	0.34	-	26
	2x14	0.8	-	11
	2x15	0.66	-	13
	2x16	0.4	-	22
	2x18	0.74	-	12
	2x20	0.76	-	12
	2x22	0.74	-	12
	2x25	0.58	-	15
	2x30	0.74	-	12
	2x32	0.86	-	10
	2x36	0.86	-	10
	2x38	0.86	-	10
	2x40	0.86	-	10
	2x58	1.34	-	7
	2x65	1.34	-	7
	2x75	1.34	-	7
	2x80	1.6	-	6
	2x85	1.6	-	6
	2x100	1.92	-	5
	2x125	1.88	-	5
Series circuit for two fluorescent lamps with external electromagnetic ballast - parallel corrected	2x4	0.17	2	15
	2x6	0.16	2	15
	2x8	0.15	2	15
	2x10	0.17	2	15
	2x11	0.16	2	15
	2x13	0.17	2	15
	2x14	0.4	4,5	7
	2x15	0.33	4,5	7
	2x16	0.2	2,5	12
	2x18	0.37	4,5	7
	2x20	0.38	4,5	7
	2x22	0.37	5	6
	2x25	0.29	3,5	9
	2x30	0.37	4,5	7
	2x32	0.43	5	6

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz
	2x36	0.43	4,5	7
	2x38	0.43	4,5	7
	2x40	0.43	4,5	7
	2x58	0.67	7	4
	2x65	0.67	7	4
	2x75	0.67	6	5
	2x80	0.8	7	4
	2x85	0.8	8	4
	2x100	0.96	10	3
	2x125	0.94	18	2
Lead-lag circuit for fluorescent lamps with external electromagnetic ballasts - series corrected	2x18	0.26	2,7	31
	2x36	0.48	4,5	17
	2x40	0.48	4,5	17
	2x58	0.78	7	10
	2x65	0.78	7	10
	2x80	0.96	9	8
	2x85	0.96	9	8
	2x125	1.2	18	7
Fluorescent lamps with external electronic ballasts	4	0.03	-	117
	6	0.033	-	106
	2x6	0.06	-	58
	8	0.04	-	88
	2x8	0.08	-	44
	10	0.05	-	70
	2x10	0.09	-	39
	11	0.06	-	58
	13	0.07	-	50
	14	0.08	-	44
	2x14	0.15	-	23
	3x14	0.21	-	17
	4x14	0.28	-	13
	15	0.08	-	44
	2x15	0.13	-	27
	16	0.07	-	50
	2x16	0.14	-	25
	3x16	0.2	-	18
	4x16	0.28	-	13
	18	0.09	-	39
	2x18	0.17	-	21
	3x18	0.24	-	15
	4x18	0.31	-	11
	19	0.11	-	32
	2x19	0.22	-	16
	20	0.11	-	32
	2x20	0.22	-	16
	21	0.11	-	32
	2x21	0.22	-	16
	22	0.11	-	32
	2x22	0.23	-	15
	24	0.12	-	29
	2x24	0.22	-	16
	3x24	0.33	-	11
	4x24	0.43	-	8
	25	0.15	-	23
	2x25	0.28	-	13
	28	0.14	-	25
	2x28	0.27	-	13
	30	0.14	-	25
	2x30	0.27	-	13
	32	0.17	-	21
	2x32	0.35	-	10
	34	0.17	-	21
	2x34	0.35	-	10

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz
	35	0.17	-	21
	2x35	0.34	-	10
	36	0.16	-	22
	2x36	0.31	-	11
	3x36	0.46	-	8
	38	0.15	-	23
	2x38	0.31	-	11
	39	0.19	-	18
	2x39	0.36	-	10
	40	0.21	-	17
	2x40	0.42	-	8
	45	0.24	-	15
	2x45	0.46	-	8
	49	0.24	-	15
	2x49	0.46	-	8
	50	0.25	-	14
	2x50	0.48	-	7
	51	0.22	-	16
	2x51	0.42	-	8
	54	0.26	-	13
	2x54	0.52	-	7
	55	0.28	-	13
	2x55	0.55	-	6
	58	0.25	-	14
	2x58	0.48	-	7
	65	0.25	-	14
	2x65	0.48	-	7
	70	0.3	-	12
	2x70	0.57	-	6
	73	0.38	-	9
	2x73	0.7	-	5
	80	0.4	-	9
	2x80	0.76	-	5
High pressure mercury vapour lamps with external electromagnetic ballasts - uncorrected	50	0.6	-	14
	80	0.8	-	10
	125	1.2	-	7
	250	2.2	-	4
	400	3.3	-	2
	700	5.4	-	1
	1000	7.5	-	1
High pressure mercury vapour lamps with external electromagnetic ballasts - parallel corrected	50	0.3	7	4
	80	0.4	8	4
	125	0.6	10	3
	250	1.2	18	1
	400	1.8	25	1
	700	3.4	40	0
	1000	4.8	60	0
High pressure mercury vapour lamps which do not require ballasts	160	0.8	-	11
	250	1.2	-	7
	500	2.4	-	4
Metal halide lamps with external electromagnetic ballasts - uncorrected	35	0.5	-	18
	70	1	-	10
	100	1.2	-	8
	150	1.8	-	5
	250	3	-	3
	400	4.6	-	3
	600	6.2	-	1
	1000	9.7	-	1
	2000	12.2	-	0

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz
Metal halide lamps with external electromagnetic ballasts - parallel corrected	35	0.23	6	5
	70	0.42	12	2
	100	0.55	12	2
	150	0.77	20	1
	250	1.26	32	0
	400	2	45	0
	600	3	65	0
	1000	5	85	0
	2000	10.5	125	0
Metal halide lamps with external electronic ballasts	20	0.11	-	18
	35	0.21	-	10
	2x35	0.38	-	5
	50	0.29	-	7
	70	0.38	-	5
	2x70	0.71	-	3
	100	0.56	-	4
	150	0.72	-	3
	250	1.3	-	2
	400	2	-	1
	1000	5	-	0
	2000	6	-	0
High pressure sodium vapour lamps with external electromagnetic ballasts - uncorrected	35	0.53	-	15
	50	0.8	-	11
	70	1	-	9
	100	1.2	-	7
	150	1.8	-	5
	250	3	-	3
	400	4.4	-	2
	600	6.2	-	1
	1000	10.3	-	0
High pressure sodium vapour lamps with external electromagnetic ballasts - parallel corrected	35	0.22	6	5
	50	0.3	8	3
	70	0.4	12	2
	100	0.55	12	2
	150	0.77	20	1
	250	1.26	32	0
	400	2	45	0
	600	2.9	65	0
	1000	5.1	100	0
High pressure sodium vapour lamps with external electronic ballasts	35	0.21	-	10
	50	0.25	-	8
	70	0.38	-	5
	100	0.56	-	4
	150	0.72	-	3
	250	1.3	-	2
	400	2	-	1
	600	3.1	-	0
	1000	5	-	0
Low pressure sodium vapour lamps with external electromagnetic ballasts - uncorrected	18	0.4	-	22
	35	0.6	-	7
	55	0.6	-	7
	90	0.9	-	4
	135	0.9	-	3
	180	0.9	-	3
Low pressure sodium vapour lamps with external electromagnetic ballasts - parallel corrected	18	0.35	5	6
	35	0.28	20	1
	55	0.35	20	1
	90	0.55	26	1
	135	0.8	40	0
	180	1	40	0
Low pressure sodium vapour lamps with ECG	35	0.16	-	13
	55	0.25	-	8
LED lamps Power supplies for LEDs	-	-	-	max. 2.4 A per pole

Installation Contactors 25 A, 40 A & 63 A, AC/DC

U_c	Rating	Function	Type Designation	Article No.	Units per package
25A (hum-free)					
230 V AC/DC	25 A	3 NO	CR2530230	135193	1 / 60
230 V AC/DC	25 A	4 NO	CR2540230	135201	1 / 60
230 V AC/DC	25 A	2 NO + 2 NC	CR2522230	135189	1 / 60
230 V AC/DC	25 A	4 NC	CR2504230	135185	1 / 60
24 V AC/DC	25A	3 NO	CR2530024	135191	1 / 60
24 V AC/DC	25 A	4 NO	CR2540024	135197	1 / 60
24 V AC/DC	25 A	2 NO + 2 NC	CR2522024	135187	1 / 60
24 V AC/DC	25 A	4 NC	CR2504024	135183	1 / 60
12 V AC/DC	25 A	4 NO	CR2540012	135195	1 / 60
40A (hum-free)					
230 V AC/DC	40 A	2 NO	CR4020230	135205	1 / 40
230 V AC/DC	40 A	3 NO	CR4030230	135207	1 / 40
230 V AC/DC	40 A	4 NO	CR4040230	135211	1 / 40
230 V AC/DC	40 A	2 NC	CR4002230	135203	1 / 40
24 V AC/DC	40 A	2 NO	CR4020024	135204	1 / 40
24 V AC/DC	40 A	3NO	CR4030024	135206	1 / 40
24 V AC/DC	40 A	4 NO	CR4040024	135209	1 / 40
12 V AC/DC	40 A	4 NO	CR4040012	135208	1 / 40
63A (hum-free)					
230 V AC/DC	63 A	2 NO	CR6320230	135212	1 / 40
230 V AC/DC	63 A	4 NO	CR6340230	135214	1 / 40
24 V AC/DC	63 A	4 NO	CR6340024	135213	1 / 40

Accessories

Description	Type Designation	Article No.	Units per package
Auxiliary contacts 1NO + 1NC, 6 A	CRA611	135215	3
Auxiliary contacts 2NO, 6 A	CRA620	135216	3
Spacer 0.5MU	Z-DST	248949	10
Sealing cover (2MU) for CR25	CRC25	135218	10
Sealing cover (3MU) for CR40 and CR63	CRC63	135219	10

Description Installation Contactors CR25, CR40 and CR63

Contactors are frequently applied for switching of lamp loads, fans or pumps in both utility as well as industrial areas. All contactors with AC/DC coils ensure silent operation (hum-free) which is further enhanced by a low power consumption. Optimal contacts and low heat dissipation guarantee a long lifetime of the contactor.

Technical characteristics

- Designed according to IEC 60947-4-1 and IEC 61095 standards
- Suitable for applications in general control, heating & lighting applications
- Available in 25 A, 40 A and 63 A rating with 2, 3 or 4-pole contacts
- Coil voltages: 12 V AC/DC, 24 V AC/DC, 48 V AC/DC and 230 V AC/DC
- Optional add-on auxiliary contact available
- DIN modular profile
- Spacers available to extend lifetime (it is recommended to use 1 spacer between every 2 contactors installed)

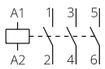
Advantages:

- Low inrush power for all AC/DC types
- Availability of combined AC/DC type contactors ensure silent operation (hum-free)
- Contactors of AC/DC coil type are operable on both AC and DC voltage.
- All combined AC/DC type versions are equipped with surge protection on the operating coil
- Equipped with contact indication
- Optimal quality of contacts and low heat dissipation ensure a long lifetime

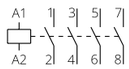
Connection diagrams

2 NO

3 NO



4 NO



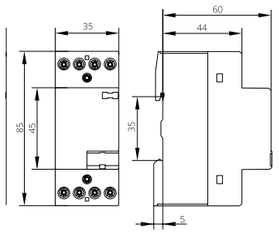
2 NO + 2 NC

2 NC

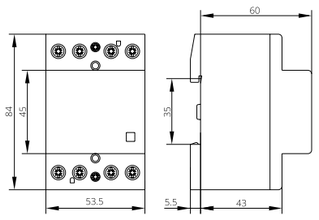
4 NC

Dimensions (mm)

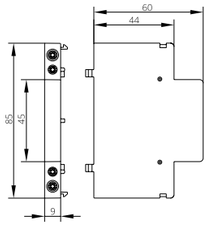
CR25



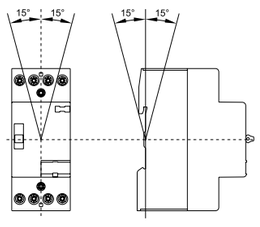
CR40 & CR63



CRA

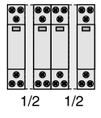


Permitted installation positions



Packing density

Spacers recommended! (Z-DST)



Technical Data

CR		Contactors			Aux. contact
Rating		**25 A**	**40 A**	**63 A**	**6 A**
General					
Standards		IEC/EN 60947-4-1, IEC/EN 61095			IEC/EN 60947-5-1
Nominal operating voltage	U_e (V)	400			230 / 400
Mechanical endurance (switching cycles)		10,000,000			3,000,000
Protection class (according to DIN 40 050, IEC 529)		IP20			IP20
Permissible ambient temperature	(°C)				25 up to +55
4NO		-25..+70	-25..+70	-25..+70	
3NO		-15..+70	-15..+70		
2NO			-15 .. +70	-15 .. +70	
2NO+2NC		-15..+55			
2NC			-15..+55		
4NC		-15..+55			
Storage temperature	(°C)	-40 up to +80			-30 up to +80
Contact rating					
Rated insulation voltage	U_i (V)	440			500
Frequency	f (Hz)	50 / 60			50 / 60
Rated impulse withstand voltage	U_{imp} (kV)	4	6	6	4
Rated thermal current	I_{th} (A)	25	40	63	6
Power dissipation per contact at In	(W)	2.2	4	8	0.3
AC-1 / AC-7a Rated operational current	I_e (A)	25	40	63	
AC-1 / AC-7a Operational power rating	P_{max} (kW)				
Single phase 230 V		5.4	8.7	13.3[2]	
Three phase 230 V		9	16	24[2]	
Three phase 400 V		16	26	40[2]	
AC-3 / AC-7b Operational power rating	P_{max} (kW)				
Single phase 230 V		1.3	3.7	5	
Three phase 230 V		2.2	5.5	8.5	
Three phase 400 V		4	11	15	
AC-15 Rated operational current	I_e (A)				
Single phase 230 V					
Single phase 400 V					
DC-1 (L/R ≤ 1 ms) Rated thermal current	I_e (A)				
1-pole: at Ue = 24/110/220 V DC		25/6/0.6	40/4/1.2	63/4/1.2	
2-poles in series: at Ue = 24/110/220 V DC		25/10/6	40/10/8	63/10/8	
3-poles in series: at Ue = 24/110/220 V DC		25/20/15	40/30/20	63/35/30	
4-poles in series: at Ue = 24/110/220 V DC		25/20/15	40/40/40	63/63/63	
DC-13 Rated thermal current	I_e (A)				
1-pole: at Ue = 24/110/220 V DC					6/0.3/0.05
2-poles in series: at Ue = 24/110/220 V DC					6/1/0.1
Contact material		AgNi	AgSnO2	AgSnO2	
Opening distance	(mm)	4.6 (NO)/4.2 (NC)	3.5 (NO)/2.8 (NC)	3.5 (NO)/2.8 (NC)	
Electrical endurance					
AC-1 / AC-7a Application (maximum operating cycles)		200,000	100,000	100,000	
AC-3 / AC-7b Application (maximum operating cycles)		500,000	150,000	150,000	
AC-1/AC-3/AC-5b/AC-6b/AC-15 (max. op. cycles/hour)			600		
AC-15 / DC-13 (maximum operating cycles)					50,000
Operating coil					
Coil inrush power (for all voltage ratings)	(VA/W)	2.6/2.6[1]	5/5	5/5	
Coil consumption (for all voltage ratings)		2.6/2.6[1]	5/5	5/5	
Closing delay	(ms)	15 – 45	15 - 20	15 - 20	
Opening delay	(ms)	20 – 70	35 - 45	35 - 45	
Range of control voltage	Uc		85 up to 110%		
Kind of voltage			AC / DC		
Frequency (AC)	f (Hz)		40 .. 500		
Dimensions					
Width	(mm)	35	53.5	53.5	9
Height	(mm)	85	84	84	85
Depth	(mm)	65	65.5	65.5	60
Terminals for main					
Terminal capacity - fine stranded wire	(mm^2)	1 to 6	1.5 to 16	1.5 to 16	
Terminal capacity - solid wire	(mm^2)	1 to 10	1.5 to 25	1.5 to 25	
Terminal screw size		M3.5	M5	M5	
Terminal screw head type (Pozidrive)		PZ1	PZ2	PZ2	
Maximum torque	(Nm)	1.2	3.5	3.5	
Terminals for operating coils					
Terminal capacity - fine stranded wire	(mm^2)		1 to 2.5		
Terminal capacity - solid wire	(mm^2)		1 to 2.5		
Terminal screw size			M3		
Terminal screw head type (Pozidrive)			PZ1		
Maximum torque	(Nm)		0.6		
Terminals for auxiliary circuit					
Terminal capacity - fine stranded wire	(mm^2)				1 to 2.5
Terminal capacity - solid wire	(mm^2)				1 to 2.5
Terminal screw size					M3
Terminal screw head type (Pozidrive)					PZ Size 1
Maximum torque	(Nm)				0.8

1) Coil consumption for version 4NC is 3.8 VA/3.8 W

2) Rated power (AC-1) for CR63 4NC: single phase 230 V = 10.9 kW, three phase 230 V = 18.9 kW, three phase 400 V = 32.9 kW

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
Incandescent lamps and halogen lamps	11	0.05	-	200	364	455
	15	0.07	-	147	267	333
	18	0.08	-	122	222	278
	20	0.09	-	110	200	250
	25	0.11	-	88	160	200
	28	0.12	-	79	143	179
	30	0.13	-	73	133	167
	33	0.14	-	67	121	152
	35	0.15	-	63	114	143
	40	0.17	-	55	100	125
	42	0.18	-	52	95	119
	46	0.2	-	48	87	109
	48	0.21	-	46	83	104
	50	0.22	-	44	80	100
	53	0.23	-	42	75	94
	57	0.25	-	39	70	88
	60	0.26	-	37	67	83
	70	0.3	-	31	57	71
	75	0.33	-	29	53	67
	77	0.34	-	29	52	65
	80	0.35	-	28	50	63
	100	0.44	-	22	40	50
	116	0.5	-	19	34	43
	120	0.52	-	18	33	42
	150	0.65	-	15	27	33
	160	0.7	-	14	25	31
	200	0.87	-	11	20	25
	205	0.89	-	11	20	24
	230	1	-	10	17	22
	300	1.3	-	7	13	17
	400	1.74	-	6	10	13
	500	2.17	-	4	8	10
	750	3.26	-	3	5	7
	1000	4.35	-	2	4	5
	1500	6.52	-	1	3	3
	2000	8.7	-	1	2	3
Transformators for low-voltage halogen lamps (electromagnetic and electronic)	10	0.04	-	120	270	430
	20	0.09	-	60	135	215
	30	0.13	-	40	90	143
	40	0.17	-	30	68	108
	50	0.22	-	24	54	86
	60	0.26	-	20	45	72
	70	0.3	-	17	39	61
	80	0.35	-	15	34	54
	90	0.39	-	13	30	48
	100	0.44	-	12	27	43
	150	0.65	-	8	18	29
	200	0.87	-	6	14	22
	300	1.3	-	4	9	14
	400	1.74	-	3	7	11
Compact fluorescent lamps with internal ballasts	3	0.04	-	200	550	700
	5	0.06	-	120	330	420
	6	0.07	-	100	275	350
	7	0.08	-	86	236	300
	8	0.09	-	75	206	263
	9	0.1	-	67	183	233
	10	0.11	-	60	165	210
	11	0.12	-	55	150	191
	12	0.13	-	50	138	175
	13	0.14	-	46	127	162
	14	0.15	-	43	118	150
	15	0.16	-	40	110	140
	16	0.18	-	38	103	131
	18	0.2	-	33	92	117

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
	20	0.21	-	30	83	105
	21	0.22	-	29	79	100
	22	0.23	-	27	75	95
	23	0.24	-	26	72	91
	24	0.25	-	25	69	88
	25	0.26	-	24	66	84
	26	0.27	-	23	63	81
	27	0.124	-	22	61	78
	30	0.15	-	20	55	70
	33	0.155	-	18	50	64
	35	0.164	-	17	47	60
	40	0,2	-	15	41	53
	50	0.24	-	12	33	42
	70	0.312	-	9	24	30
Compact fluorescent lamps with external electromagnetic ballasts - uncorrected	5	0.05	-	106	190	294
	2x5	0.07	-	76	136	210
	7	0.05	-	106	190	294
	2x7	0.07	-	76	136	210
	9	0.06	-	88	158	245
	2x9	0.08	-	66	119	184
	10	0.07	-	76	136	210
	11	0.08	-	66	119	184
	13	0.08	-	66	119	184
	16	0.1	-	53	95	147
	18	0.12	-	44	79	123
	2x18	0.21	-	25	45	70
	21	0.12	-	44	79	123
	22	0.2	-	27	48	74
	24	0.15	-	35	63	98
	26	0.15	-	35	63	98
	28	0.15	-	35	63	98
	32	0.22	-	24	43	67
	36	0.21	-	25	45	70
	38	0.21	-	25	45	70
	40	0.21	-	25	45	70
	58	0.32	-	17	30	46
Compast fluorescent lamps with external electromagnetic ballasts - parallel corrected	5	0.05	2	18	110	165
	2x5	0.07	2	18	110	165
	7	0.05	2	18	110	165
	2x7	0.07	2	18	110	165
	9	0.06	2	18	110	165
	2x9	0.08	2	18	110	165
	10	0.07	2	18	110	165
	11	0.08	2	18	110	165
	13	0.08	2	18	110	165
	16	0.1	2	18	110	165
	18	0.12	4.5	8	49	73
	2x18	0.21	4	9	55	83
	21	0.12	3	12	73	110
	22	0.2	4.5	8	49	73
	24	0.15	4.5	8	49	73
	26	0.15	4.5	8	49	73
	28	0.15	3.5	10	63	94
	32	0.22	4	9	55	83
	36	0.21	4.5	8	49	73
	38	0.21	4.5	8	49	73
	40	0.21	4.5	8	49	73
	58	0.32	7	5	31	47

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
Compact fluorescent lamps with external electronic ballasts	5	0.03	-	105	300	417
	7	0.04	-	79	225	313
	9	0.05	-	63	180	250
	2x9	0.09	-	35	100	139
	10	0.05	-	63	180	250
	2x10	0.09	-	35	100	139
	11	0.07	-	45	129	179
	2x11	0.12	-	26	75	104
	13	0.07	-	45	129	179
	2x13	0.12	-	26	75	104
	14	0.08	-	39	113	156
	2x14	0.15	-	21	60	83
	16	0.07	-	45	129	179
	17	0.1	-	32	90	125
	2x17	0.18	-	18	50	69
	18	0.09	-	35	100	139
	2x18	0.17	-	19	53	74
	22	0.13	-	24	69	96
	2x22	0.21	-	15	43	60
	24	0.12	-	26	75	104
	2x24	0.23	-	14	39	54
	3x24	0.32	-	10	28	39
	4x24	0.43	-	7	21	29
	26	0.12	-	26	75	104
	2x26	0.24	-	13	38	52
	28	0.14	-	23	64	89
	32	0.16	-	20	56	78
	2x32	0.31	-	10	29	40
	2x36	0.31	-	10	29	40
	38	0.17	-	19	53	74
	2x38	0.35	-	9	26	36
	40	0.2	-	16	45	63
	2x40	0.39	-	8	23	32
	42	0.2	-	16	45	63
	2x42	0.41	-	8	22	30
	55	0.27	-	12	33	46
	2x55	0.52	-	6	17	24
	57	0.28	-	11	32	45
	2x57	0.57	-	6	16	22
	60	0.31	-	10	29	40
	2x60	0.61	-	5	15	20
	70	0.34	-	9	26	37
	80	0.38	-	8	24	33
	2x80	0.76	-	4	12	16
	85	0.42	-	8	21	30
	100	0.46	-	7	20	27
	120	0.58	-	5	16	22
	150	0.69	-	5	13	18
Fluorescent lamps with external electromagnetic ballasts - uncorrected	4	0.17	-	66	118	188
	6	0.16	-	70	125	200
	8	0.15	-	75	133	213
	10	0.17	-	66	118	188
	11	0.16	-	70	125	200
	13	0.17	-	66	118	188
	14	0.4	-	28	50	80
	15	0.33	-	34	61	97
	16	0.2	-	56	100	160
	18	0.37	-	30	54	86
	20	0.38	-	29	53	84
	22	0.37	-	30	54	86
	25	0.29	-	39	69	110
	30	0.37	-	30	54	86

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
	32	0.43	-	26	47	74
	36	0.43	-	26	47	74
	38	0.43	-	26	47	74
	40	0.43	-	26	47	74
	58	0.67	-	17	30	48
	65	0.67	-	17	30	48
	75	0.67	-	17	30	48
	80	0.8	-	14	25	40
	85	0.8	-	14	25	40
	100	0.96	-	12	21	33
	125	0.94	-	12	21	34
Fluorescent lamps with external electromagnetic ballasts - parallel corrected	4	0.09	2	18	110	165
	6	0.08	2	18	110	165
	8	0.08	2	18	110	165
	10	0.09	2	18	110	165
	11	0.08	2	18	110	165
	13	0.09	2	18	110	165
	14	0.2	4.5	8	49	73
	15	0.17	4.5	8	49	73
	16	0.1	2.5	14	88	132
	18	0.19	4.5	8	49	73
	20	0.19	4.5	8	49	73
	22	0.19	5	7	44	66
	25	0.15	3.5	10	63	94
	30	0.24	4.5	8	49	73
	32	0.29	5	7	44	66
	36	0.29	4.5	8	49	73
	38	0.29	4.5	8	49	73
	40	0.29	4.5	8	49	73
	58	0.46	7	5	31	47
	65	0.46	7	5	31	47
	75	0.46	6	6	37	55
	80	0.57	7	5	31	47
	85	0.57	8	5	28	41
	100	0.66	10	4	22	33
	125	0.65	18	2	12	18
Series circuit for two fluorescent lamps with external electromagnetic ballast - uncorrected	2x4	0.34	-	33	59	94
	2x6	0.32	-	35	63	100
	2x8	0.3	-	37	67	107
	2x10	0.34	-	33	59	94
	2x11	0.32	-	35	63	100
	2x13	0.34	-	33	59	94
	2x14	0.8	-	14	25	40
	2x15	0.66	-	17	30	48
	2x16	0.4	-	28	50	80
	2x18	0.74	-	15	27	43
	2x20	0.76	-	15	26	42
	2x22	0.74	-	15	27	43
	2x25	0.58	-	19	34	55
	2x30	0.74	-	15	27	43
	2x32	0.86	-	13	23	37
	2x36	0.86	-	13	23	37
	2x38	0.86	-	13	23	37
	2x40	0,86	-	13	23	37
	2x58	1.34	-	8	15	24
	2x65	1.34	-	8	15	24
	2x75	1.34	-	8	15	24
	2x80	1.6	-	7	13	20
	2x85	1.6	-	7	13	20
	2x100	1.92	-	6	10	17
	2x125	1.88	-	6	11	17

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
Series circuit for two fluorescent lamps with external electromagnetic ballast - parallel corrected	2x4	0.17	2	18	110	165
	2x6	0.16	2	18	110	165
	2x8	0.15	2	18	110	165
	2x10	0.17	2	18	110	165
	2x11	0.16	2	18	110	165
	2x13	0.17	2	18	110	165
	2x14	0.4	4.5	8	49	73
	2x15	0.33	4.5	8	49	73
	2x16	0.2	2.5	14	88	132
	2x18	0.37	4.5	8	49	73
	2x20	0.38	4.5	8	49	73
	2x22	0.37	5	7	44	66
	2x25	0.29	3.5	10	63	94
	2x30	0.37	4.5	8	49	73
	2x32	0.43	5	7	44	66
	2x36	0.43	4.5	8	49	73
	2x38	0.43	4.5	8	49	73
	2x40	0.43	4.5	8	49	73
	2x58	0.67	7	5	31	47
	2x65	0.67	7	5	31	47
	2x75	0.67	6	6	37	55
	2x80	0.8	7	5	31	47
	2x85	0.8	8	5	28	41
	2x100	0.96	10	4	22	33
	2x125	0.94	18	2	12	18
Lead-lag circuit for fluorescent lamps with external electromagnetic ballasts - series corrected	2x18	0.26	2,7	40	100	150
	2x36	0.48	4,5	22	54	81
	2x40	0.48	4,5	22	54	81
	2x58	0.78	7	13	33	50
	2x65	0.78	7	13	33	50
	2x80	0.96	9	11	27	41
	2x85	0.96	9	11	27	41
	2x125	1.2	18	9	22	33
Fluorescent lamps with external electronic ballasts	4	0.03	-	158	417	600
	6	0.033	-	144	379	545
	2x6	0.06	-	79	208	300
	8	0.04	-	119	313	450
	2x8	0.08	-	59	156	225
	10	0.05	-	95	250	360
	2x10	0.09	-	53	139	200
	11	0.06	-	79	208	300
	13	0.07	-	68	179	257
	14	0.08	-	59	156	225
	2x14	0.15	-	32	83	120
	3x14	0.21	-	23	60	86
	4x14	0.28	-	17	45	64
	15	0.08	-	59	156	225
	2x15	0.13	-	37	96	138
	16	0.07	-	68	179	257
	2x16	0.14	-	34	89	129
	3x16	0.2	-	24	63	90
	4x16	0.28	-	17	45	64
	18	0.09	-	53	139	200
	2x18	0.17	-	28	74	106
	3x18	0.24	-	20	52	75
	4x18	0.31	-	15	40	58
	19	0.11	-	43	114	164
	2x19	0.22	-	22	57	82
	20	0.11	-	43	114	164
	2x20	0.22	-	22	57	82
	21	0.11	-	43	114	164
	2x21	0.22	-	22	57	82
	22	0.11	-	43	114	164
	2x22	0.23	-	21	54	78

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
	24	0.12	-	40	104	150
	2x24	0,.22	-	22	57	82
	3x24	0.33	-	14	38	55
	4x24	0.43	-	11	29	42
	25	0.15	-	32	83	120
	2x25	0.28	-	17	45	64
	28	0.14	-	34	89	129
	2x28	0.27	-	18	46	67
	30	0.14	-	34	89	129
	2x30	0.27	-	18	46	67
	32	0.17	-	28	74	106
	2x32	0.35	-	14	36	51
	34	0.17	-	28	74	106
	2x34	0.35	-	14	36	51
	35	0.17	-	28	74	106
	2x35	0.34	-	14	37	53
	36	0.16	-	30	78	113
	2x36	0.31	-	15	40	58
	3x36	0.46	-	10	27	39
	38	0.15	-	32	83	120
	2x38	0.31	-	15	40	58
	39	0.19	-	25	66	95
	2x39	0.36	-	13	35	50
	40	0.21	-	23	60	86
	2x40	0.42	-	11	30	43
	45	0.24	-	20	52	75
	2x45	0.46	-	10	27	39
	49	0.24	-	20	52	75
	2x49	0.46	-	10	27	39
	50	0.25	-	19	50	72
	2x50	0.48	-	10	26	38
	51	0.22	-	22	57	82
	2x51	0.42	-	11	30	43
	54	0.26	-	18	48	69
	2x54	0.52	-	9	24	35
	55	0.28	-	17	45	64
	2x55	0.55	-	9	23	33
	58	0.25	-	19	50	72
	2x58	0.48	-	10	26	38
	65	0.25	-	19	50	72
	2x65	0.48	-	10	26	38
	70	0.3	-	16	42	60
	2x70	0.57	-	8	22	32
	73	0.38	-	13	33	47
	2x73	0.7	-	7	18	26
	80	0.4	-	12	31	45
	2x80	0.76	-	6	16	24
High pressure mercury vapour lamps with external electromagnetic ballasts - uncorrected	50	0.6	-	18	38	55
	80	0.8	-	13	29	42
	125	1.2	-	9	20	29
	250	2.2	-	5	10	15
	400	3.3	-	3	7	10
	700	5.4	-	2	4	6
	1000	7.5	-	1	3	4
High pressure mercury vapour lamps with external electromagnetic ballasts - parallel corrected	50	0.3	7	5	31	47
	80	0.4	8	5	27	41
	125	0.6	10	4	22	33
	250	1.2	18	2	12	18
	400	1.8	25	1	9	13
	700	3.4	40	0	5	7
	1000	4.8	60	0	4	5

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
High pressure mercury vapour lamps which do not require ballasts	160	0.8	-	12	22	28
	250	1.2	-	8	15	18
	500	2.4	-	4	7	9
Metal halide lamps with external electromagnetic ballasts - uncorrected	35	0.5	-	22	43	60
	70	1	-	12	23	32
	100	1.2	-	10	19	26
	150	1.8	-	7	12	18
	250	3	-	4	7	10
	400	4.6	-	3	6	9
	600	6.2	-	2	3	4
	1000	9.7	-	1	2	3
	2000	12.2	-	0	1	2
Metal halide lamps with external electromagnetic ballasts - parallel corrected	35	0.23	6	6	36	50
	70	0.42	12	3	18	25
	100	0.55	12	3	18	25
	150	0.77	20	1	11	15
	250	1.26	32	1	6	9
	400	2	45	0	5	7
	600	3	65	0	3	5
	1000	5	85	0	2	3
	2000	10.5	125	0	1	2
Metal halide lamps with external electronic ballasts	20	0.11	-	25	51	64
	35	0.21	-	13	27	33
	2x35	0.38	-	7	15	18
	50	0.29	-	10	19	24
	70	0.38	-	7	15	18
	2x70	0.71	-	4	8	10
	100	0.56	-	5	10	13
	150	0.72	-	4	8	10
	250	1.3	-	2	4	5
	400	2	-	1	2	3
	1000	5	-	0	1	1
	2000	6	-	0	0	1
High pressure sodium vapour lamps with external electromagnetic ballasts - uncorrected	35	0.53	-	18	55	70
	50	0.8	-	12	35	45
	70	1	-	10	30	35
	100	1.2	-	8	25	30
	150	1.8	-	6	17	22
	250	3	-	4	10	13
	400	4.4	-	2	6	8
	600	6.2	-	1	4	5
	1000	10.3	-	1	3	3
High pressure sodium vapour lamps with external electromagnetic ballasts - parallel corrected	35	0.22	6	6	36	55
	50	0.3	8	4	27	41
	70	0.4	12	3	18	27
	100	0.55	12	3	18	27
	150	0.77	20	1	11	16
	250	1.26	32	1	6	10
	400	2	45	0	4	6
	600	2.9	65	0	3	5
	1000	5.1	100	0	2	3
High pressure sodium vapour lamps with external electronic ballasts	35	0.21	-	13	27	33
	50	0.25	-	11	22	28
	70	0.38	-	7	15	18
	100	0.56	-	5	10	13
	150	0.72	-	4	8	10
	250	1.3	-	2	4	5
	400	2	-	1	3	4
	600	3.1	-	0	1	2
	1000	5	-	0	1	1

	Power	Current	Capacitor	Maximum number of lamps per pole at 230 V, 50 Hz		
Lamps Type	W	A	µF	CR25	CR40	CR63
Low pressure sodium vapour lamps with external electromagnetic ballasts - uncorrected	18	0.4	-	27	71	90
	35	0.6	-	9	23	30
	55	0.6	-	9	23	30
	90	0.9	-	5	14	19
	135	0.9	-	4	10	13
	180	0,.9	-	4	10	13
Low pressure sodium vapour lamps with external electromagnetic ballasts - parallel corrected	18	0.35	5	7	44	66
	35	0.28	20	1	11	16
	55	0.35	20	1	11	16
	90	0.55	26	1	8	12
	135	0.8	40	0	4	7
	180	1	40	0	5	8
Low pressure sodium vapour lamps with ECG	35	0.16	-	18	35	44
	55	0.25	-	11	22	28
LED lamps				max. 3.8 A	max. 11 A	max. 18 A
Power supplies for LEDs				per pole	per pole	per pole

SG84511

Z-SCH230/1/25-20

SG84611

Z-SCH230/25-40

SG84711

Z-SCH230/63-40

U_s	I_n AC1	Function	Type Designation	Article No.	Units per package
Installation Contactors Z-SCH					
230 V AC	25 A	2NO	Z-SCH230/1/25-20	120853	2 / 120
230 V AC	25 A	1NO+1NC	Z-SCH230/1/25-11	193886	2 / 120
230 V AC	25 A	2NC	Z-SCH230/1/25-02	193887	2 / 120
24 V AC	25 A	2NO	Z-SCH24/1/25-20	193885	2 / 120
24 V AC	25 A	1NO+1NC	Z-SCH24/1/25-11	193888	2 / 120
24 V AC	25 A	2NC	Z-SCH24/1/25-02	193984	2 / 120
230 V AC	25 A	4NO	Z-SCH230/25-40	248847	1 / 60
230 V AC	25 A	4NC	Z-SCH230/25-04	248848	1 / 60
230 V AC	25 A	3NO+1NC	Z-SCH230/25-31	248846	1 / 60
230 V AC	25 A	2NO+2NC	Z-SCH230/25-22	248849	1 / 60
24 V AC	25 A	4NO	Z-SCH24/25-40	248851	1 / 60
24 V AC	25 A	2NO+2NC	Z-SCH24/25-22	248850	1 / 60
230 V AC	40 A	4NO	Z-SCH230/40-40	248852	1 / 40
230 V AC	40 A	3NO+1NC	Z-SCH230/40-31	248854	1 / 40
230 V AC	40 A	2NO+2NC	Z-SCH230/40-22	248853	1 / 40
230 V AC	40 A	2NO	Z-SCH230/40-20	248855	1 / 40
230 V AC	63 A	4NO	Z-SCH230/63-40	248856	1 / 40
230 V AC	63 A	4NC	Z-SCH230/63-04	285735	1 / 40
230 V AC	63 A	3NO+1NC	Z-SCH230/63-31	248858	1 / 40
230 V AC	63 A	2NO+2NC	Z-SCH230/63-22	248857	1 / 40
230 V AC	63 A	2NO	Z-SCH230/63-20	248859	1 / 40

Installation Contactors CMUC

- Universal Control Voltage U_s AC/DC

SG28812

CMUC230/25-40

230 V AC/DC	25 A	4NO	CMUC230/25-40	137309	1 / 60
230 V AC/DC	25 A	4NC	CMUC230/25-04	137405	1 / 60
230 V AC/DC	25 A	3NO+1NC	CMUC230/25-31	137401	1 / 60
230 V AC/DC	25 A	2NO+2NC	CMUC230/25-22	137403	1 / 60
24 V AC/DC	25 A	4NO	CMUC24/25-40	137308	1 / 60
24 V AC/DC	25 A	4NC	CMUC24/25-04	137404	1 / 60
24 V AC/DC	25 A	3NO+1NC	CMUC24/25-31	137400	1 / 60
24 V AC/DC	25 A	2NO+2NC	CMUC24/25-22	137402	1 / 60

Description	Type Designation	Article No.	Units per package
Accessories suitable for Z-SCH / CMUC			
Sealing cover	Z-SCHAK-2TE	248860	10
Sealing cover	Z-SCHAK-3TE	248861	10
Auxiliary Switch 1NO+1NC for Z-SCH series *)	Z-SC	248862	3
Auxiliary Switch 1NO+1NC for CMCU series	CMUCA	303643	3
Spacer 0.5MU	Z-DST	248949	10
Suppressor RC-Combination 12-250 VAC	Z-RC/230	101428	2 / 120

*) NOT suitable for Z-SCH.../1/...- types

SG84311

Z-SC

Description Installation Contactors Z-SCH, CMUC

These Installtion Contactors are designed to cover all applications in residential and commercial sites, for example:

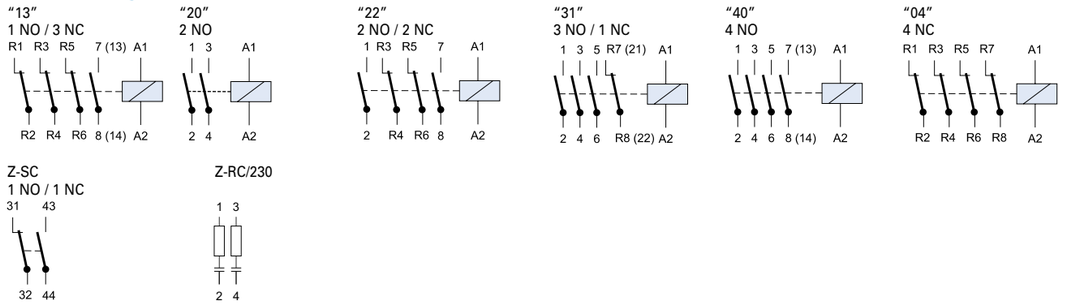
- Switching of lighting systems
- Switching of electrical heating systems
- Switching of ventilation systems
- Switching of air conditioning systems and fans
- Switching of heat pumps
- Switching of roller doors/gates and blinds
- etc.

Advantages and Safety:

- Front-side switch position indicator
- Compact frame
- Large terminals
- Low switching noise
- Z-SCH low noise
- CMUC no humming
- High contact force for high switching capacity
- Simple snap-on fastening of 35 mm DIN rail
- Finger and hand touch safe according to VGB 4
- Hardly flammable materials and chlorine-free and halogen-free plastics are used
- Z-SCH: Innovative AC magnet system
- CMUC: Innovative AC/DC magnet system

These products meets the requirement of the standards IEC/EN 60947-4-1 and IEC/EN 61095

Connection diagram

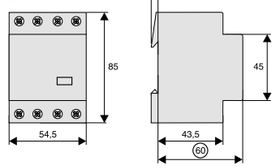


Dimensions (mm)

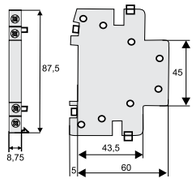
Z-SCH.../1/25
Z-RC/230

Z-SCH.../25
CMUC.../25

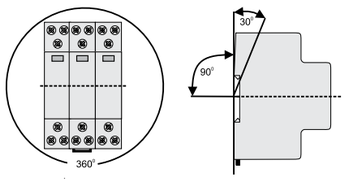
Z-SCH.../40, .../63



Z-SC (NOT suitable for Z-SCH.../1/...)
CMUCA

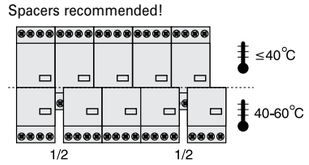


Permitted installation positions



Packing Density at full contact load

Z-SCH / CMUC
Spacers recommended!



Technical Data

		Z-SCH/25/.., CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC, CMUCA
Data according to		IEC 61095, EN 61095, VDE 0660, IEC 60947-4-1, EN 60947-4-1, VDE			
Utilisation category AC1 (e.g. heating system)					
Rated operational current (= I_{th})	I_n				
open at 60 °C		25 A	40 A	63 A	-
Service life of switching element		0.1 S x 10^6	0.1 S x 10^6	0.1 S x 10^6	-
Rated operational power AC1 220 - 240 V		9.5 kW	16 kW	25 kW	-
Rated operational power AC1 380 - 415 V		17 kW	27.5 kW	43 kW	-
Lowest switching power		24 V / 100 mA	24 V / 100 mA	24 V / 100 mA	17 V / 5 mA
Utilisation category AC3 (Switching of 3phase AC motors)					
Rated operational current	I_n	9 A	27 A	30 A	-
Service life of switching element		0.15 S x 10^6	0.15 S x 10^6	0.15 S x 10^6	-
Rated power of 3phase AC motors 50-60 Hz, 220 V		2.2 kW	7.5 kW	8 kW	-
Rated power of 3phase AC motors 50-60 Hz, 230-240 V		2.5 kW	8 kW	8.5 kW	-
Rated power of 3phase AC motors 50-60 Hz, 380-415 V		4 kW	12.5 kW	15 kW	-
Utilisation category DC1 (Switching of resistive loads, L/R ≤ 1 ms), values for NO / NC contacts					
1pole 24 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
1pole 48 V DC		22 / 16.5 A	25 / 18.5 A	26 / 19.5 A	-
1pole 60 V DC		18 / 13.5 A	19 / 14 A	21 / 15.5 A	-
1pole 110 V DC		5 / 3.5 A	7 / 5 A	8 / 6 A	-
1pole 220 V DC		0.5 / 0.4 A	0.7 / 0.5 A	0.7 / 0.5 A	-
2pole in series 24 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
2pole in series 48 V DC		25 / 18.75 A	40 / 30 A	44 / 33 A	-
2pole in series 60 V DC		25 / 18.75 A	33 / 24.5 A	36 / 27 A	-
2pole in series 110 V DC		16 / 12 A	17 / 12.5 A	18 / 13.5 A	-
2pole in series 220 V DC		4 / 3 A	5 / 3.5 A	6 / 4.5 A	-
3pole in series 24 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
3pole in series 48 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
3pole in series 60 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
3pole in series 110 V DC		25 / 18.5 A	31 / 23 A	34 / 25.5 A	-
3pole in series 220 V DC		10 / 7.5 A	15 / 11 A	16 / 12 A	-
4pole in series 24 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 48 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 60 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 110 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 220 V DC		15 / 11 A	20 / 15 A	21 / 15.5 A	-
Utilisation category DC3 and DC5 (Switching of resistive loads, L/R ≤ 15 ms), values for NO / NC contacts					
1pole 24 V DC		15 / 11 A	23 / 17 A	25 / 18.5 A	-
1pole 48 V DC		5 / 3.5 A	10 / 7.5 A	10 / 7.5 A	-
1pole 60 V DC		4 / 3 A	5 / 3.5 A	5 / 3.5 A	-
1pole 110 V DC		1 / 0.7 A	1.5 / 1.1 A	1.5 / 1.1 A	-
1pole 220 V DC		0.1 / 0.075 A	0.3 / 0.2 A	0.3 / 0.2 A	-
2pole in series 24 V DC		25 / 18.5 A	40 / 30 A	45 / 33.5 A	-
2pole in series 48 V DC		17 / 12.75 A	23 / 17 A	25 / 18.5 A	-
2pole in series 60 V DC		13 / 9.5 A	15 / 11 A	15 / 11 A	-
2pole in series 110 V DC		5 / 3.5 A	5 / 3.5 A	5 / 3.5 A	-
2pole in series 220 V DC		0.5 / 0.375 A	1 / 0.75 A	1 / 0.75 A	-
3pole in series 24 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
3pole in series 48 V DC		25 / 18.5 A	40 / 30 A	45 / 33.5 A	-
3pole in series 60 V DC		25 / 18.5 A	30 / 22.5 A	30 / 22.5 A	-
3pole in series 110 V DC		15 / 11 A	15 / 11 A	15 / 11 A	-
3pole in series 220 V DC		3 / 2 A	4 / 3 A	4 / 3 A	-
4pole in series 24 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 48 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 60 V DC		25 / 18.5 A	40 / 30 A	63 / 47 A	-
4pole in series 110 V DC		25 / 18.5 A	40 / 30 A	45 / 33.5 A	-
4pole in series 220 V DC		8 / 6 A	10 / 7.5 A	10 / 7.5 A	-
Main switching elements (U_{imp} = 4 kV, Duty Cycle: 100%)					
Rated insulation voltage	U_i	440 V AC	440 V AC	440 V AC	440 V AC
Rated operational voltage	U_e	440 V AC	440 V AC	440 V AC	440 V AC
Permissible switching frequency AC1, AC3	z	300 x/h	600 x/h	600 x/h	600 x/h
Endurance mechanical components		1 x 10^6	1 x 10^6	1 x 10^6	1 x 10^6

Technical Data (continue page)

		Z-SCH/25/.., CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC, CMUCA
Auxiliary switching elements (U_{imp} = 4 kV, Duty Cycle: 100%)					
Rated insulation voltage	U_i	440 V AC	440 V AC	440 V AC	440 V AC
Nominal thermal current = It_h, 40°C		25 A	40 A	63 A	10 A
Nominal thermal current = It_h, 60°C		25 A	40 A	63 A	6 A
Utilisation category AC15 (Controlling of electromagnetic load)					
Rated operational current 220-240 V	I_e	-	-	-	3 A
Rated operational current 380-415 V	I_e	-	-	-	2 A
Rated operational current 440 V	I_e	-	-	-	1.6 A
Utilisation category DC13 (Controlling of electromagnetic load at DC)					
Rated operational current per pole 24-60 V	I_e	-	-	-	2 A
Rated operational current per pole 110 V	I_e	-	-	-	0.4 A
Rated operational current per pole 220 V	I_e	-	-	-	0.1 A
Trip Coil Power					
Z-SCH					
Switching on		14 - 18 VA	33 - 45 VA	33 - 45 VA	-
Holding		4.4 - 8.4 VA	7 VA	7 VA	-
		1.6 - 3.2 W	2.6 W	2.6 W	-
CMUC		3 - 4 W	-	-	-
Operating range of trip coils multiple of U_e (-40 to +40°C)					
Z-SCH					
Coil voltage 50 Hz		24, 220 - 240 V	220 - 240 V	220 - 240 V	-
Coil voltage 60 Hz		24, 230 - 264 V	230 - 264 V	230 - 264 V	-
CMUC					
Coil voltage 50/60 Hz		24, 220-240 V	-	-	-
DC		24, 220 V			
Power loss per current path	P_v	2 W	3 W	7 W	0.5 W
Power loss per device at nominal current load 1pole	P_{vges}	5.2 W	5.6 W	5.6 W	-
Power loss per device at nominal current load 2pole	P_{vges}	7.2 W	8.6 W	16.6 W	-
Power loss per device at nominal current load 3pole	P_{vges}	9.2 W	11.6 W	23.6 W	-
Power loss per device at nominal current load 4pole	P_{vges}	11.2 W	14.6 W	30.6 W	-
Switching noise (on and off), typical mean values		80 dB	78 dB	78 dB	-
Terminal capacity					
Main conductor					
one or several wires		1.5 - 10 mm^2	2.5 - 25 mm^2	2.5 - 25 mm^2	0.5 - 2.5 mm^2
fine-wire		1.5 - 6 mm^2	2.5 - 16 mm^2	2.5 - 16 mm^2	0.5 - 2.5 mm^2
fine wires with wire end sleeve		1.5 - 6 mm^2	2.5 - 16 mm^2	2.5 - 16 mm^2	0.5 - 1.5 mm^2
number of conductors per terminal		1	1	1	2
Coil					
one or several wires		0.75 - 2.5 mm^2	0.75 - 2.5 mm^2	0.75 - 2.5 mm^2	-
fine-wire		0.5 - 2.5 mm^2	0.5 - 2.5 mm^2	0.5 - 2.5 mm^2	-
fine wires with wire end sleeve		0.5 - 1.5 mm^2	0.5 - 1.5 mm^2	0.5 - 1.5 mm^2	-
number of conductors per terminal		1	1	1	-
Weight		0.22 kg/unit	0.36 kg/unit	0.36 kg/unit	0.026 kg/unit
Tightening torque of terminal screws					
Main contacts		0.8 - 1.4 Nm	2.5 - 3.0 Nm	2.5 - 3.0 Nm	-
Coil		0.6 - 1.2 Nm	0.6 - 1.2 Nm	0.6 - 1.2 Nm	-
Short circuit protection (main circuit), maximum nominal current of fuse					
Co-ordination type (1), gL (gG)		35 A	63 A	80 A	-
Short circuit protection (auxiliary circuit), maximum nominal current of fuses					
Short-circuit current 1 kA, without fusing of contacts, gL (gG)		-	-	-	10 A
Switching times at control voltage U_s ±10%					
Make delay		9 - 15 ms	11 - 15 ms	11 - 15 ms	-
Break delay		4 - 8 ms	6 - 13 ms	6 - 13 ms	-
Arc duration		10 - 15 ms	10 - 15 ms	10 - 15 ms	-
Pollution degree		3	3	3	3
Overvoltage category (grounded neutral system)		1 - 3	1 - 3	1 - 3	1 - 3

Installation Contactors Z-SCH, CMUC for Lighting Systems

The decisive factors are the type, connection and current consumption of lamps during switch-on and in permanent operation. Only 90 % of the continuous current of switching devices should be used in view of higher current consumption as a result of increases of voltage. The maximum number of lamps per phase that can be operated by a switching device is dependent on the nominal current and making current of lamps on the one hand, and on the continuous current and making capacity of the switching devices on the other. Thus, e.g. in lead-lag circuits, the continuous current of contactors can be used, while this is not possible in fluorescent tubes with separate compensation.

		Z-SCH/25/... CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC, CMUCA
Utilisation category AC1					
Rated operational current	I_e	25 A (60 °C)	40 A (60 °C)	63 A (60 °C)	-
Making capacity root mean square	$I_{r.m.s.}$	200 A	360 A	480 A	-
Making capacity peak value	I_{peak}	280 A	510 A	680 A	-
Utilisation category AC5a					
Rated operational power 250 V cosφ = 0.45		1.3 kW	3.4 kW	5.5 kW	-
Rated operational power 220-240 V~ cosφ = 0.90		1.2 kW	3.1 kW	5.1 kW	-
DUO		3.7 kW	6.3 kW	10 kW	-
Utilisation category AC5b					
Rated operational power 240V~		3 kW	5.7 kW	8 kW	-

Incandescent Lamps

The incandescent lamp filament has a very low ohmic resistance when it is cold. Therefore, when switching on, there is a high peak current (up to 20x I_n). When switching off, only the nominal current is switched off.

Utilisation category AC5b	Power	Current	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
	W	A	max. number of lamps per current path at 230 V, 50 Hz			
Incandescent Lamps AC5B (with or except halogen)	60	0.27	50	92	129	-
	100	0.45	30	55	77	-
	200	0.91	15	27	38	-
	300	1.36	10	19	26	-
	500	2.27	6	11	16	-
	1000	4.5	3	6	8	-
Low voltage halogen lamps (12 or 24V) with transformer (with electronic transformer)	0.09	52	110	174	-	
	0.22	24	50	80	-	
	75	0.33	16	35	54	-
	100	0.43	12	27	43	-
	150	0.65	9	19	29	-
	200	0.87	6	14	23	-
	300	1.30	4	9	14	-

LED Lamps

Lamp Types			Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
LED Lamp. Pay attention on the inrush current of the ballast and cosφ of the lamp.	max. permissible inrush current contactor [A]		233	424	565	-
max. number of lamps per current path	inrush current contactor [A] / inrush current lamp/ballast [A]	= max. number of lamps per current path ($I_{nLED} \leq I_{th}$)				

Fluorescent Tubes, Mercury Arc Lamps

High- and low pressure discharge lamps with mercury vapour, with or without fluorescent-coated glass body are perfectly identical in their electrical behaviour.
In order to limit the operational current and pre-conduction current, and to achieve the initial peak voltage, reactance coils are used as ballast. Capacitors are used for compensation of the resulting reactive current, which are either connected in series with the coil (lead-lag circuit) or parallel to the mains (separate compensation, very rarely used now). The high making current in case of separate compensation (max. 30 x nominal current of the capacitor) which goes down quickly is usually attenuated considerably by the feed line.

Utilisation category AC5a		
	Fluorescent lamps without comp. or with series comp.	$I = I_{eAC1} \times 0.5$
	Lead-lag circuit (2x..)	$I = I_{eAC1} \times 0.35$
	Fluorescent tubes with parallel compensation	$I = I_{peak} / 100$ (take into account compensation capacitor)
I / I_{Lampe} = number of connectable lamps per current path	Fluorescent tubes with electronic ballast	$I = I_{peak} / 50$
	Mercury arc lamps, HD without compensation	$I = I_{eAC1} \times 0.5$
	Mercury arc lamps, HD with compensation	$I = I_{peak} / 100$ (take into account compensation capacitor)

Utilisation category AC5a	Power	Current	Capacitor	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC, CMUCA
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz			
Fluorescent tubes without compensation or with series compensation	11	0.16	1.3	75	210	310	-
	18	0.37	2.7	34	90	140	-
	24	0.35	2.5	34	90	140	-
	36	0.43	3.4	30	70	140	-
	58	0.67	5.3	20	45	70	-
	65	0.67	5.3	19	40	65	-
	85	0.8	5.3	16	35	60	-
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 110	2 x 220	2 x 250	-
	18	0.11	-	2 x 55	2 x 130	2 x 200	-
	24	0.14	-	2 x 44	2 x 110	2 x 160	-
	36	0.22	-	2 x 33	2 x 70	2 x 100	-
	58	0.35	-	2 x 22	2 x 46	2 x 70	-
	65	0.35	-	2 x 16	2 x 40	2 x 60	-
	85	0.47	-	2 x 11	2 x 30	2 x 40	-
Fluorescent tubes with parallel compensation	11	0.16	3.0	43	67	107	-
	18	0.37	4.0	32	50	80	-
	24	0.35	4.0	32	50	80	-
	36	0.43	4.0	32	50	80	-
	58	0.67	7.0	18	36	46	-
	65	0.67	7.0	18	36	46	-
	85	0.8	8.0	16	33	44	-
Fluorescent tubes with electronic ballast	18	0.09	-	40	100	150	-
	36	0.16	-	20	50	75	-
	58	0.25	-	15	30	55	-
	80	0.4	-	10	20	30	-
	2 x 18	0.17	-	20	50	60	-
	2 x 36	0.32	-	10	25	30	-
	2 x 58	0.49	-	7	15	20	-
Mercury arc lamps, high pressure without compensation e.g.: HQL, HPL	50	0.61	-	21	38	55	-
	80	0.8	-	16	28	40	-
	125	1.15	-	11	20	28	-
	250	2.15	-	6	11	15	-
	400	3.25	-	4	7	10	-
	700	5.4	-	2	4	6	-
	1000	7.5	-	1	3	4	-
Mercury arc lamps, high pressure with compensation e.g.: HQL, HPL	50	0.28	7	18	36	50	-
	80	0.41	8	16	31	44	-
	125	0.65	10	13	25	35	-
	250	1.22	18	7	14	19	-
	400	1.95	25	5	10	14	-
	700	3.45	45	3	6	8	-
	1000	4.8	60	2	4	6	-

Metal Halide Lamps

Metal halide lamps are a version of high-pressure mercury arc lamps with higher luminous efficiency and fidelity of colour (metalloids [halogens] added to the mercury fill up the Hg-spectrum with its many gaps). Ballast and ignition devices are necessary. Starting time 3 ... 5 minutes at 1.4 - 2 x I.
After switching on, it is not possible to light the lamp again immediately (lamp extinguishes after a power cut-off of only 1/2 period). Therefore, in many cases in important facilities ionisation of part of the lamps is maintained by switching over to 415 V, 500 Hz (e.g. to an emergency power supply). In this case, the lamp lights immediately after the mains voltage is on again. Otherwise, this would take several minutes. When using suitable ignition devices, the lamps can be lit again immediately.

I / I_{Lampe} = number of connectable lamps per current path	Metal halide lamps (HQI) without compensation	I = I_{eAC1} x 0.5
	Metal halide lamps (HQI) with compensation	I = I_{peak} / 100 (take into account compensation capacitor)
	Transformer for low voltage halogen lamps	I = I_{peak} / 50

	Power	Current	Capacitor	**Z-SCH25/.. CMUC.../25/**	**Z-SCH/40/..**	**Z-SCH/63/..**	**Z-SC, CMUCA**
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz			
Metal halide lamps without compensation e.g. HQI, HPI	35	0.53	-	28	57	-	-
	70	1	-	15	30	-	-
	150	1.8	-	8	17	-	-
	250	3	-	5	10	-	-
	400	3.5	-	4	8	-	-
	1000	9.5	-	1	3	-	-
	2000	16.5	-	-	2	-	-
400 V per pole	2000	10.5	-	-	2	-	-
	3500	18	-	-	1	-	-
Metal halide lamps with electronic ballast (50-125 xI_n) HQI	20	0.1	i	9	18	20	-
	35	0.2	i	6	11	13	-
	70	0.36	i	5	12	12	-
	150	0.7	i	4	10	10	-
Metal halide lamps with compensation, with parallel compensation e.g. HQI, HPI	35	0.25	6	21	42	58	-
	70	0.45	12	11	21	29	-
	150	0.75	20	7	13	18	-
	250	1.5	33	4	9	11	-
	400	2.1	35	4	9	10	-
	1000	5.8	95	1	3	4	-
	2000	11.5	148	-	2	2	-
400 V per pole	2000	6.6	58	-	3	4	-
	3500	11.6	100	-	2	3	-
Transformers for low-voltage halogen lamps	20	-	-	52	110	174	-
	50	-	-	24	50	80	-
	75	-	-	16	35	54	-
	100	-	-	12	27	43	-
	150	-	-	9	19	29	-
	200	-	-	5	14	23	-
	300	-	-	4	9	14	-

Sodium Vapour Lamps

For 200 W, 1200 mm high-pressure lamps and low-pressure lamps, reactance coils are used as ballast. For smaller lamps, stray field transformers can be used as ballast. Take into account, the long starting period.

Low pressure lamps:

Without compens.: Making current 1 x I_e, cosφ 0.3; starting time 5 ... 10min
Decisive for selection of device: 60% Constant current
I = I_{eAC1} x 0.6

With compensation: Making current 20 x I_e, cosφ 0.45; starting time 5 ... 10min (at 1.6 x I_n), I = I_{peak}/200

High pressure lamps:

Without compens.: Making current 1.4 x I_e, cosφ 0.5; starting time 5 ... 10min
Decisive for selection of device: 60% Constant current
I = I_{eAC1} x 0.6

With compensation: Making current 20 x I_e, cosφ 0.95; starting time 5 ... 10min (at 1.6 x I_n)

	Power	Current	Capacitor	**Z-SCH25/.. CMUC.../25/**	**Z-SCH/40/..**	**Z-SCH/63/..**	**Z-SC, CMUCA**
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz			
Sodium vapour lamps low-pressure without compensation	35	1.5	-	9	22	30	-
	55	1.5	-	9	22	30	-
	90	2.4	-	6	13	19	-
	135	3.3	-	4	10	14	-
	150	3.3	-	4	10	14	-
	180	3.3	-	4	10	14	-
	200	3.3	-	4	10	14	-
Sodium vapour lamps low-pressure with compensation, with parallel compensation	35	0.31	20	6	15	18	-
	55	0.42	20	6	15	18	-
	90	0.63	30	4	10	12	-
	135	0.94	45	3	7	8	-
	150	1	40	3	8	9	-
	180	1.16	40	3	8	9	-
	200	1.32	30	-	10	12	-
Sodium vapour lamps high-pressure without compensation	150	1.8	-	8	15	22	-
	250	3	-	5	10	13	-
	330	3.7	-	4	8	10	-
	400	4.7	-	3	6	8	-
	1000	10.3	-	1	3	4	-
Sodium vapour lamps high pressure with compensation, with parallel compensation	150	0.83	20	7	20	25	-
	250	1.5	33	4	12	15	-
	330	2	40	3	10	13	-
	400	2.4	48	2	8	12	-
	1000	6,3	106	1	4	6	-
Sodium vapour lamps high pressure with electronic ballast (50-125 xI_n)	20	0.1	i	9	18	20	-
	35	0.2	i	6	11	13	-
	70	0.36	i	5	12	12	-
	150	0.7	i	4	10	10	-

Utilisation Categories of Contactors

Type of current	Utilisation category	Typical Applications	Verification of electrical service life							Verification of switching capacity						
		I = Making current, I_c = Breaking current,														
		I_e = Rated operational current, U = Voltage,	Switching on			Switching off				Switching on				Switching off		
		U_e = Rated operational voltage,	I_e	I / I_e	U / U_e	cosφ	I_c / I_e	U_r / U_e	cosφ	I_e	I / I_e	U / U_e	cosφ	I_c / I_e	U_r / U_e	cosφ
		U_r = Recovery voltage	A							A						
AC	AC-1	Non-inductive or slightly inductive load Resistance furnaces	all values	1	1	0.95	1	1	0.95	all values	1.5	1.05	0.8	1.5	1.05	0.8
	AC-2	Slip ring motors: starting, switching off	all values	2.5	1	0.65	2.5	1	0.65	all values	4	1.05	0.65	4	1.05	0.8
	AC-3	Squirrel cage motors: starting, switching off	$I_e \leq 17$	6	1	0.65	1	0.17	0.65	$I_e \leq 100$	10	1.05	0.45	8	1.05	0.45
		(running motors[4])	$I_e > 17$	6	1	0.35	1	0.17	0.35	$I_e > 100$	8	1.05	0.35	6	1.05	0.35
	AC-4	Squirrel cage motors: starting, plugging reversing, inching	$I_e \leq 17$	6	1	0.65	6	1	0.65	$I_e \leq 100$	12	1.05	0.45	10	1.05	0.45
			$I_e > 17$	6	1	0.35	6	1	0.35	$I_e > 100$	10	1.05	0.35	8	1.05	0.35
	AC-5	Switching of electric discharge lamp controls									3.0	1.05	0.45	3.0	1.05	0.45
	AC-5b	Switching of incandescent lamps									1.5[2]	1.05	[2]	1.05[2]	1.05	[2]
	AC-6a[3]	Switching of transformers														
	AC-6b[3]	Switching of capacitor banks														
	AC-7a	Slightly inductive loads in household appliances and similar applications	according to manufacturer specifications							1.5	1.05	0.8	1.5	1.05	0.8	
	AC-7b	Motor loads for household appliances									8,0	1.05	[1]	8,0	1.05	[1]
	AC-8a	Switching of hermetically enclosed refrigerant compressor motors with manual reset of overload releases[5]									6,0	1.05	[1]	6,0	1.05	[1]
	AC-8b	Switching of hermetically enclosed refrigerant compressor motors with automatic reset of overload releases[5]									6,0	1.05	[1]	6,0	1.05	[1]
DC	DC-1	Non-inductive or slightly inductive load, Resistance furnaces	all values	1	1	1	1	1	1	all values	1.5	1.05	1	1.5	1.05	1
	DC-3	Shunt motors: starting, plugging, reversing, inching, dynamic braking	all values	2.5	1	2	2.5	1	2	all values	4	1.05	2.5	4	1.05	2.5
	DC-5	Series motors: starting, plugging, reversing, inching, dynamic braking	all values	2	1	7.5	2.5	1	7.5	all values	4	1.05	2.5	4	1.05	2.5
	DC-6	Switching of incandescent lamps									1.5[2]	1.05	[2]	1.5[2]	1.05	[2]

acc. to IEC 947-4-1, EN 60 947 VDE 0660 Part 102

[1] cosφ = 0.45 for $I_e \leq 100$ A; cosφ = 0.35 for $I_e \leq 100$ A.
[2] The tests must be carried out with an incandescent lamp load connected.
[3] In this case, the test data must be derived from the test values for AC-3 or AC-4 according to a special table.
[4] Devices for utilisation category AC-3 may be used for occasional inching or plugging during a limited period, such as for setting up a machine. However, during this limited period of time, the number of operations must not exceed five per minute or ten in a ten minute period.
[5] Hermetically enclosed refrigerant compressor motor means a combination of a compressor and a motor both of which are housed in the same enclosure with no external shaft or shaft seals, the motor running in the refrigerant.

Utilisation Categories of Auxiliary Switches

Type of current	Utilisation category	Typical Applications	Normal conditions of use						Divergent conditions of use					
		I = Making current, I_c = Breaking current,												
		I_e = Rated operational current, U = Voltage,	Switching on			Switching off			Switching on			Switching off		
		U_e = Rated operational voltage,	I / I_e	U / U_e	cosφ	I_c / I_e	U_r / U_e	cosφ	I / I_e	U / U_e	cosφ	I_c / I_e	U_r / U_e	cosφ
		U_r = Recovery voltage,												
		$t_{0.95}$ = the time in ms until 95% of the stationary current has been reached,												
		P = U_e x I_e = Rated power in Watts												
AC	AC-12	Control of resistive and solid state loads in optocoupler input circuits	1	1	0.9	1	1	0.9	-	-	-	-	-	-
	AC-13	Control of solid state loads with transformerisolation	2	1	0.65	1	1	0.65	10	1.1	0.65	1.1	1.1	0.65
	AC-14	Control of small electromagnetic loads (max. 72 VA)	6	1	0.3	1	1	0.3	6	1.1	0.7	6	1.1	0.7
	AC-15	Control of electromagnetic loads (above 72 VA)	10	1	0.3	1	1	0.3	10	1.1	0.3	10	1.1	0.3
			I / I_e	U / U_e	$t_{0.95}$	I_c / I_e	U_r / U_e	$t_{0.95}$	I / I_e	U / U_e	$t_{0.95}$	I_c / I_e	U_r / U_e	$t_{0.95}$
DC	DC-12	Control of resistive and solid state loads in optocoupler input circuits	1	1	1 ms	1	1	1 ms	-	-	-	-	-	-
	DC-13	Control of electromagnets	1	1	6xP[1]	1	1	6xP[1]	1.1	1.1	6xP[1]	1.1	1.1	6xP[1]
	DC-14	Control of electromagnetic loads with economy resistors in the circuit	10	1	15 ms	1	1	15 ms	10	1.1	15 ms	10	1.1	15 ms

acc. to IEC 947-4-1, EN 60 947 VDE 0660 Part 102

[1] The value „6xP" is the result of an empirical relationship which is found to represent most direct current magnetic loads up to an upper limit of P = 50W with 6 [ms]/[W] = 200 [ms]. Loads with a rated power above 50 W are composed of small loads located parallel to each other. Therefore, 300 ms is an upper limit independent of the power rating.

SG59611

Z-S230/SO

Impulse Relays Z-S

- 16 A 250 VAC

240 V 50Hz	1NO	1	Z-S240/S	265261	2 / 120
240 V 50Hz	2NO	1	Z-S240/SS	265269	2 / 120
240 V 50Hz	1NO+1NC	1	Z-S240/SO	265282	2 / 120
240 V 50Hz	2NO+2NC	2	Z-S240/2S2O	265304	1 / 60
240 V 50Hz	1CO	1	Z-S240/W	265289	2 / 120
240 V 50Hz	2CO	2	Z-S240/WW	265311	1 / 60
240 V 60Hz	2NO	1	Z-S241/SS	265268	2 / 120
230 V 50Hz	1NO	1	Z-S230/S	265262	2 / 120
230 V 50Hz	2NO	1	Z-S230/SS	265271	2 / 120
230 V 50Hz	4NO	2	Z-S230/4S	270335	1 / 60
230 V 50Hz	1NO+1NC	1	Z-S230/SO	265283	2 / 120
230 V 50Hz	2NO+2NC	2	Z-S230/2S2O	265305	1 / 60
230 V 50Hz	1CO	1	Z-S230/W	265290	2 / 120
230 V 50Hz	2CO	2	Z-S230/WW	265312	1 / 60
230 V 60Hz	2NO	1	Z-S231/SS	265270	2 / 120
110 V 50Hz	1NO	1	Z-S110/S	265263	2 / 120
110 V 50Hz	2NO	1	Z-S110/SS	265273	2 / 120
110 V 50Hz	1NO+1NC	1	Z-S110/SO	265284	2 / 120
110 V 50Hz	2NO+2NC	2	Z-S110/2S2O	265306	1 / 60
110 V 50Hz	1CO	1	Z-S110/W	265291	2 / 120
110 V 50Hz	2CO	2	Z-S110/WW	265313	1 / 60
110 V 60Hz	2NO	1	Z-S111/SS	265272	2 / 120
110 V DC	2NO	1	Z-S109/SS	265274	2 / 120
110 V DC	1CO	1	Z-S109/W	265292	2 / 120
110 V DC	2CO	2	Z-S109/WW	265314	1 / 60
48 V AC/24 V DC*)	1NO	1	Z-S48/S	265534	2 / 120
48 V AC/24 V DC*)	2NO	1	Z-S48/SS	265536	2 / 120
48 V AC/24 V DC*)	4NO	2	Z-S48/4S	100665	1 / 60
48 V AC/24 V DC*)	1NO+1NC	1	Z-S48/SO	265538	2 / 120
48 V AC/24 V DC*)	2NO+2NC	2	Z-S48/2S2O	265540	1 / 60
48 V AC/24 V DC*)	1CO	1	Z-S48/W	265544	2 / 120
48 V AC/24 V DC*)	2CO	2	Z-S48/WW	265542	1 / 60
24 V AC/12 V DC*)	1NO	1	Z-S24/S	265535	2 / 120
24 V AC/12 V DC*)	2NO	1	Z-S24/SS	265537	2 / 120
24 V AC/12 V DC*)	1NO+1NC	1	Z-S24/SO	265539	2 / 120
24 V AC/12 V DC*)	2NO+2NC	2	Z-S24/2S2O	265541	1 / 60
24 V AC/12 V DC*)	1CO	1	Z-S24/W	265545	2 / 120
24 V AC/12 V DC*)	2CO	2	Z-S24/WW	265543	1 / 60
24 V 60Hz	2NO	1	Z-S25/SS	265276	2 / 120
12 V 50Hz	1NO	1	Z-S12/S	265266	2 / 120
12 V 50Hz	2NO	1	Z-S12/SS	265278	2 / 120
12 V 50Hz	1NO+1NC	1	Z-S12/SO	265287	2 / 120
12 V 50Hz	2NO+2NC	2	Z-S12/2S2O	265309	1 / 60
12 V 50Hz	1CO	1	Z-S12/W	265296	2 / 120
12 V 50Hz	2CO	2	Z-S12/WW	265317	1 / 60
8 V 50Hz	1NO	1	Z-S8/S	265267	2 / 120
8 V 50Hz	2NO	1	Z-S8/SS	265280	2 / 120
8 V 50Hz	1NO+1NC	1	Z-S8/SO	265288	2 / 120
8 V 50Hz	2NO+2NC	2	Z-S8/2S2O	265310	1 / 60
8 V 50Hz	1CO	1	Z-S8/W	265297	2 / 120
8 V 50Hz	2CO	2	Z-S8/WW	265318	1 / 60
8 V DC	2NO	1	Z-S7/SS	265281	2 / 120
8 V DC	1CO	1	Z-S7/W	265298	2 / 120
8 V DC	2CO	2	Z-S7/WW	265319	1 / 60

*) Dual voltage AC/DC

SG69011

Z-SC230/S

SG69111

Z-SB230/SS

SG59011

Z-S/KO

wa_sg02512

Z-EK/25

Control Voltage	Function	MU	Type Designation	Article No.	Units per package
Impulse Relays with central control Z-SC					
240 V AC 50/60Hz	3NO	2	Z-SC240/3S	265320	1 / 60
240 V AC 50/60Hz	1NO+1CO	2	Z-SC240/1S1W	265323	1 / 60
240 V AC 50/60Hz	2NO+1NC	2	Z-SC240/2S1O	265326	1 / 60
230 V AC 50/60Hz	1NO	1	Z-SC230/S	265299	2 / 120
230 V AC 50/60Hz	3NO	2	Z-SC230/3S	265321	1 / 60
230 V AC 50/60Hz	1NO+1CO	2	Z-SC230/1S1W	265324	1 / 60
230 V AC 50/60Hz	2NO+1NC	2	Z-SC230/2S1O	265327	1 / 60
24 V AC 50/60Hz	1NO	1	Z-SC24/S	265300	2 / 120
Impulse Relays with switchable LED Z-SB					
230 V 50Hz	2NO	1	Z-SB230/SS	265301	2 / 120
24 V 50Hz	2NO	1	Z-SB24/SS	265302	2 / 120
24 V DC	2NO	1	Z-SB23/SS	265303	2 / 120

Description	MU	Type Designation	Article No.	Units per package
Accessories for Z-S./.				
Compensator	1	Z-S/KO	270588	2 / 120
Group block	1	Z-SC/GP	270587	2 / 120
Busbar				
1pole angulated grey 10 mm²		Z-SV-10/1P-F/13	264918	10
1pole angulated blue 10 mm²		Z-SV-10/N-F/13	264919	10
1pole angulated grey 16 mm²		Z-SV-16/1P-1MU/F	269523	25
1pole angulated blue 16 mm²		Z-SV-16/N-1MU/F	269524	25
Extension terminal 25 mm² long, straight		Z-EK/25	264935	10 / 600
Extension terminal 25 mm² short, straight		Z-EK/25/K	269525	10 / 600
Extension terminal 25 mm² long, crosswise		Z-EK/25/QL	264937	10 / 600
Extension terminal 25 mm² short, crosswise		Z-EK/25/Q	264936	10 / 600

Description Impulse Relays Z-S

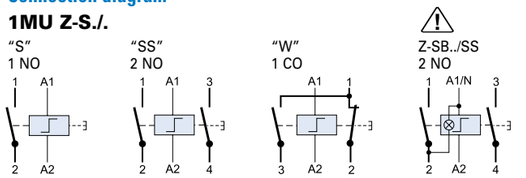
- Impulse relays according to EN/IEC 60669 for switching electrical consumers in impulse operation.
- Shape and terminal compatible with the installation relay range
- Manual operation for testing purposes is possible
- Separately switchable LED (Z-SB../SS) for signalling purposes
- Glow lamps of illuminated pushbuttons connected parallel produce reactive currents which may be compensated by a capacitor block in order to prevent excessive heating of coils in case of high numbers of glow lamps.
- Glow lamps parallel to control keys according to table
- Main contacts can be connected to standard pin busbar

Security:
- Optional optical operating status display by means of LED
- Switching position indicated on the front side by manual operating key
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Made of hardly flammable materials and plastics free from chlorine and halogens.
- Finger and hand touch safe according to VBG4

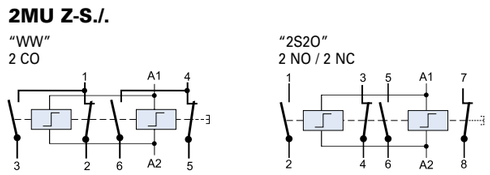
Advantages:
- Available in two versions (Z-S., Z-SB.)
- Low switching noise
- Easy to connect thanks to large terminals which are supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil connection

Connection diagram

1MU Z-S./.

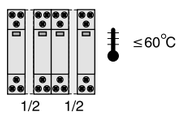


2MU Z-S./.

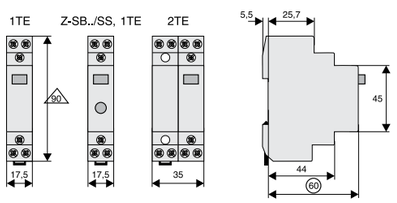


Packing density

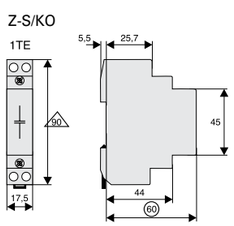
Spacers obligatory! (Z-DST)



Dimensions (mm)



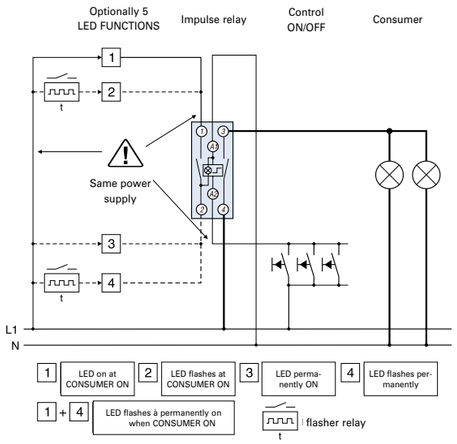
Z-S/KO



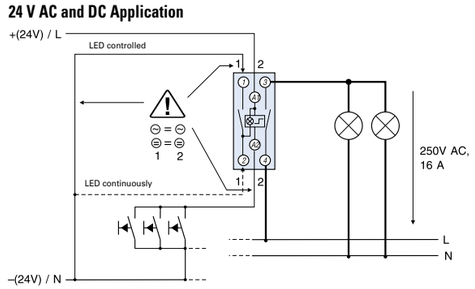
Technical Data

		Z-S
Electrical		
Rated current (IEC/EN 60669-2-2) 250 V AC		16 A
Number of poles		1 to 4
Main contacts		
NO/NC		1/2 (1MU), 3/4 (2MU)
CO		1 (1MU), 2 (2MU)
Control circuit		
Rated control feed voltage	U_s	
AC		8, 12, 24, 48, 230 V
DC		8, 12, 24, 110 V
Alternative control voltages, frequencies, and contact arrangements upon enquiry		
Rated frequency		50 Hz
Operating range		0.9-1.1 x U_s
Pickup power of coils		12 VA / 7 W typ.
Max. number of parallel pushbutton units		unlimited
Max. number of parallel illuminated pushbutton units 230 V 0.6 mA typ.		
without compensation		8 units (1MU), 15 units (2MU)
with compensation 1 x Z-SC/KO (Z-S/KO)		23 units (1MU), –
with compensation 2 x Z-SC/KO (Z-S/KO)		46 units (1MU), 43 units (2MU)
Minimum command duration		> 200 ms
Operating noise		no humming
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	2 kV
Duty max. (only in case of breakdown of control system)		1 h, 100% with spacer
Load Circuit		
Rated operational voltage	U_e	
1p, 2p		250 VAC
3p, 4p		240/415 VAC
Minimum operational voltage	U_{min}	24 V AC/DC (U_s 8-110 V)
Rated insulation voltage	U_i	500 V
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	4 kV
Conventional thermal current	I_{th}	16 A AC
Rated operational current	I_e	16 A AC
Rated constant current	I_u	16 A AC
Rated current DC	I_e	
24 V		16 A
48 V		12.5 A
230 V		1 A
Conditional rated short circuit current	I_q	10 kA (with 20 A gL/gG)
Duration of bouncing		< 10 ms (typ. < 5 ms)
Endurance		
electrical components		≥ $40x10^3$ switching operations
mechanical components		≥ $1x10^6$ switching operations
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.5 mm pro MU
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP20
Mounting position		as required
Upper and lower terminals		lift terminals (captive)
Terminal capacity		
Contact and coil		0.5 - 10 mm^2 one- or more wire
		0.5 - 6 mm^2 fine wires with wire end sleeve
Temperature range		-20 to +45 °C
Total contact gap		> 5 mm / independent contacts
Contact material		does not contain cadmium
Accessories		
Capacitor block		1.5 µF, 240 V AC

Impulse Relays with switchable LED



24 V AC and DC Application



Description Impulse Relays Z-SC with Central Control

- Impulse relay according to EN/IEC 60669 for switching electrical consumers in impulse operation.
- Local and central control, capable of switching 2-stage groups
- Shape and terminal compatible with the installation relay range
- Manual operation for testing purposes is possible
- Glow lamps of illuminated pushbuttons connected parallel produce reactive currents which may be compensated by a capacitor block in order to prevent excessive heating of coils in case of high numbers of glow lamps.
- Glow lamps parallel to control keys according to table
- Main contacts can be connected to standard busbar

Security:

- Switching position indicated on the front side by manual operating key
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Made of hardly flammable materials and plastics free from chlorine and halogens.
- Finger and hand touch safe according to VBG4.

Advantages:

- Low switching noise
- Easy to connect thanks to large terminals which are supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil connection

Connection diagram

1MU Z-SC./S

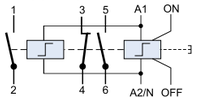
"S"
1 NO

2MU Z-SC./.

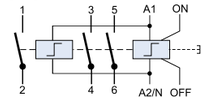
"1S1W"
1 NO / 1 CO

2MU Z-SC./.

"2S1O"
2 NO / 1 NC

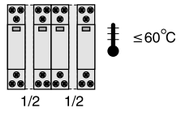


"3S"
3 NO

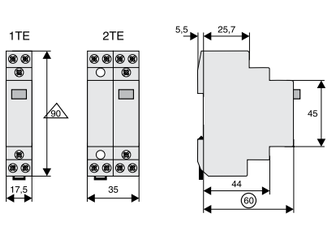


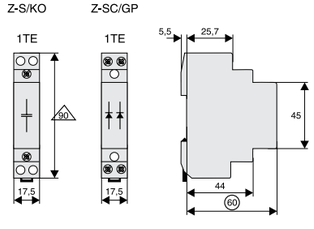
Packing density

Spacers obligatory! (Z-DST)



Dimensions (mm)

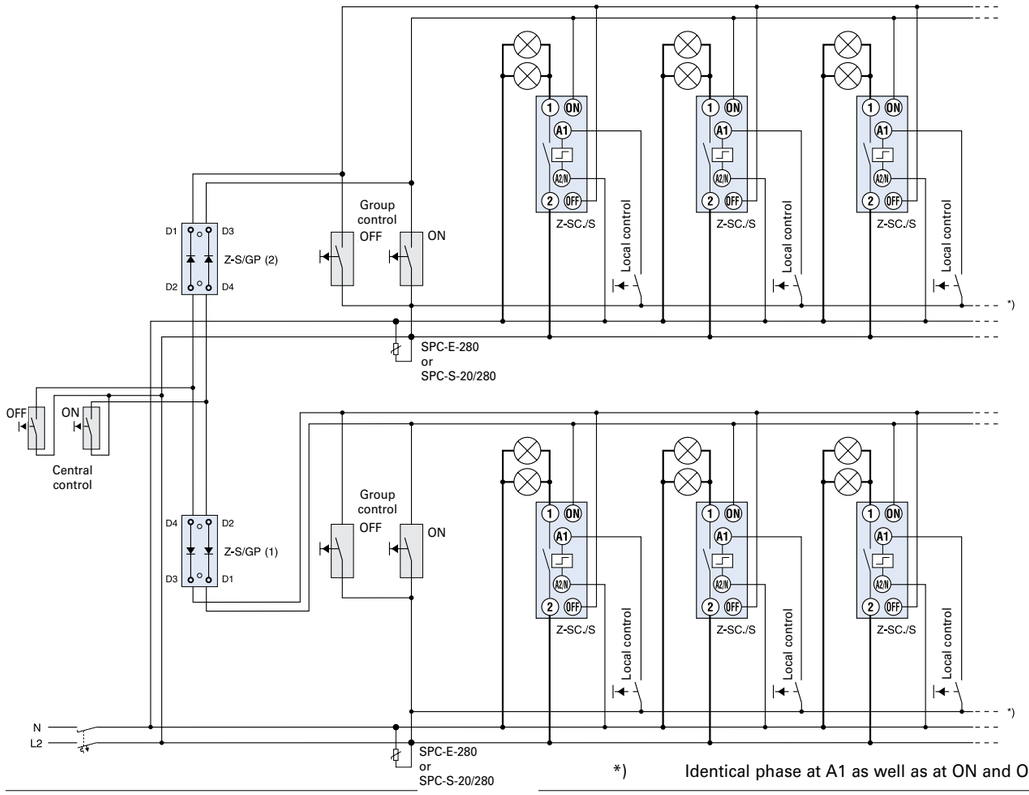




Technical Data

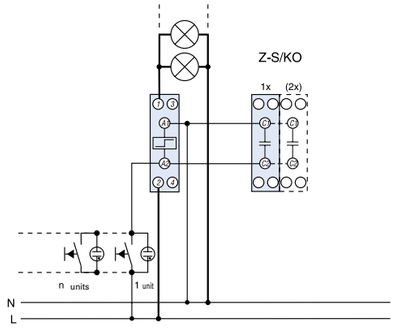
		Z-SC
Electrical		
Rated current (IEC/EN 60669-2-2) 250 V AC		16 A
Number of poles		1 to 3
Main contacts		
NO		1 (1MU), 3 (2MU)
NO/NC		2+1 (2MU)
CO/NO		1 (2MU)
Control circuit		
Rated control feed voltage	U_s	
AC		12, 24, 230, 240 V
Alternative control voltages, frequencies, and contact arrangements upon enquiry		
Rated frequency		50 Hz; 50-60 Hz 240 V
Operating range		0.9-1.1 x U_s
Maximum power of coils, pick-up		
U_s = 24 V		25 VA (15 W)
U_s = 230 V		32 VA (19 W)
Max. number of parallel pushbutton units		unlimited
Max. number of parallel illuminated pushbutton units 230 V 0.6 mA typ.		
without compensation		4 units (1MU, 2MU)
with compensation 1 x Z-SC/KO (Z-S/KO)		19 units (1MU), 9 units (2MU)
with compensation 2 x Z-SC/KO (Z-S/KO)		30 units (1MU), 18 units (2MU)
Minimum command duration		> 200 ms
Operating noise		no humming
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	2 kV
Duty max. (only in case of breakdown of control system)		100% (1MU), <100% (2MU), 1h max. with spacer
Load Circuit		
Rated operational voltage	U_e	
1p, 2p		250 V AC
3p		240/415 V AC
Minimum operational voltage	U_{min}	24 V AC/DC (U_s 8-110 V)
Rated insulation voltage	U_i	500 V
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	4 kV
Conventional thermal current	I_{th}	16 A AC
Rated operational current	I_e	16 A AC
Rated constant current	I_u	16 A AC
Rated current DC	I_e	
24 V		16 A
48 V		12.5 A
230 V		1 A
Conditional rated short circuit current	I_q	10 kA (with 20 A gL/gG)
Duration of bouncing		< 10 ms (typ. < 5 ms)
Endurance		
electrical components		≥ 40x10^3 switching operations
mechanical components		≥ 1x10^6 switching operations
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.5 mm (1MU), 35 mm (2MU)
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP20
Mounting position		as required
Upper and lower terminals		lift terminals (captive)
Terminal capacity		
Contact and coil		0.5 - 10 mm^2 one- or more wire
		0.5 - 6 mm^2 fine wires with wire end sleeve
Temperature range		-20 to +45 °C
Total contact gap		> 5 mm / independent contacts
Contact material		does not contain cadmium
Accessories		
Capacitor block		1.5 µF, 240 V AC
Group block		240 V AC

Block Diagram for Central, Group, and Local Control



*) Identical phase at A1 as well as at ON and OFF

Compensation by means of Capacitor Block



Utilisation categories (accoording to IEC/EN 60947-4-1)

Utilisation categories 1MU (1S, 2S, 1S+1O, 1W), 2MU (2S+2O, 2W, 3S+1O)		Z-S, Z-ZC, Z-SB
AC-1		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-1		3200 W (cosφ = 0.8), 4000 VA
Make-/break-current AC-1	I_c	24 A AC
AC-3		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		900 W (cosφ = 0.45), 2000 VA
Make-/break-current AC-3	I_c	80 A AC
AC-5a		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W (cosφ = 0.45), 2500 VA
Make-/break-current AC-5a	I_c	30 A AC
AC-5b		
Rated operational voltage	U_e	230 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
Make-/break-current AC-5b	I_c	13.2 A AC
AC-7a (according toEN 61095)		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-7a		3200 W (cosφ = 0.8), 4000 VA
Make-/break-current AC-7a	I_c	24 A AC

Utilisation categories 2MU (3S, 4S)		
AC-1		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-1		3200 W (cosφ = 0.8), 4000 VA
Make-/break-current AC-1	I_c	24 A AC
AC-3		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		900 W (cosφ = 0.45), 2000 VA
Make-/break-current AC-3	I_c	80 A AC / 64 A AC
AC-5a		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W (cosφ = 0.45), 2500 VA
Make-/break-current AC-5a	I_c	30 A AC
AC-5b		
Rated operational voltage	U_e	230/400 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
Make-/break-current AC-5b	I_c	13.2 A AC
AC-7a (according toEN 61095)		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-7a		3200 W (cosφ = 0.8), 4000 VA
Make-/break-current AC-7a	I_c	24 A AC
AC-7b (according toEN 61095)		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-7b		1125 W (cosφ = 0.8), 2500 VA
Make-/break-current AC-7b	I_c	30 A AC

Lamp Types	Power W	Current A	Capacitor µF	Z-S, Z-ZC, Z-SB max. number of lamps per current path at 230 V, 50 Hz
Incandescent Lamps	60	0.27		33
Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer	20	0.09	-	55
	50	0.22	-	22
	75	0.33	-	14
	100	0.43	-	11
	150	0.65	-	7
	200	0.87	-	5
	300	1.3	-	3
Fluorescent tubes without compensation or with series compensation	11	0.16	1.3	62
	18	0.37	2.7	27
	24	0.35	2.5	27
	36	0.43	3.4	24
	58	0.67	5.3	15
	65	0.67	5.3	14
	85	0.8	5.3	12
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 71
	18	0.11	-	2 x 45
	24	0.14	-	2 x 35
	36	0.22	-	2 x 22
	58	0.35	-	2 x 14
	65	0.35	-	2 x 14
	85	0.47	-	2 x 10
Fluorescent tubes with parallel compensation	11	0.16	3.0	34
	18	0.37	4.0	26
	24	0.35	4.0	26
	36	0.43	4.0	26
	58	0.67	7.0	14
	65	0.67	7.0	14
	85	0.8	8.0	13
Fluorescent tubes with electronic ballast	18	0.09	-	32
	36	0.16	-	16
	58	0.25	-	12
	2 x 18	0.17	-	16
	2 x 36	0.32	-	8
	2 x 58	0.49	-	6

LED Lamps		Z-S
LED Lamps. Pay attention on the inrush current of the ballast and cosφ of the lamp	max. permissible inrush current of installation relay (A)	80 A
	Max. Inrush current installation relay (A) Inrush current lamp (A)	= max. number of lamps per pole ($I_{nLED} \leq I_{th}$)

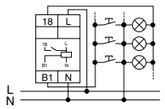
	Function	Type Designation	Article No.	Units per package
Staircase Switch with switch-off warning and stop function TL				
SG07312 	Staircase switch with switchoff warning and stop function	TLE	101064	2 / 120
	Staircase switch as TLE, with additional control input for central control, zero-voltage proof	TLK	101066	2 / 120

Description Staircase Switch with switch-off warning and stop function TL

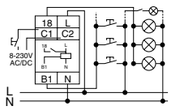
- Automatic electronic staircase switch
- Switch-off warning can be switched off (type TLK)
- Subsequent switching is possible, programmable long-time function
- Power saving function, low switching noise
- Automatic 3-/4 wire circuit recognition
- Zero voltage safety thanks to memory function (type TLK)
- Central control function (type TLK)
- External voltage control input (type TLK)

Connection diagram

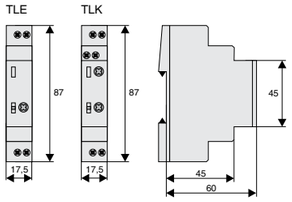
e.g. 3 wire circuit TLE

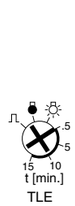


e.g. 4 wire circuit with attic lighting TLK



Dimensions (mm)





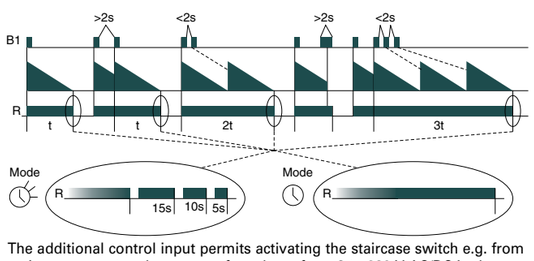
Modes

- Automatic timing
- Automatic timing with switch-off warning
- Permanent light
- Off
- Impulse relay
- Impulse relay, zero-voltage proof

2000 W
1000 W
500 W
max. 100 mA

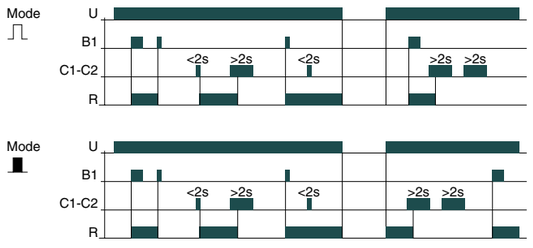
Functional Description

Automatic timing :
After pushing the button the output relay closes (terminals L-18) and the set time starts to run. If the button is pushed again before the time t has lapsed the time re-starts from zero (subsequent switching function in accordance with EN 60669-2-3). Repeated quick pressing of the pushbutton („pumping“) leads to the addition of 2, 3 or more time intervals up to 60 min. Pushing the button once for a long time (> 2 s) stops the running lighting period, and the relay switches off (power saving function). In the function, the device generates short pulses (flickering) as a switch-of warning (according to DIN 18015-2), 15 s, 10 s, and 5 s prior to switching off.



The additional control input permits activating the staircase switch e.g. from an intercom system by means of a voltage from 8 to 230 V AC/DC in the modes and . This input channel permits starting the lighting time, as well as subsequent switching. Switching off (power saving function) and programming of longer lighting periods („pumping“) is not possible via this input channel.

Impulse mode :
In the impulse mode each push of the button makes the output relay switch over. In the function the output relay is always open after the feed voltage has been applied. In the function the relay immediately picks up when the feed voltage is applied provided that it was closed prior to the power failure. By applying a short voltage pulse (< 2 s) to the additional control input C1-C2 the relay R is switched on (central ON).
A longer voltage pulse (> 2 s) causes the relay R to switch off (central OFF).



Technical Data

	TL
Electrical	
Feed voltage	230 V AC
Rated voltage tolarance	-15%, +10%
Power consumption	6 VA (0.8 W)
Rated frequency	48-63 Hz
Duty	100%
Reset time	500 ms
Adjustment range	0.5 - 15 min.
Overvoltage category	III (in accordance with IEC 60664-1)
Rated surge voltage	4 kV
Output	
Switching contact	1 NO (Terminals L-18)
Rated voltage	250 VAC
Constant current	16 A
Switch on peak current (20 ms)	80 A
Breaking capacity AC	4000 VA / AC1, 384 W / DC
Maximum current	30 A / < 3s
Switching voltage	250 V AC1 / 24 V DC
Min. Breaking capacity DC	500 mW
Output indication	yellow LED ( )
Mechanical endurance	30 x 10^6 switching operations
Electrical endurance (AC1)	10 x 10^5 switching operations 16 A / 250 V
Control input B1	
Connection (carrying voltage)	Pushbutton T-N (3-wire circuit) Pushbutton T-L (4-wire circuit)
Glow lamps parallel to control keys	max. 100 mA
Overload protection	electronic
Control input	
C1-C2 (Type TLK)	8-230 V AC/DC
Mechanical	
Frame size	45 mm
Device height	87 mm
Device width	17.5 mm (1MU)
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection / Pollution degree	IP20 / 2
Type of connection	lift terminals according to VBG 4 (PZ1 required)
Terminal capacity	1x 0.5-4 mm^2, 2x 0.5-2.5 mm^2
Tightening torque	max. 1 Nm
Temperature range	-25 to +55 °C
Operation position	as required

SG07412

ZRMF1/W

SG07912

ZRMF2/WW

Function	Contactors	Type Designation	Article No.	Units per package
Time-Lag Relay ZR				
E, R	1CO	ZRER/W	110405	2 / 120
E, R, Ws, Wa, Es, Wu, Bp	1CO	ZRMF1/W	110406	2 / 120
E, R, Ws, Wa, Es, Wu, Bp	2CO	ZRMF2/WW	110408	1 / 60
Ip, Ii	1CO	ZRTAK/W	110747	2 / 120

Description Time-Lag Relay ZR

Functions

- **ZRER/W**
  - E ON delay
  - R OFF delay
- **ZRMF1/W, ZRMF2/WW**
  - E ON delay
  - R OFF delay
  - Ws Single shot leading edge with control input
  - Wa Single shot trailing edge with control input
  - Es ON delay with control input
  - Wu Single shot leading edge voltage controlled
  - Bp Flasher pause first
- **ZRTAK/W**
  - Ip Asymmetric flasher pause first
  - Ii Asymmetric flasher pulse first (with bridge A1-B1)

Indicators

ZRER/W, ZRMF1/W, ZRMF2/WW

Green LED U/t ON: indication of supply voltage
Green LED U/t flashes: indication of time period
Gelbe LED R ON/OFF: indication of output relay

ZRTAK/W

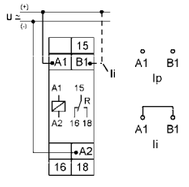
Green LED U/t ON: indication of supply voltage
Green LED U/t slow flashing: indication of time period t1
Green LED U/t fast flashing: indication of time period t2
Gelbe LED R ON/OFF: indication of output relay

Time Ranges

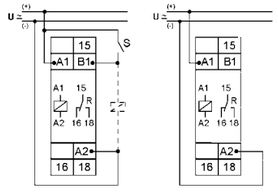
Absolute time range	Adjustment range	
1 s	50 ms	1 s
10 s	500 ms	10 s
1 min	3 s	1 min
10 min	30 s	10 min
1 h	3 min	1 h
10 h	30 min	10 h
100 h	5 h	100 h

Connection diagram

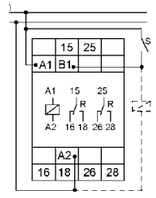
Type ZRTAK/W

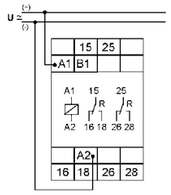


Type ZRER/W, ZRMF1/W



Type ZRMF2/WW



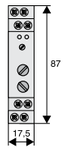


Technical Data

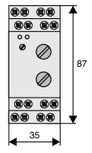
	ZR
Electrical	
Standard according	EN 60669
Basic accuracy	±1% (of scale end value)
Setting accuracy	<5% (of scale end value)
Repeating accuracy	<0.5% or ±5ms
Effect of voltage	–
Effect of temperature	≤0.01% / °C
Input circuit	
Feed voltage Terminals A1-A2	24 V to 240 V AC/DC, 24 V / -15% to 240 V / +10%
Rated frequency	48 to 63 Hz
Power consumption	
Type: .../W	4 VA (1.5 W)
Type: .../WW	6 VA (2 W)
Duty	100%
Reset time	100 ms
Residual ripple in case of DC	10%
Release voltage	>30% of min. feed voltage
Output circuit	potential-free CO
Breaking capacity	2000 VA (8 A / 250 V AC)
Fuse protection	8 A fast
Endurance	
electrical components at a resistive load of 1000 VA	2 x 10^5 switching operations
mechanical components	20 x 10^6 switching operations
Switching frequency	
at a resistive load of 100 VA	max. 60/min
at a resistive load of 1000 VA (in accordance with IEC 60947-5-1)	max. 6/min
Rated surge voltage	4 kV
Overvoltage category	III (in accordance with IEC 60664-1)
Control contact	
Input carrying potential	Terminals A1-B1
loadable	yes
Maximum line length	10 m
Overload protection	electronic
Minimum control pulse length	
DC	50 ms
AC	100 ms
Trigger level (sensitivity)	automatic adaption to supply voltage
Mechanical	
Frame size	45 mm
Device height	87 mm
Device width	17.5 mm (/W) and 35 mm (/WW)
Degree of protection, built-in	IP40
Operation position	as required
Upper and lower terminals	lift terminals
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Terminal capacity	1 x 0.5-2.5 mm^2 with/without multicore cable end 1 x 4 mm^2 without multicore cable end 2 x 0.5-1.5 mm^2 with/without multicore cable end 2 x 2.5 mm^2 flexible without multicore cable end
Tightening torque of terminal screws	max. 1 Nm
Permitted relative air humidity in accordance with IEC 60721-3-3 class 3K3	15 to 85%
Ambient temperature in accordance with IEC 60068-1	-25 to +55 °C
Storage and transport temperature	-25 to +70 °C
Pollution degree	2
when built in	3

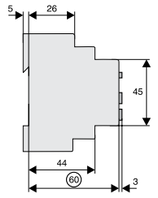
Dimensions (mm)

Typ: .../W



Typ: .../WW

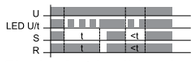




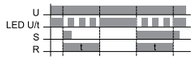
Description of Functions

- **ON delay (E)**
  When the supply voltage U is applied, the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the expiry of the interval t, the interval already expired is erased and is restarted when the supply voltage is next applied.

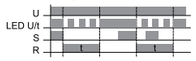
- **OFF delay (R)**
  The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the output relay R switches into on-position (yellow LED illuminated). If the control contact is opened, the set interval t begins (green LED flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). If the control contact is closed again before the interval t has expired, the interval already expired is erased and is restarted.



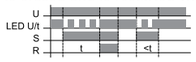
- **Single shot leading edge with control input (Ws)**
  The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the output relay R switches into on-position (green LED U/t illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.



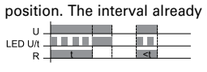
- **Single shot trailing edge with control input (Wa)**
  The supply voltage U must be constantly applied to the device (green LED U/t illuminated). Closing the control contact S has no influence on the condition of the output R. When the control contact is opened, the output relay switches into on-position (yellow LED illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated), the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.



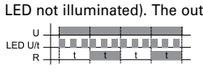
- **ON delay with control input (Es)**
  The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the control contact is opened again If the control contact is opened before the interval t has expired, the interval already expired is erased and is restarted with the next cycle.



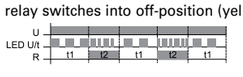
- **Single shot leading edge voltage controlled (Wu)**
  When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the interval t has expired the output relay switches into off-position. The interval already is erased and is restarted when the supply voltage is next applied.



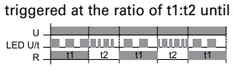
- **Flasher pause first (Bp)**
  When the supply voltage U is applied, the set interval t begins (green LED U/t flashes). After the interval t has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval t begins again. After the interval t has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at a ratio of 1:1 until the supply voltage is interrupted.



- **Asymmetric flasher pause first (Ip)**
  When the supply voltage U is applied, the set interval t1 begins (green LED U/t flashes slowly). After the interval t1 has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval t2 begins (green LED U/t flashes fast). After the interval t2 has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at the ratio of t1:t2 until the supply voltage is interrupted.



- **Asymmetric flasher pulse first (Ii)**
  When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval t1 begins (green LED U/t flashes slowly). After the interval t1 has expired, the output relay switches into off-position (yellow LED not illuminated) and the set interval t2 begins (green LED U/t flashes fast). After the interval t2 has expired, the output relay switches into on-position (yellow LED illuminated). The output relay is triggered at the ratio of t1:t2 until the supply voltage is interrupted.



Switching voltage	U_N	Contactors	Type Designation	Article No.	Units per package
Undervoltage Relay REUVM					
• Optical indication Relay active … green LED Fault in phases L1, L2, L3 … red LED is flashing Loss of Neutral conductor N … green LED is flashing • Single phase application is possible					
SG83511 					
U_N x 0.85	230/400 VAC	1CO	REUVM	148598	1
U_N x 0.85	230/400 VAC	2CO	REUVM2	167284	1

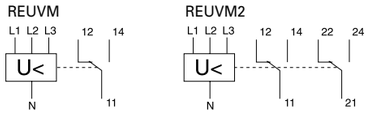
Description Undervoltage Relay REUVM

- When the connection to the three phases and neutral conductor is made the relay is energized in case there is no fault and the green LED lights. If the monitored nominal voltage U_N drops under the switching voltage U_S, in one, two or all three phases the relay reverts to its de-energized position. The green LED disappear.
- Optical indication
  Relay active … green LED
  Fault in phases L1, L2, L3 … red LED is flashing
  Loss of Neutral conductor N … green LED is flashing
- Single-phases operation: bridge L1-L2-L3

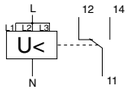
Technical Data

		REUVM
Electrical		
Rated operational voltage	U_N	230/400 V AC
Rated frequency		50-60 Hz
Switching voltage	U_S	U_N x 0.85 fix
Power consumption		< 1 VA
Switching time delay		500 ms
Switching contact		1 CO, 2 CO
Rated operational voltage / current		250 V AC / 5 A cosφ = 1 30 V DC / 5 A 300 V DC / 0.25 A
Min. Rated operational voltage		100 mV AC/DC
Min. Rated operational current		10 mA AC/DC
Rated peak withstand voltage		4 kV
Duty		100%
Overvoltage category		III
Dielectric strength		
Coil – contact circuit		4 $kV_{r.m.s.}$
Open circuit contact		1 $kV_{r.m.s.}$
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.8 mm
Weight		65 g, 73 g
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Upper and lower terminals		lift terminals
Terminal capacity		
solid		1x4 mm^2, 2x1.5 mm^2
fine-wire		1x2.5 mm^2
Tightening torque of terminal screws		0.5 Nm
Resistance to climatic conditions		F / DIN 40040
Temperature range		-25 to +60 °C
Flame class		V0, glow wire 960 °C
Pollution degree		2
Comparative tracking index		CTI 600

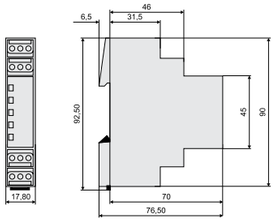
Connection diagram



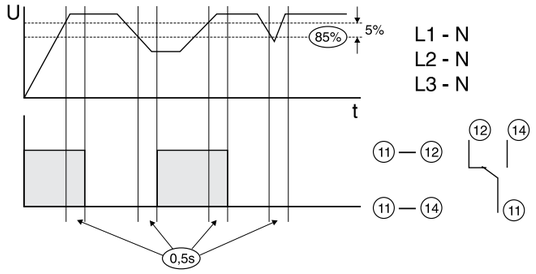
Single-phases application



Dimensions (mm)

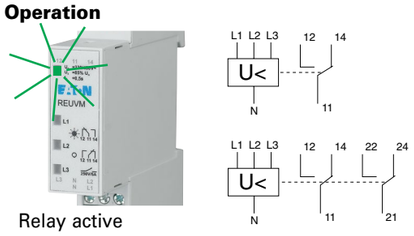


Functional diagram



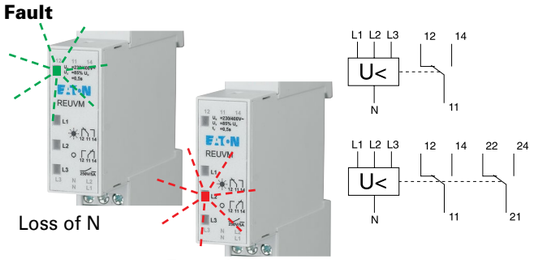
Optical indication and contact position

Operation



Relay active

Fault



Loss of N

Example
Phase L2

Rated operational voltage	Type Designation	Article No.	Units per package

Voltage Indication UVA

- Optical indication
  Voltage of phases L1, L2, L3 is indicated with green LED's even at loss of Neutral conductor N
- Single-phases application, or even possible to use DC

SG00112

230/400 V AC, 50/60 Hz	UVA	167285	1

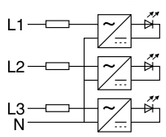
Description Voltage Indication UVA

- When the connection to the three phases and neutral conductor is made, the green Power LED lights. If only two phases are connected, eg. L1 and L3, only these green LED`s lights, even at loss of Neutral conductor N.
- For use as voltage return indication in manual operated Mains-Emergency-system operation
- Large operational voltage range 85-480 V AC, 85-300 V DC

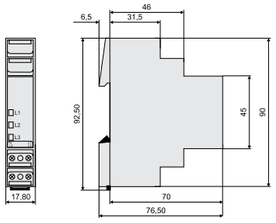
Technical Data

		UVA
Electrical		
Rated operational voltage	U_N	230/400 V AC
Rated frequency		50-60 Hz
Rated operational voltage range		
L-L		85-480 V AC
L-N		85-300 V AC/DC
Power consumption at 400 V AC		3x 23 mW
Max. permissible back-up fuse		16A gG (gL)
Duty		100%
Rated peak withstand voltage		6 kV
Overvoltage category		IV
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.8 mm
Weight		42 g
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Upper and lower terminals		lift terminals
Terminal capacity		
solid		1x4 mm^2, 2x1.5 mm^2
fine-wire		1x2.5 mm^2
Tightening torque of terminal screws		0.5 Nm
Temperature range		-30 to +60°C
Flame class		V0, glow wire 960 °C
Pollution degree		2
Comparative tracking index		CTI 600

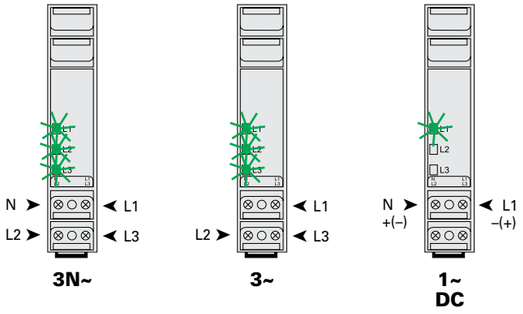
Connection diagram



Dimensions (mm)



Application and visuale indicators



Function	Rated operational current range (A)	Type Designation	Article No.	Units per package
Load Shedding (Current) Relay Z-LAR				
NC	3-8	Z-LAR/8-O	248256	1 / 60
NC	10-16	Z-LAR/16-O	248257	1 / 60
NC	15-32	Z-LAR/32-O	248258	1 / 60
NO	3-8	Z-LAR/8-S	248259	1 / 60
NO	10-16	Z-LAR/16-S	248260	1 / 60
NO	15-32	Z-LAR/32-S	248261	1 / 60
CO	3-8	Z-LAR/8-W	248262	1 / 60

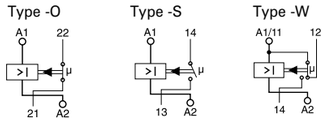
Description Load Shedding (Current) Relay Z-LAR

- For simple priority connection of important consumers
- For fast current increase
- Expensive peak loads are avoided efficiently (staggered heating)
- Integrated auxiliary switch, 1 NC or 1 NO or 1 CO contact
- NC and NO contact are potential free

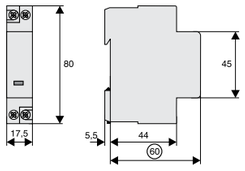
Technical Data

		Z-LAR/8	Z-LAR/16	Z-LAR/32
Electrical				
Nominal thermal current	I_{th}	8 A	16 A	32 A
Rated voltage	U	250 V AC	250 V AC	250 V AC
Responding current	I_{AN}	≥ 3 A	≥ 10 A	≥ 15 A
Release current	I_A	≤ 1.8 A	≤ 4.5 A	≤ 8.5 A
Max. electrical switching frequency		3600/h	3600/h	3600/h
Rated insulation voltage	U_i	440 V	440 V	440 V
Power loss at I_{th}				
Effective power		3.4 W	1.95 W	3.17 W
Apparent power		7.7 VA	4.66 VA	7,36 VA
Rated peak withstand voltage	U_{imp}	4 kV	4 kV	4 kV
Back-up fuse line protection		max. 10 A	max. 16 A	max. 32 A
Switching contact				
Function NC, NO, CO				
Back-up fuse		max. 1 A gL	max. 1 A gL	max. 1 A gL
Contact gap *)		< 3 mm (µ)	< 3 mm (µ)	< 3 mm (µ)
Breaking capacity		1 A / 250 V~	1 A / 250 V~	1 A / 250 V~
Minimum switching capacity		300 mW	300 mW	300 mW
Minimum operational voltage		12 V	12 V	12 V
Endurance electrical components		100,000 switching operations		
*) Do not use as the only means of isolating a device from the line voltage				
Mechanical				
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715		
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Upper and lower terminals		lift terminals	lift terminals	lift terminals
Terminal capacity				
Main circuit		2 x 10 mm^2	2 x 10 mm^2	2 x 10 mm^2
Auxiliary circuit		2 x 2.5 mm^2	2 x 2.5 mm^2	2 x 2.5 mm^2
Tightening torque of terminal screws				
Main circuit		max. 1.2 Nm	max. 1.2 Nm	max. 1.2 Nm
Auxiliary circuit		max. 1 Nm	max. 1 Nm	max. 1 Nm

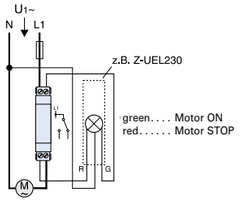
Connection diagram



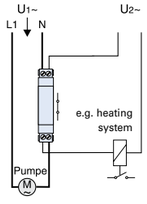
Dimensions (mm)



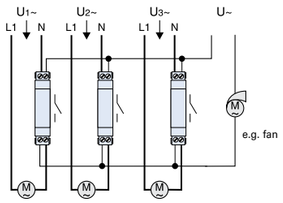
Connection Example - Operating Status



Connection Example - Priority for Pump



Connection Example - „OR“ Circuit, Extraction System



Digital Timers TSDW

Drive	Program	Channels	Type Designation	Article No.	Units per package
Digital	Week	1 channel	TSDW1COMIN	167383	1
Digital	Week	1 channel	TSDW1CO-1	196848	1
Digital	Week	2 channels	TSDW2CO-1	196849	1

Description Digital Timers with a Weekly Program TSDW1CO, TSDW2CO

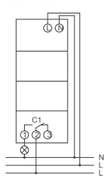
- Spring terminals
- Text-based user guidance on the display
- 56 memory cells
- Interface for memory card
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- ON-OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- Integrated counter for operating hours
- Vacation program
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- TSDW1CO: 1 channel
- TSDW2CO: 2 channels

Technical Data

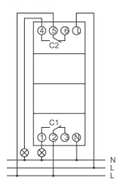
	TSDW1CO-1	TSDW2CO-1
Electrical		
Rated operational voltage	230 V AC	230 V AC
Frequency	50 – 60 Hz	50 – 60 Hz
Stand-by Power (typical)	0.4 W	0.4 W
Power backup	10 years	10 years
Accuracy (typical)	± 0.25 s/day at 25 °C (quartz)	± 0.25 s/day at 25 °C (quartz)
Switching capacity		
at 250 V AC, cosφ = 1	16 A	16 A
at 250 V AC, cosφ = 0.6	10 A	10 A
Incandescent/halogen lamp load	2600 W	2600 W
Energy saving lamps 230 V	1100 W	1100 W
LED lamp < 2 W	50 W	50 W
LED lamp > 2 W	600 W	600 W
Fluorescent lamp load (conventional)		
not corrected	2600 VA	2600 VA
series corrected	2600 VA	2600 VA
parallel corrected	1300 VA 130 µF	1300 VA 130 µF
Min. switching capacity	ca.10 mA	ca.10 mA
Shortest switching time	1 min	1 min
Mechanical		
Frame size	45 mm	45 mm
Device width	36 mm	36 mm
Mounting	DIN rail	DIN rail
Width	2 modules	2 modules
Type of connection	Duo fix spring terminals	Duo fix spring terminals
Ambient temperature	-30 °Cto +60 °C	-30 °C to +60 °C
Degree of protection	IP20	IP20
Protection class	II according to EN 60730-1	II according to EN 60730-1
Certification mark	V	V

Connection example

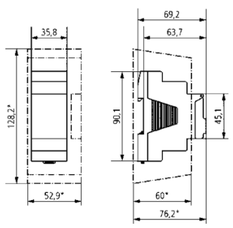
TSDW1CO-1



TSDW2CO-1



Dimensions (mm)



Description Digital Timers with a Weekly Program TSDW1COMIN

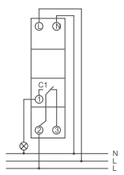
- 1 channel
- Screw-type terminals
- Text-based operator guidance on the display
- 84 memory cells
- 3 years Power backup (exchangeable lithium battery)
- ON-OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates

Technical Data

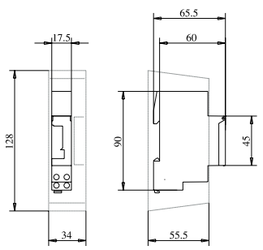
	TSDW1COMIN
Electrical	
Rated operational voltage	230 V AC
Frequency	50–60 Hz
Power backup	3 years
Breaking capacity	
at 250 V AC, cosφ = 1	16 A
at 250 V AC, cosφ = 0.6	6 A
Incandescent/halogen lamp load	1000 W
Shortest switching time	1 min
Accuracy	≤ ± 1 s/day (quartz)
Stand-by Power	0.4 W
Mechanical	
Frame size	45 mm
Device width	17.5 mm
Mounting	DIN rail
Degree of protection	IP20
Protection class	II according to EN 60730-1
Ambient temperature	-10 to +55 °C
Certification mark	V

Connection example

TSDW1COMIN



Dimensions (mm)



Drive	Program	Channels	Type Designation	Article No.	Units per package
Astronomical Timer with a Weekly Program TSDW1COA					
Quartz	Week	1 channel	TSDW1COA-1w	196850	1

sg06119_l

Description Astronomical Timer with a Weekly Program TSDW1COA

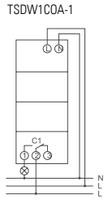
- Astronomical switching function (automatic calculation of sunrise and sunset times for the entire year)
- Spring terminals
- Text-based user guidance on the display
- Interface for memory card
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- Calculated astronomical switching times
- Programmable ON/OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- Integrated counter for operating hours
- Vacation program
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- 1 channel
- 54 memory cells

Technical Data

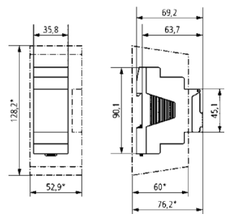
	TSDW1COA-1
Electrical	
Rated operational voltage	230 V AC
Frequency	50 – 60 Hz
Stand-by Power (typical)	0.4 W
Power backup	10 years
Accuracy (typical)	at 25 °C typical ± 0,25 s/day (quartz)
Switching capacity	
at 250 V AC, cosφ = 1	16 A
at 250 V AC, cosφ = 0.6	10 A
Incandescent/halogen lamp load	2600 W
Energy saving lamps 230 V	1100 W
LED lamp < 2 W	50 W
LED lamp > 2 W	600 W
Fluorescent lamp load (conventional)	
not corrected	2600 VA
series corrected	2600 VA
parallel corrected	1300 VA 130 µF
Min. switching capacity	ca.10 mA
Shortest switching time	1 min
Mechanical	
Frame size	45 mm
Device width	36 mm
Mounting	DIN rail
Width	2 modules
Type of connection	DuoFix spring terminals
Ambient temperature	-30 to +55 °C
Degree of protection	IP20
Protection class	II according to EN 60730-1
Certification mark	V

Connection example

TSDW1COA-1



Dimensions (mm)



SG83911

Drive	Program	Channels	Type Designation	Article No.	Units per package
Analogue Timers TS					
Quartz	Day	1 channel	TSQD1NO	167388	1
Synchron	Day	1 channel	TSSD1NO	167389	1
Quartz	Day	1 channel	TSQD1CO	167390	1
Synchron	Day	1 channel	TSSD1CO	167391	1
Quartz	Week	1 channel	TSQW1CO	167392	1

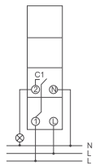
Description Analogue Timers TSQD1NO, TSSD1NO

- 1 MU
- 1 channel
- Screw-type terminals
- Manual switch with 3 positions: Permanent ON/AUTO/Permanent OFF
- Switching status indication
- TSQD1NO: with power backup (Internal rechargeable battery)
  - Quartz-controlled
- TSSD1NO: Daily program
  - Without power backup
  - 96 switching segments
  - Mains-synchronized
  - Shortest switching time: 15 minutes

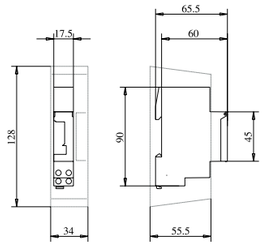
Technical Data

	TSQD1NO	TSSD1NO
Electrical		
Rated operational voltage	230–240 V AC	230 V AC
Frequency	50–60 Hz	50 Hz
Program	Daily program	Daily program
Power backup	3 days	–
Breaking capacity		
at 250 V AC, cosφ = 1	16 A	16 A
at 250 V AC, cosφ = 0.6	4 A	4 A
Shortest switching time	15 min	15 min
Programmable	every 15 min	every 15 min
Accuracy	≤ ± 1 s/day (quartz)	Mains-synchronized
Stand-by Power	0.5 W	0.9 W
Mechanical		
Frame size	45 mm	45 mm
Device width	17.5 mm	17.5 mm
Mounting	DIN rail	DIN rail
Degree of protection	IP20	IP20
Protection class	II according to EN 60730-1	II according to EN 60730-1
Ambient temperature	-10 to +55 °C	-25 to +55 °C
Certification mark	V	V

Connection example



Dimensions (mm)



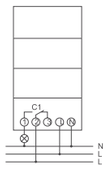
Description Analogue Timers TSQD1CO, TSSD1CO, TSQW1CO

- 3 MU
- 1 channel
- Spring terminals
- Pre-selected switching
- Manual switch with 3 positions: Permanent ON/AUTO/Permanent OFF
- Switching status indication
- TSQD1CO:
  - With power backup (NiMH cell)
  - Quartz-controlled
  - Clock-hands for time indication and 12h/24h recognition
  - Easy correction of spring forward/fall back at daylight-saving start and end
- TSQW1CO:
  - Weekly program
  - 84 switching segments
  - Shortest switching time: 2 hours
- TSSD1CO:
  - Daily program
  - Without power backup
  - 96 switching segments
  - Shortest switching time: 15 minutes
  - Clock-hands for time indication and 12h/24h recognition
  - Easy correction of spring forward/fall back at daylight-saving start and end

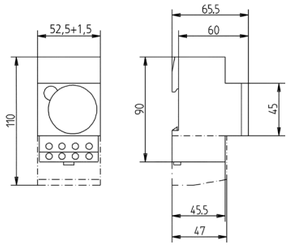
Technical Data

	TSQD1CO	TSSD1CO	TSQW1CO
Electrical			
Rated operational voltage	110–230 V AC	110–230 V AC	110–230 V AC
Frequency	50–60 Hz	50 Hz	50–60 Hz
Program	Daily program	Daily program	Weekly program
Power backup	200 hours, approx. 100 hours– at 110 V		200 hours, approx. 100 hours at 110 V
Breaking capacity			
at 250 V AC, cosφ = 1	16 A	16 A	16 A
at 250 V AC, cosφ = 0.6	4 A	4 A	4 A
Shortest switching time	15 min	15 min	2 h
Programmable	every 15 min	every 15 min	alle 2 h
Accuracy	≤ ± 1 s/day (quartz)	Mains-synchronized	≤ ± 1 s/day (quartz)
Stand-by Power	0.5 W	0.9 W	0.5 W
Mechanical			
Frame size	45 mm	45 mm	45 mm
Device width	52.5+1.5 mm	52.5+1.5 mm	52.5+1.5 mm
Mounting	DIN rail	DIN rail	DIN rail
Degree of protection	IP20	IP20	IP20
Protection class	II according to EN 60730-1	II according to EN 60730-1	II according to EN 60730-1
Ambient temperature	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C
Certification mark	V	V	V

Connection example



Dimensions (mm)



Switching contact	Brightness range	Brightness adjustable	Mounting	DIN rail Size	Type Designation	Article No.	Units per package
Light Intensity Switch SRSD							
1NO	2-2000 Lux	Analog	DIN rail	1TE	SRSD1NOW	196845	1
Light Intensity Switch with timer SRC							
1NO	1-99000 Lux	Digital	DIN rail	2TE	SRCD1COD	196847	1

Description Light Intensity Switch analog for DIN rail SRSD1NOW

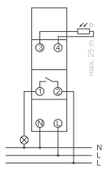
- Analog twilight switch
- External surface-mounted light sensor, cadmium sulfide (CdS) free
- Indication of the channel and switching status
- Freely adjustable switching brightness
- Wide lux range: 2 - 2000 lux
- Fixed on/off switching delay, preventing faulty operation caused by lightning, car headlights, etc.
- Improved switching capabilities: LED 350W (>2W)
- Reduced Power standby: ~0,3 W

Technical Data

	SRSD1NOW
Electrical	
Rated operational voltage	230 V AC, +10%/-15%
Frequency	50–60 Hz
Stand-by Power (typical)	0.3 W
Setting range for brightness	2-2000 lx
Switch-on delay	20 s
Switch-off delay	80 s
Contact type	NO
Switch output	Potential-free
Switching capacity	
at 250 V AC, cosφ = 1	16 A
Fluorescent lamp	10 AX
Incandescent/halogen lamp load	2600 W
Energy saving lamps	
LED lamp < 2 W	30 W
LED lamp > 2 W	350 W
Fluorescent lamp load (conventional)	
not corrected	2300 VA
series corrected	2300 VA
parallel corrected	730 VA, 80 µF
Fluorescent lamp (electronic ballast)	650 VA
Min. switching capacity	<10 mA
Mechanical	
Frame size	45 mm
Device width	17.5 mm
Mounting	DIN rail
Width	1 module
Connection	Screw terminals
Ambient temperature	-30 °C to +55 °C
Sensor temperature range	-40 °C to +70 °C
Degree of protection	IP20, Sensor IP 55
Protection class	II
Certification mark	V
Max. line length to the sensor	25 m

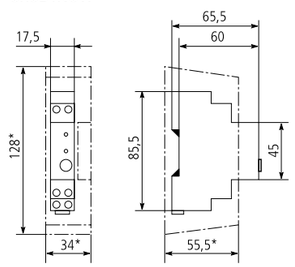
Connection diagram

SRSD1NOW



Dimensions (mm)

SRSD1NOW



Description Light Intensity Switch with Timer for DIN Rail SRCD1COD

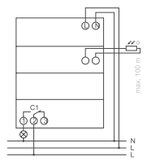
- Twilight switch with an integrated weekly timer
- External light sensor included in delivery
- 1 channel
- External input
- 3 special programs (small annual program)
- Pulse program
- 84 memory locations
- Switching brightness digitally adjustable
- Adjustable On and Off switching delay
- Switching brightness and switching delay can be set separately for switching On and Off
- Onscreen display of channel and switching status as well as current lux value
- Zero-cross switching for relay-saving switching and high lamp loads
- Up to 4 sensors can be attached
- Up to 10 devices can be connected to a digital sensor
- Extended brightness range
- Permanent switching ON/OFF
- Test function
- Switching preselection
- Display back light (can be turned off)
- PIN coding
- Operating hour counter
- DuoFix spring terminals

Technical Data

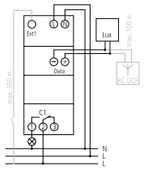
	SRCD1COD
Electrical	
Rated operational voltage	110 – 230 V AC, +10%/-15%
Frequency	50 – 60 Hz
Stand-by Power (typical)	0.8 W
Power reserve	10 years at 20 °C
Setting range for brightness	1 – 99000 lx
Preset brightness value	15 lx
Switch-on/off delay	0 – 59 min
Number of channels	1
Number of memory locations	84
External inputs	1
Accuracy (typical)	± 0,25 s/day at 25 °C (quartz)
Keyboards	4 touch buttons
Shortest switching times	1 min
Contact type	Changeover contact
Switching output	Switching of any external conductor is permitted
Switching capacity	
at 230 V AC, cosφ = 1	16 A
at 230 V AC, cosφ = 0.6	10 A
Incandescent/halogen lamp load	2600 W
Fluorescent lamp load (conventional)	
not corrected	2600 VA
series corrected	1300 VA (130 µF)
parallel corrected	1100 W
Energy saving lamps	
LED lamp < 2 W	50 W
LED lamp > 2 W	600 W
Mechanical	
Frame size	45 mm
Device width	36 mm
Mounting	DIN rail
Width	2 modules
Type of connection	DuoFix spring terminals
Ambient temperature	-25°C ... 55°C, sensor -40 °C ... +70 °C
Type of protection	IP 20, sensor IP 55
Protection class	II, Sensor III
Max. cable length to sensor	100 m

Connection diagram

SRCD1CO

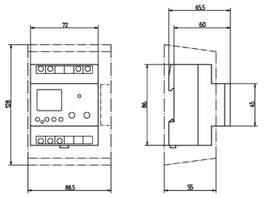


SRCD1COD

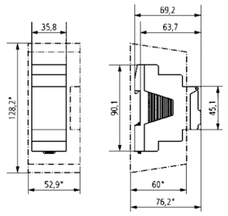


Dimensions (mm)

SRCD1CO



SRCD1COD



SG82911

MU	Secondary voltage (V)	Secondary current (A)	Type Designation	Article No.	Units per package
Bell-Transformers 230 V, TR-G					
2	8	1	TR-G/8	272480	1 / 28
2	4-8-12	1-1-0.67	TR-G3/8	272481	1 / 28
2	8	1	TR-G/8-S	272482	1 / 28
2	4-8-12	2-2-1.5	TR-G3/18	272483	1 / 28
3	12-24	2-1	TR-G2/24	272484	1 / 20

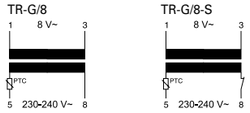
Description Bell-Transformers 230 V, TR-G

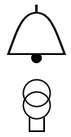
- Type -S with primary switch
- Accessories: Suface Mounting Set (mounting plate, terminal covers)

Technical Data

	TR-G/8	TR-G3/8	TR-G/8-S	TR-G3/18	TR-G2/24
Electrical					
Nominal power	8 VA	8 VA	8 VA	18 VA	24 VA
Rated supply voltage range	230-240 V AC	230-240 V AC	230-240 V AC	230-240 V AC	230-240 V AC
at terminals	5-8	5-8	5-8	5-8	5-8
Rated frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
No-load current	25 mA	26 mA	25 mA	36 mA	24 mA
Rated supply current	69 mA	58 mA	69 mA	72/124/138 mA	155/160 mA
Primary resistance	616 Ω	667 Ω	616 Ω	229 Ω	616 Ω
Rated output voltage	8 V AC	4/8/12 V AC	8 V AC	4/8/12 V AC	12/24 V AC
at terminals	1-3	2-3/1-2/1-3	1-3	2-3/1-2/1-3	1-2/1-3
No-load output voltage	13 V	4.9/12/16.8 V	13 V	5.9/12/17.8 V	16/31 V
Rated output voltage	8.4 V	3.8/7.9/12.2 V	8.4 V	4.3/8.4/12.7 V	12.2/23.2 V
at rated output current	1 A	1-1-0.67 A	1 A	2-2-1.5 A	2-1 A
Secondary resistance	2 Ω	0.9/1.9/2.8 Ω	2 Ω	0.4/1/1.3 Ω	1/3 Ω
Power loss in no-load operation	1.4 W	1.4 W	1.4 W	1.8 W	1.9 W
Total power loss at nominal load	7.1 W	6.2 W	7.1 W	11.6 W	11.9 W
Short circuit proof	PTC	PTC	PTC	PTC	PTC
Test voltage (primary-secondary)	5 kV	5 kV	5 kV	5 kV	5 kV
Pollution degree	P2	P2	P2	P2	P2
Mechanical					
Frame size	45 mm	45 mm	45 mm	45 mm	45 mm
Device height	90 mm	90 mm	90 mm	90 mm	90 mm
Device width	36 mm	36 mm	36 mm	36 mm	54 mm
Weight	236 g	253 g	236 g	354 g	612 g
Mounting	quick fastening on DIN rail IEC/EN 60715				
Degree of protection, built-in	IP20	IP20	IP20	IP20	IP20
Upper and lower terminals	lift terminals	lift terminals	lift terminals	lift terminals	lift terminals
Terminal capacity	1 - 3x2.5 mm²	1 - 3x2.5 mm²	1 - 3x2.5 mm²	1 - 3x2.5 mm²	1 - 3x2.5 mm²
Tightening torque of terminal screws	0.5 Nm	0.5 Nm	0.5 Nm	0.5 Nm	0.5 Nm
Permitted relative air humidity	<95%	<95%	<95%	<95%	<95%
Rated ambient temperature	40 °C	40 °C	40 °C	40 °C	35 °C
Temperature rise at intermittent duty (20 x 1 min. 100% and 5 min. 20%)	24 K	24 K	24 K	26 K	31 K
Insulation class	E	E	E	E	E
Glow wire-test enclosure	850 °C	850 °C	850 °C	850 °C	850 °C

Connection diagram (e.g.)

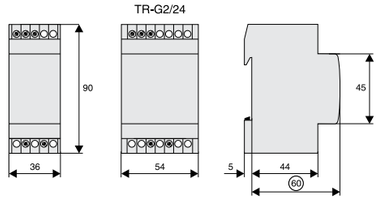




Bell transformer

Short circuit-proof transformer

Dimensions (mm)



SG42512

MU	Secondary voltage (V)	Secondary current (A)	Type Designation	Article No.	Units per package
Safety-Transformer 230V, TR-G2/63-SF					
5	12-24	5.2-2.6	TR-G2/63-SF	272485	1 / 12

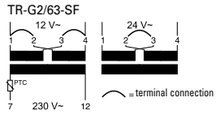
Description Safety-Transformer 230V, TR-G2/63-SF

- 100% duty
- Safety transformer with separate windings according to EN 61558
- Accessories: Suface Mounting Set (mounting plate, terminal covers)

Technical Data

	TR-G2/63-SF
Electrical	
Nominal power	63 VA
Rated supply voltage range	230-240 V AC
at terminals	7-12
Rated frequency	50 Hz
No-load current	60 mA
Rated supply current	340 mA
Primary resistance	41 Ω
Rated output voltage	12/24 V AC
at terminals	1-4/1-4 (terminal connection)
No-load output voltage	13.6/27.3 V
Rated output voltage	12/24.1 V
at rated output current	5.2-2.6 A
Secondary resistance	0.15/0.6 Ω
Power loss in no-load operation	4.1 W
Total power loss at nominal load	19.6 W
Duty	100%
Short circuit proof	inherently (PTC)
Test voltage (primary-secondary)	5 kV
Pollution degree	P2
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	90 mm
Weight	1256 g
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP20
Upper and lower terminals	lift terminals
Terminal capacity	1 - 3x2.5 mm^2
Tightening torque of terminal screws	0.5 Nm
Permitted relative air humidity	<95%
Rated ambient temperature	25 °C
Temperature rise at uninterrupted duty	51 K
Insulation class	F
Glow wire-test enclosure	850 °C

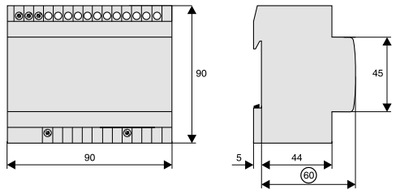
Connection diagram (e.g.)



Safety transformer according to EN 61558 (Fail-safe = no danger in case of failure)

Short circuit-proof transformer

Dimensions (mm)



wa_sg04311

ASBELL230

Function	Rated voltage (V~)	Type Designation	Article No.	Units per package
Signaling Devices AS				
Bell	230 V AC	ASBELL230	167393	1
Bell	12 V AC	ASBELL12	167394	1
Buzzer	230 V AC	ASBUZZ230	167395	1
Siren	24 V AC/DC	ASSIR24	167396	1

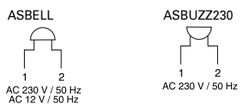
Description Signaling Devices AS

- Signal bells and buzzers are typically used in residential buildings and in functional buildings such as shops, offices, banks etc. They are either used to signalize alert conditions, or generally as audible sound signals.
- These devices are built-in devices installed in distribution cabinets. They are designed for short-time operation in compliance with the IEC 62080 standard.
- Space-saving design of one module unit only.
- Safe device protection thanks to PTC to avoid overloads and short-circuits.

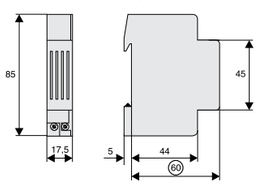
Signal bell ASBELL, buzzer ASBUZZ230

		ASBELL230, ASBUZZ230	ASBELL12
Technical Data			
Standards		IEC 62080	IEC 62080
Rated operational voltage	U_e	230 V AC	12 V AC
Rated operational power	P_s	5.5 VA	4 VA
Working range 50/60 Hz		0.94 ... 1.06 x U_c	0.94 ... 1.06 x U_c
Rated frequency		50 Hz	50 Hz
Working range of frequency		45 ... 65 Hz	45 ... 65 Hz
Rated power loss in idle operation	P_v	0.83 W	0.83 W
Pollution degree according to EN 61010-1		2	2
Operating voltage according to EN 61010-1		230 V AC	12 V AC
Insulating material group according to EN 61010-1		II	II
Safe separation			
Air gap		≥ 3 mm	≥ 1.5 mm
Creep distance within the device		≥ 2.5 mm	≥ 1.5 mm
Test voltage 50 Hz, 1 min.		1.25 kV	1 kV
Flammability class		V0	V0
Terminal capacity			
solid		1 x 6 or 2 x 4 mm^2	1 x 6 or 2 x 4 mm^2
flexible with wire end sleeve, min.		0.75 mm^2	0.75 mm^2
Sound volume		≥ 75 dB	≥ 75 dB
Permitted ambient temperature		-10 to +55 °C	-10 to +55 °C
Degree of protection according to DIN EN 60529		IP20, with connected wires	IP20, with connected wires
Protection class according to DIN EN 61140 / VDE 0140		II	II

Connection diagram



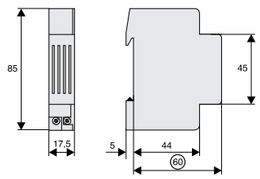
Dimensions (mm)



Siren ASSIR24

	ASSIR24
Technical Data	
Data according to	EN 60669-1
Feed voltage	24 V AC/DC
Voltage tolerance range	± 15%
Power loss	2.4 VA
Voltage test AC	2.5 kV
Sound volume	105 dB
Operative temperature	-10 to +55 °C
Storage temperature	-25 to +70 °C
Degree of protection	IP20

Dimensions (mm)



	Description	Type Designation	Article No.	Units per package

Command and Signalling Devices RMQ Titan® xCommand

- Complete units for front installation

Push-button, flat, 1NO+1NC

wa_sg00912

Push-button, flat, LED 230 V, 1NO+1NC

wa_sg00912

spring-return, white	M22-DL-W-K11-230-W	SET000013	1
spring-return, red	M22-DL-R-K11-230-R	SET000014	1
spring-return, green	M22-DL-G-K11-230-G	SET000015	1
spring-return, gelb	M22-DL-Y-K11-230-W	SET000016	1
spring-return, blue	M22-DL-B-K11-230-B	SET000017	1
stay-put, white	M22-DRL-W-K11-230-W	SET000018	1
stay-put, red	M22-DRL-R-K11-230-R	SET000019	1
stay-put, green	M22-DRL-G-K11-230-G	SET000020	1
stay-put, gelb	M22-DRL-Y-K11-230-W	SET000021	1
stay-put, blue	M22-DRL-B-K11-230-B	SET000022	1

Indicator lamp, flat, LED 230 V

wa_sg00612

white	M22-L-W-230-W	SET000023	1
red	M22-L-R-230-R	SET000024	1
green	M22-L-G-230-G	SET000025	1
gelb	M22-L-Y-230-W	SET000026	1
blue	M22-L-B-230-B	SET000027	1

Selector, 1NO+1NC

wa_sg00712

2 positions, spring-return	M22-WK-K11	SET000028	1
2 positions, stay-put	M22-WRK-K11	216519	1

Key-operated switch, 1NO+1NC

wa_sg00812

2 positions, spring-return	M22-WS-K11	SET000029	1
2 positions, stay-put	M22-WRS-K11	216517	1

	Description	Type Designation	Article No.	Units per package

Double push-button, 1NO+1NC with LED

wa_sg01012

Double push-button 1NO+1NC with LED	I O	M22-DDL-GR-X1/X0/K11/230-W	216509	1

Accessories RMQ Titan®

SG06410

DIN rail adapter	M22-IVS	216400	1
Contact element 1NO	M22-K10	216376	20
Contact element 1NC	M22-K01	216378	20

EMERGENCY SWITCH-OFF button, complete unit IP66

wa_sg02911

Emergency switch-off button, 2NC, surface-mounted	M22-PV/KC02/IY	216524	1

Technical Data Command and Signalling Devices RMQ Titan® xCommand

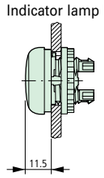
		Contact elements	LED elements[1]	Luminous push-button Push-button
General				
Standards and regulations		IEC/EN 60947, VDE 0660		
Endurance, mechanical components		> 5 x 10^6 switching op.	–	> 5 x 10^6 switching op.
Operating frequency		≤ 3600 switching op./h	–	≤ 3600 switching op./h
Operating force		≤ 5 N	–	≤ 5 N
Operating torque (Screw-type terminals)		≤ 0.8 Nm	–	–
Degree of protection IEC/EN 60529		IP20	IP20	IP67, IP69K
Resistance to climatic conditions[2]		Humidity and heat, constant, according to IEC 60068-2-78 Humidity and heat, periodic, according to IEC 60068-2-30		
Ambient temperature[1], open		-25 to +70 °C	-25 to +70 °C	-25 to +70 °C
Operation position		as required	as required	as required
Shock resistance according to IEC 60068-2-27, Shock duration 11 ms, half-sinusoidal		> 30 g	> 30 g	> 30 g
Terminal capacity				
solid		0.75 - 2.5 mm^2	0.75 - 2.5 mm^2	–
multi-wire		0.5 - 2.5 mm^2	0.75 - 2.5 mm^2	–
Current paths				
Rated peak withstand voltage	U_{imp}	6000 V AC	6000 V AC	–
Rated insulation voltage	U_i	500 V	500 V	–
Overvoltage category/Pollution degree		III/3	III/3	–
Circuit safety	H_F			
at 24 V DC / 5 mA		< 10^{-7} failure rate, < 1 failure to 10^7 switching operations	–	–
at 5 V DC / 1 mA		< 5 x 10^{-6} failure rate, < 1 failure to 5 x 10^6 switching operations	–	–
Max. short-circuit protection				
Without fuse		PKZM0-10 / PLSM-B6	–	–
Fuse gG/gL		10 A	–	–
Switching capacity				
Rated operational current	I_e			
AC-15				
115 V		6 A	–	–
120 V		6 A	–	–
400 V		4 A	–	–
500 V		2 A	–	–
DC-13				
24 V		3 A	–	–
42 V		1.7 A	–	–
60 V		1.2 A	–	–
110 V		0.8 A	–	–
220 V		0.3 A	–	–
Endurance, electrical components				
AC-15				
230 V / 0.5 A		1.6 x 10^6 switching operations	–	–
230 V / 1 A		1 x 10^6 switching operations	–	–
230 V / 3 A		0.7 x 10^6 switching operations	–	–
DC-13				
12 V / 2.8 A		1.2 x 10^6 switching operations	–	–

[1] > 200 V AC / 60 Hz: -25 to +55 °C

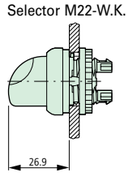
[2] Indoor and protected outdoor position

Dimensions (mm)

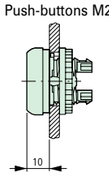
Indicator lamp M22-L...



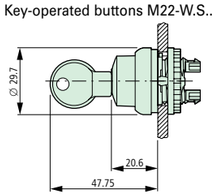
Selector M22-W.K...



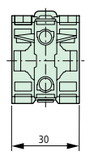
Push-buttons M22-D...

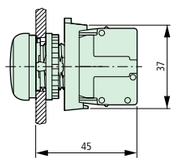


Key-operated buttons M22-W.S...



Installation depth





Description	Type Designation	Article No.	Units per package

Command and Signalling Devices LS-TITAN® xCommand

- NO, 1 NC

Position switch LS-11, IP66

wa_sg03111

Cap plunger head	LS-11	266109	10
Roller plunger	LS-11/P	266112	2
Spring-rod head, snap-action switch	LS-11S/S	266104	2
Roller lever	LS-11/L	266110	2
Rotary lever	LS-11/RL	266111	2
Adjustable roller lever	LS-11/RLA	266113	2
Actuating lever, snap-action switch	LS-11S/RR	266106	4

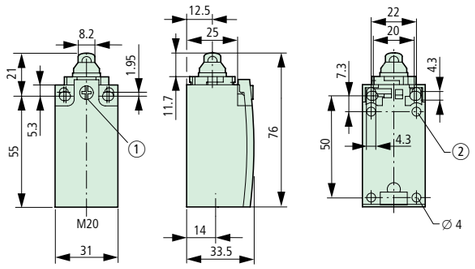
Technical Data Command and Signalling Devices LS-TITAN® xCommand

		Position switch LS-11
General		
Standards and regulations		IEC/EN 60947
Resistance to climatic conditions		Humidity and heat, constant, according to IEC 60068-2-78 Humidity and heat, periodic, according to IEC 60068-2-30
Ambient temperature		-25 to +70 °C
Operation position		as required
Terminal capacity Cage-Clamp[1]		
solid		1 x (0.5-2.5) mm^2
fine wires with wire end sleeve according to DIN 46228		1 x (0.5-1.5) mm^2
Current paths/Switching capacity		
Rated peak withstand voltage	U_{imp}	4000 V AC
Rated insulation voltage	U_i	500 V
Overvoltage category/Pollution degree		III/3
Circuit safety	H_F	
at 24 V DC / 5 mA		< 10^{-7} failure rate, < 1 failure to 10^7 switching operations
at 5 V DC / 1 mA		< 5 x 10^{-6} failure rate, < 1 failure to 5 x 10^6 switching operations
Rated operational current	I_e	
AC-15		
24 V		6 A
230/240 V		6 A
400/415 V		4 A
DC-13		
24 V		10 A
110 V		1 A
220 V		0.5 A
Line frequency		max. 400 Hz
Short-circuit resistance when closed (IEC/EN 60947-5-1)		
Without fuse		PKZM0-10 / PLSM-B6
max. Fuse gG/gL		10 A
Short-circuit current strength IEC/EN 60947-5-1, max. Fuse gG/gL		6 A
Mechanical specifications		
Endurance		
Standard-action switch		8 x 10^6 switching operations
Snap-action switch		8 x 10^6 switching operations
Contact temperature of the actuating roller		≤ 100 °C
Shock resistance (half-sinusoidal shock 20 ms)		
Standard-action switch		25 g
Snap-action switch		2 g
Basic device		–
Operating frequency		≤ 6000 switching operations/h

[1] Cage-Clamp is a registered trademark of Wago Kontakttechnik, D-32423 Minden

Dimensions (without actuation element) in mm

Position switch LS-11...



Contactors DILM

Control Voltage 230 V 50 Hz, 240 V 60 Hz

wa_sg00111

Rated current (A)	Rated power (kW)	Auxiliary contact	Type Designation	Article No.	Units per package
7	3	1NC	DILM7-10(230V50HZ)	276550	1
7	3	1NC	DILM7-01(230V50HZ)	276585	1
6	4	1NC	DILM9-10(230V50HZ)	276690	1
6	4	1NC	DILM9-01(230V50HZ)	276725	1
12	5.5	1NC	DILM12-10(230V50HZ)	276830	1
12	5.5	1NC	DILM12-01(230V50HZ)	276865	1
17	7.5	1NC	DILM17-10(230V50HZ)	277004	1
17	7.5	1NC	DILM17-01(230V50HZ)	277036	1
25	11	1NC	DILM25-10(230V50HZ)	277132	1
25	11	1NC	DILM25-01(230V50HZ)	277164	1
32	15	1NC	DILM32-10(230V50HZ)	277260	1
32	15	1NC	DILM32-01(230V50HZ)	277292	1
40	18.5	–	DILM40(230V50HZ)	277766	1
50	22	–	DILM50(230V50HZ)	277830	1
65	30	–	DILM65(230V50HZ)	277894	1

Control Voltage 24 VDC

wa_sg00111

7	3	1NC	DILM7-10(24VDC)	276565	1
7	3	1NC	DILM7-01(24VDC)	276600	1
6	4	1NC	DILM9-10(24VDC)	276705	1
6	4	1NC	DILM9-01(24VDC)	276740	1
12	5.5	1NC	DILM12-10(24VDC)	276845	1
12	5.5	1NC	DILM12-01(24VDC)	276880	1
17	7.5	1NC	DILM17-10(RDC24)	277018	1
17	7.5	1NC	DILM17-01(RDC24)	277050	1
25	11	1NC	DILM25-10(RDC24)	277146	1
25	11	1NC	DILM25-01(RDC24)	277178	1
32	15	1NC	DILM32-10(RDC24)	277274	1
32	15	1NC	DILM32-01(RDC24)	277306	1
40	18.5	–	DILM40(RDC24)	277780	1
50	22	–	DILM50(RDC24)	277844	1
65	30	–	DILM65(RDC24)	277908	1

Overload release setting range (A)	Type Designation	Article No.	Units per package

Motor-protective Relay ZB

Suitable for DILM7 to DILM32

wa_sg17604

wa_sg17704

Overload release setting range (A)	Type Designation	Article No.	Units per package
Suitable for DILM40 to DILM65			
6 -10	ZB65-10	278455	1
10 - 16	ZB65-16	278456	1
16 - 24	ZB65-24	278457	1
24 - 40	ZB65-40	278458	1
40 - 57	ZB65-57	278459	1
50 -65	ZB65-65	278460	1

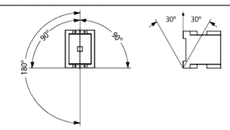
wa_sg17404

NO	NC	Type Designation	Article No.	Units per package
Auxiliary Switch moduless DILA-XHI				
Suitable for DILM7 to DILM32				

wa_sg03011

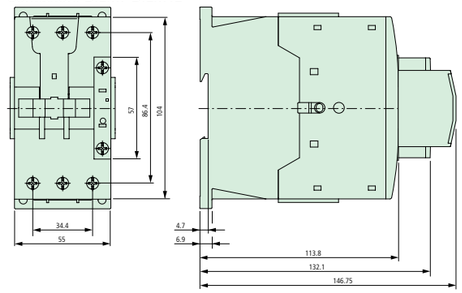
Auxiliary Switch moduless DILM150-XHI				
Suitable for DILM40 to DILM65				
2	–	DILM150-XHI20	277945	5
1	1	DILM150-XHI11	277946	5
4	–	DILM150-XHI40	277948	5
3	1	DILM150-XHI31	277949	5
2	2	DILM150-XHI22	277950	5

Technical Data Contactors xStart

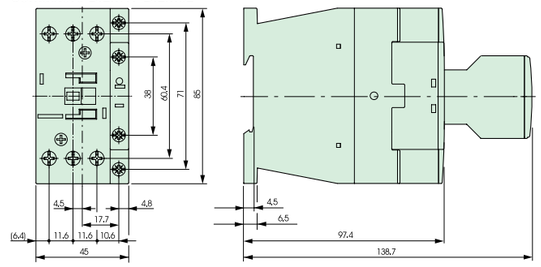
		DILM, DILA, ZB
General		
Standards and regulations		IEC/EN 60947, VDE 0660, UL, CSA
Endurance, mechanical components		
AC operated		10 x 10^6 switching operations
DC operated		10 x 10^6 switching operations
Switching frequency, mechanical components		
AC operated		9000 switching operations/h
DC operated		9000 switching operations/h
Resistance to climatic conditions		Humidity and heat, constant, according to IEC 60068-2-78
		Humidity and heat, periodic, according to IEC 60068-2-30
Ambient temperature		
open		-25 to +60 °C
hermetically enclosed		-25 to +40 °C
storage		-40 to +80 °C
Mounting position AC and DC operated		
Shock resistance (half-sinusoidal shock 10 ms) (IEC/EN 60068-2-27)		
Main switching elements NO		10 g
Auxiliary switching elements NO		7 g
Auxiliary switching elements NC		5 g
Degree of protection		IP20
Protection against accidental contact in case of vertical actuation from the front		finger and hand touch safe according to DGUV VS3, EN 50274
Main current paths		
Rated peak withstand voltage	U_{imp}	8000 V AC
Rated insulation voltage	U_i	690 V
Overvoltage category/Pollution degree		III/3
Rated operational voltage	U_e	690 V
Safe separation according to VDE 0106 Part 101 and Part 101/A1		
between coil and contacts		400 V AC
between the contacts		400 V AC
Making capacity cosφ according to IEC/EN 60947 to 690 V		112 A

Dimensions (mm)

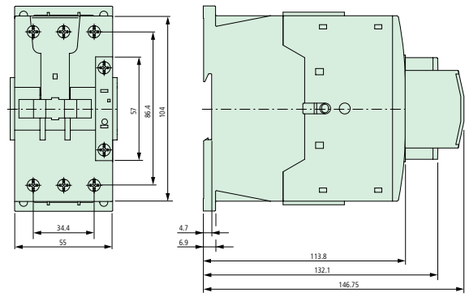
Contactors DILM7-DILM12



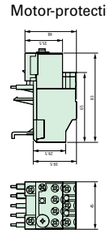
Contactors DILM17-DILM32



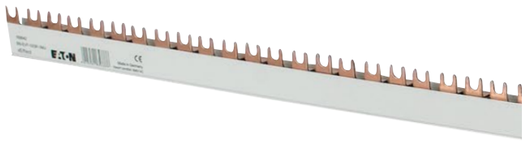
Contactors DILM40-DILM65



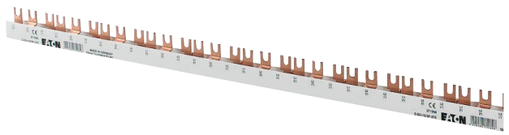
Motor-protective Relay ZB12, ZB32



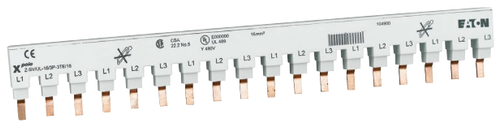
SG13113



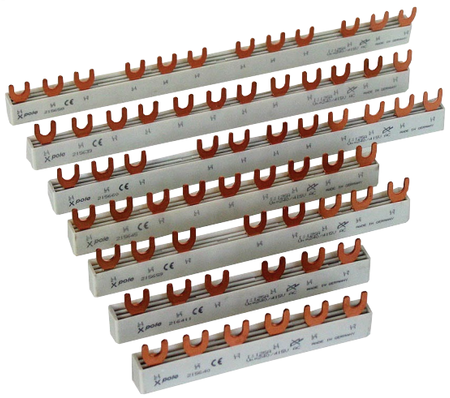
sg03515



wa_sg03511



Wa_sg02902



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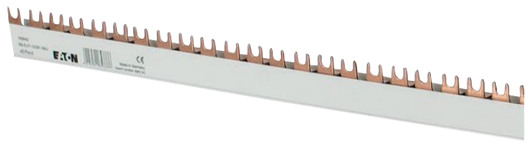


Description

Busbar System xEffect is the modular design system for busbars. xEffect busbars are available as yard goods with 1, 2 or 3 poles. Now, there is a special feature: each bar can easily be extended by one-pole bar as you like. The additional pole can be added completely without tools by easy clamping technique. The lugs or forks in the xEffect bars - available in 10 and 16 mm2 and all common distances - can be broken out at a predetermined breaking point. There is actually no more flexibility available.

Busbar System xEffect saves time and material

The yard good can be cut with a saw of course. However, there is no need neither for deburring nor for cutting the conductor. Just cut to the required dimension and close with the fitting end cap -ready! The end caps have also breakable edges, which enable further connecting of the busbar System xEffect. By overlapping assembly, doubling the cross section can be achieved.

Busbar System xEffect in use

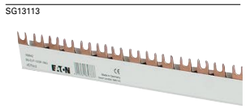
Busbar System xEffect is especially well suited for solving flexible busbar applications rack-mounted models in series. Fork-pin combinations for 1+N-applications can be realized by individual combinations - for this also the one-pole version with blue isolation is available besides the one with grey isolation. Even different cross sections can be combined in this case.
Accessories, such as feeder terminals and self adhesive phase marking labels will complete the comfortable total package. Existing contact prevention caps can be used.

Busbar System xEffect at a glance:

- Yard goods can be cut
- No cutting back of copper required
- No deburring required
- Almost no waste during cutting
- End capsavailable with 1- to 4-poles, end caps can be broken out for further extensions
- 4-pole end cap molded in pairs (leftand right)
- Overlapping rail extension possible
- Rails can be extended on demand by 1-pole rails (plug-in technology)
- All step distances
- 10 and 16 mm²
- Fork and stud
- Lugs can be broken out at any predetermined breaking point
- Self adhesive phase indication labels available
- Contact preventing caps (ZV-BS-G) can be used
- Simple, flexible handling
- All assembly requirements can be covered by the busbar System xEffect
- Low storage space requirements due to modular system
- Less time consuming (no deburring, no cutting back)
- Individual and self configurable
- Fork-pin combination for 1+N application possible, feeding through rail (terminal clamp) not possible.
- Protected technology

For MCBs, RCCBs, RCBOs, SPDs

- delivered without end caps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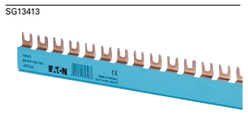

SG13413

10 mm², Rated current 63 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.22	BB-EVF-10/1P-1MU	168826	10
	27	0.24	BB-EVF-10/1P-1,5MU	168830	10
	36	0.24	BB-EVF-10/1P-2MU	168834	10
2-phases	17.8	0.31	BB-EVF-10/2P-1MU	168838	10
	27	0.36	BB-EVF-10/2P-1,5MU	168840	10
3-phases	17.8	0.46	BB-EVF-10/3P-1MU	168842	10
	27	0.58	BB-EVF-10/3P-1,5MU	168844	10
	36	0.56	BB-EVF-10/3P-2MU	168850	10
3-phases + AUX	3x17.8+1x9	0.58	BB-EVF-10/3P-1MU/AUX	168846	10
	3x17.8+2x9	0.57	BB-EVF-10/3P-1MU/2AUX	168848	10
Neutral	17.8	0.22	BB-EVF-10/N-1MU	168828	10
	27	0.24	BB-EVF-10/N-1,5MU	168832	10
	36	0.24	BB-EVF-10/N-2MU	168836	10


SG13213

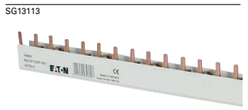

SG13613

16 mm², Rated current 80 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.33	BB-EVF-16/1P-1MU	168827	10
	27	0.36	BB-EVF-16/1P-1,5MU	168831	10
	36	0.32	BB-EVF-16/1P-2MU	168835	10
2-phases	17.8	0.46	BB-EVF-16/2P-1MU	168839	10
	27	0.54	BB-EVF-16/2P-1,5MU	168841	10
3-phases	17.8	0.69	BB-EVF-16/3P-1MU	168843	10
	27	0.87	BB-EVF-16/3P-1,5MU	168845	10
	36	0.84	BB-EVF-16/3P-2MU	168851	10
3-phases + AUX	3x17.8+1x9	0.87	BB-EVF-16/3P-1MU/AUX	168847	10
	3x17.8+2x9	0.86	BB-EVF-16/3P-1MU/2AUX	168849	10
Neutral	17.8	0.33	BB-EVF-16/N-1MU	168829	10
	27	0.36	BB-EVF-16/N-1,5MU	168833	10
	36	0.32	BB-EVF-16/N-2MU	168837	10

For MCBs, RCCBs, RCBOs, SPDs

- delivered without end caps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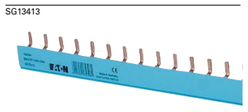
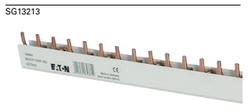

SG13413

10 mm², Rated current 63 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.22	BB-EVP-10/1P-1MU	168852	10
	27	0.24	BB-EVP-10/1P-1,5MU	168856	10
	36	0.24	BB-EVP-10/1P-2MU	168860	10
2-phases	17.8	0.31	BB-EVP-10/2P-1MU	168864	10
	27	0.36	BB-EVP-10/2P-1,5MU	168866	10
3-phases	17.8	0.46	BB-EVP-10/3P-1MU	168868	10
	27	0.58	BB-EVP-10/3P-1,5MU	168870	10
	36	0.56	BB-EVP-10/3P-2MU	168876	10
3-phases + AUX	3x17.8+1x9	0.58	BB-EVP-10/3P-1MU/AUX	168872	10
	3x17.8+2x9	0.57	BB-EVP-10/3P-1MU/2AUX	168874	10
Neutral	17.8	0.22	BB-EVP-10/N-1MU	168854	10
	27	0.24	BB-EVP-10/N-1,5MU	168858	10
	36	0.24	BB-EVP-10/N-2MU	168862	10


SG13213


SG13613

16 mm², Rated current 80 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.33	BB-EVP-16/1P-1MU	168853	10
	27	0.36	BB-EVP-16/1P-1,5MU	168857	10
	36	0.32	BB-EVP-16/1P-2MU	168861	10
2-phases	17.8	0.46	BB-EVP-16/2P-1MU	168865	10
	27	0.54	BB-EVP-16/2P-1,5MU	168867	10
3-phases	17.8	0.69	BB-EVP-16/3P-1MU	168869	10
	27	0.87	BB-EVP-16/3P-1,5MU	168871	10
	36	0.84	BB-EVP-16/3P-2MU	168877	10
3-phases + AUX	3x17.8+1x9	0.87	BB-EVP-16/3P-1MU/AUX	168873	10
	3x17.8+2x9	0.86	BB-EVP-16/3P-1MU/2AUX	168875	10
Neutral	17.8	0.33	BB-EVP-16/N-1MU	168855	10
	27	0.36	BB-EVP-16/N-1,5MU	168859	10
	36	0.32	BB-EVP-16/N-2 MU	168863	10

Accessories

End Caps BB-EV-EC


wa_sg05612

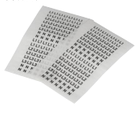
1-phase	-	-	BB-EV-EC/1P	168878	40
2+3-phases	-	-	BB-EV-EC/2-3P	168823	40
4-phases	-	-	BB-EV-EC/4P	168824	20
Neutral	-	-	BB-EV-EC/N	168879	20

Terminal BB-EV-MU/35


wa_sg05312

-	-	0.04	BB-EV-MU/35	168825	3

Sticker Phase Sequence


SG08713

-		-	BB-S-PS	169831	5

Busbar Tag Shrouds ZV-BS-G


SG05705

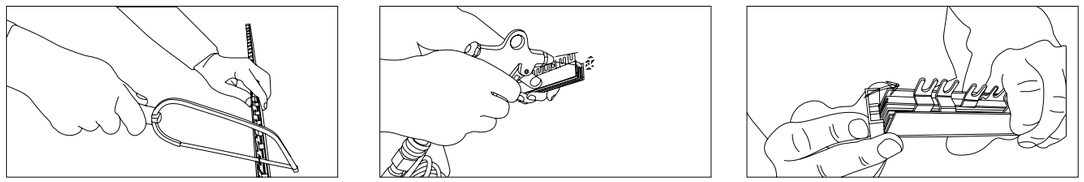
-		-	ZV-BS-G	104903	10/600

Technical Data

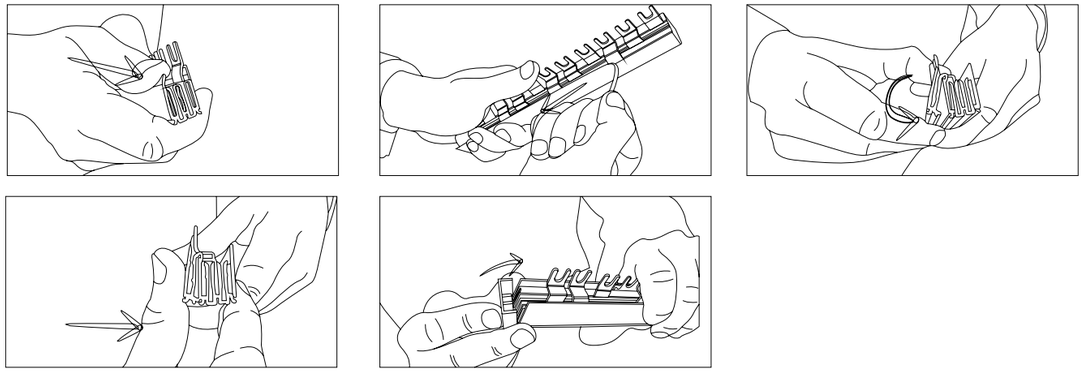
		BB-EV.
General		
Heat deflection temperature		≥ 80°C UL94 V0
Standards		EN 60947-1:2007 / IEC 60947-1:2007 / IEC 60999:2000
Climate stability		according to DIN EN 60068
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Impulse voltage strenght		≥ 4.5 kV
Min. air distance		>5.5 mm
Min. creeping distance		>5 mm
Max. operating voltage		690 V AC/DC
		1,000 V DC 1-pole only
Max. busbar current	I_e/Phase	
10 mm²		63 A
16 mm²		80 A
Protection class		IP20
Short circuit rating	I_{CC}	25 kA - NH3 355A, gC500V JM
Dielectric strenght		PC - ABS >32 kV / mm

Assembly instruction:

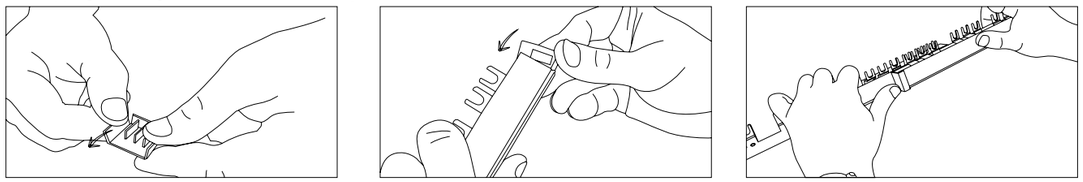
Cutting



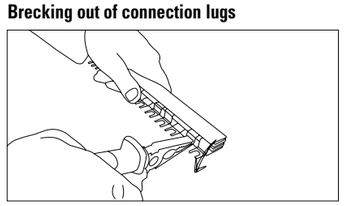
Mounting of an extension busbar



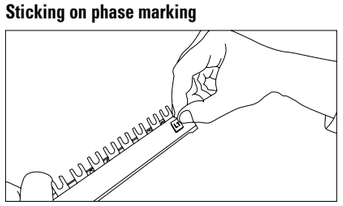
Overlapping mounting or further connection, resp.



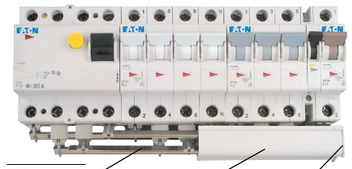
Brecking out of connection lugs



Sticking on phase marking



Plug-in busbar System 50 A, 80 A ZV



for PLS., PKN., PFIM, PFHM (with Auxiliary Switch)

Connection Angle L1, N

Same connection angle ZV-L1/N (-80A), for L1 and N, turned by 180°

Description	Cu-factor	Type Designation	Article No.	Units per package
50 A				
10 units	0.005	ZV-L1/N-10	263941	10 / 600
36 units	0.005	ZV-L1/N-36	263942	36 / 2160
100 units	0.005	ZV-L1/N-100	263943	100 / 3000
80 A				
10 units	0.005	ZV-L1/N-80A-10	263950	10 / 600
36 units	0.005	ZV-L1/N-80A-36	263951	36 / 2160
100 units	0.005	ZV-L1/N-80A-100	263952	100 / 3000

Connection Angle L2, L3

Same connection angle ZV-L2/L3(-80A), for L2 and L3, turned by 180°

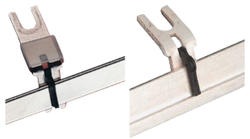
50 A				
10 units	0.007	ZV-L2/L3-10	263944	10 / 600
36 units	0.007	ZV-L2/L3-36	263945	36 / 2160
100 units	0.007	ZV-L2/L3-100	263946	100 / 3000
80 A				
10 units	0.007	ZV-L2/L3-80A-10	263953	10 / 600
36 units	0.007	ZV-L2/L3-80A-36	263954	36 / 2160
100 units	0.007	ZV-L2/L3-80A-100	263955	100 / 3000

Connection Angle N (0.5 MU) for PLSM

Same connection angle ZV-N-05TE for N 50 and 80 A busbar

50 A				
10 units	0.005	ZV-N-05TE-10	263947	10 / 600
36 units	0.005	ZV-N-05TE-36	263948	36 / 2160
80 A				
100 units	0.005	ZV-N-05TE-100	263949	100 / 3000

330607, SG7997



50 A, ZV-SS

80 A, ZV-SS-80A

Description		Type Designation	Article No.	Units per package
Busbar 1m				
50 A				
	0.143	ZV-SS	263956	1 / 10
80 A				

Accessories

Busbar cover 1m, for 50+80 A	ZV-ADP	263958	1 / 10
End caps for busbar cover	ZV-AEK	263959	10 / 600
Power feed block 35/50mm²	Z-D80	248269	12 / 120

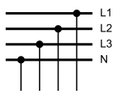
Description Plug-in busbar System 50 A, 80 A ZV

- Any combinations of switchgear with or without auxiliary switch possible
- Low number of components, 2 angle types per busbar cross-section for three-phases AC
- Same busbar cover and end caps for ZV-SS and ZV-SS-80A
- Short-circuit withstand strength and dielectric properties tested according to IEC/EN 60439-1

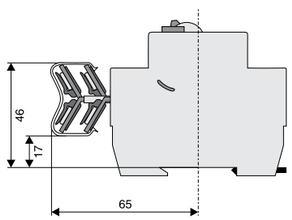
Technical Data

		ZV
Electrical		
Rated operational voltage		240/415 VA C
Rated frequency		50/60 Hz, DC
Rated voltage		690 V (at Pollution degree 2) 440 V (at Pollution degree 3)
Overvoltage category		III
Rated peak withstand voltage	U_{imp}	4 kV
Rated current		
ZV-./., ZV-SS		50 A
ZV-./.-80A, ZV-SS-80A		80 A
ZV..-N-05TE		32 A
Conditional rated short circuit current		
AC with 125 A gG		
ZV-./., ZV-SS		50 kA
ZV-./.-80A, ZV-SS-80A		50 kA
ZV..-N-05TE		10 kA
AC with 160 A gG		
ZV-./., ZV-SS		–
ZV-./.-80A, ZV-SS-80A		50 kA
ZV..-N-05TE		10 kA
DC with 160 A gG		
ZV-./., ZV-SS		10 kA
ZV-./.-80A, ZV-SS-80A		10 kA
ZV..-N-05TE		–
Mechanical		
Busbar cross section		
ZV-SS		16 mm² Cu
ZV-SS-80A		25 mm² Cu
Busbar length		1 m
Degree of protection mounted with busbar cover and end caps		IP20
Pollution degree		2 (3)
Air gap		≥ 3.2 mm
Minimum creepage distance		≥ 7 mm

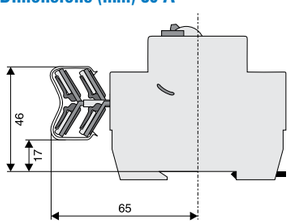
Connection diagram



Dimensions (mm) 50 A



Dimensions (mm) 80 A



Description	Cu-factor	Type Designation	Article No.	Units per package
Busbar Block (Fork) Z-GV				
• for PXL, PXK, PXF, PLS., PKN., PFIM, PFHM, Z-SLS/D01				
Busbar Block (Fork) Z-GV				
• delivered with end caps				
16 mm² - Rated current 80 A				
1-phase 16x	0.095	Z-GV-16/1P-1TE/16	271074	50
2-phases 8x	0.187	Z-GV-16/1P+N-2TE/16	271075	20
4-phases 4x	0.444	Z-GV-16/3P+N-4TE/16	271078	15
Busbar Block (Fork) Z-GV, 1 Meter				
• delivered without end caps				
10 mm² - Rated current 63 A				
1-phase	0.408	Z-GV-10/1P-1TE	270339	50
3-phases	0.739	Z-GV-10/3P-3TE	271060	20
3-phases	0.739	Z-GV-10/3P-4TE	271080	20
End cap 1-phase		Z-V-AK/1P	104905	10 / 600
End cap 2+3-phases		BB-EC/2+3P	120805	10 / 600
16 mm² - Rated current 80 A				
1-phase	0.470	Z-GV-16/1P-1TE	271061	50
1-phase + Auxiliary Switch	0.470	Z-GV-16/1P+HS	271062	50
2-phases	0.657	Z-GV-16/1P+N-2TE	271063	20
3-phases	1.042	Z-GV-16/3P-3TE	271064	20
3-phases + Auxiliary Switch	0.998	Z-GV-16/3P+HS	271065	20
4-phases	1.465	Z-GV-16/3P+N-4TE	271066	15
4-phases	1.522	Z-GV-16/3P+3N-6TE	263142	15
4-phases	1.050	Z-GV-16/PKPX/4PHAS	116882	10
End cap 1-phase		Z-V-AK/1P	104905	10 / 600
End cap 2+3-phases		BB-EC/2+3P	120805	10 / 600
End cap 4-phases		Z-V-AK/4P	264931	10 / 600

Description	Type Designation	Article No.	Units per package
Accessories			
Busbar Tag Shrouds for busbar, yellow ZV-BS-G			

Description of the Busbar Block (Fork) Z-GV

Devices to busbar	Pcs. of the devices	End caps	Type
1-phase	x57 x57 x16	Z-V-AK/1P	Z-GV-10/1P-1TE Z-GV-16/1P-1TE Z-GV-16/1P-1TE/16
2-phases	x28 x8	Z-AK-16/2+3P	Z-GV-16/1P+N-2TE Z-GV-16/1P+N-2TE/16
3-phases	x19 x19 x2 x5	Z-AK-10/2+3P Z-AK-16/2+3P	Z-GV-10/3P-3TE Z-GV-16/3P-3TE Z-GV-16/3P-3TE/8 Z-GV-16/3P-3TE/16
4-phases	x27	Z-AK-16/4P	Z-GV-16/3P+3N-6TE
	x14 x4	Z-AK-16/4P	Z-GV-16/3P+N-4TE Z-GV-16/3P+N-4TE/16
For 2-pole Combined RCD/MCB Device, 3-phases	x18 x6	Z-AK-10/2+3P	Z-GV-10/3P-4TE Z-GV-10/3P-4TE/17
For 2-pole Combined RCD/MCB Device, 4-phases	x18	Z-V-AK/4P	Z-GV-16/PKPX/4PHAS
1-phase + Auxiliary Switch	x38	Z-V-AK/1P	Z-GV-16/1P+HS
3-phases + Auxiliary Switch	x16	Z-AK-16/2+3P	Z-GV-16/3P+HS

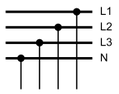
Description Busbar Block 10mm², 16mm² (Fork) Z-GV

- Length 1m
- Delivered without end caps. Please order separately.
- Short version (/17, /16, /8) delivered with end caps

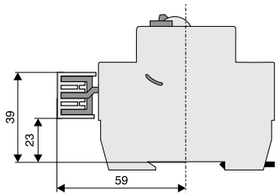
Technical Data

	Z-GV
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	63 A
16 mm²	80 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 and 16 mm² Cu
Step distance	17.8 mm
Z-GV-16-.P+HS	17.8/27 mm

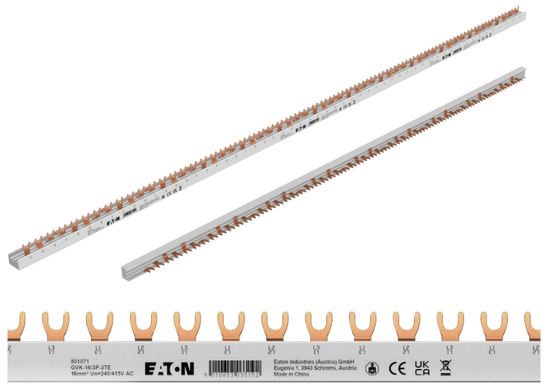
Connection diagram



Dimensions (mm)



WA_REN_SG_01922_L, WA_REN_SG_01322_R, WA_REN_SG_01522_C



Description

- Available in 10 and 16 mm² cross section
- Fork type
- 3- to 4-phases end caps available as accessories
- End caps must be ordered separately
- Comes in 1 meter length
- Busbar can be cut to desired length

Description	Cu-factor	Type Designation	Article No.	Units per package

Busbar Block (Fork) GVK

- delivered without end caps
- comes in 1 meter length
- can be cut to length

10 mm² - Rated current 63 A

WA_REN_SG_01922_L

3-phases	0.350	GVK-10/3P-3TE	EP-501073	20

16 mm² - Rated current 80 A

3-phases	0.523	GVK-16/3P-3TE	EP-501071	20
4-phases	0.660	GVK-16/3P+N-4TE	EP-501074	15
4-phases	0.610	GVK-16/3P+3N-6TE	EP-501072	15

Accessories

Description	Type Designation	Article No.	Units per package

WA_REN_SG_00822_L

End cap 3-Phases for 10 mm²	EK-3/10-EVGK-GVK	EP-501076	10 / 5000
End cap 3-Phases for 16 mm²	EK-3/16-EVGK-GVK	EP-501077	10 / 5000
End cap 4-Phases for 16 mm²	EK-3N/16-EVGK-GVK	EP-501078	10 / 5000

Description	Type Designation	Article No.	Units per package

Accessories

Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705

Finger and hand touch safe	ZV-BS-G	104903	10 / 600

Description Busbar Block 10mm², 16mm² (Fork) GVK

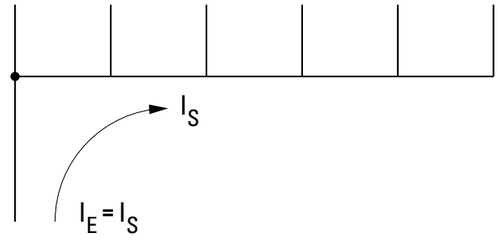
- GVK busbars can be cut to length
- Endcaps are not included and should be ordered separately

Technical Data

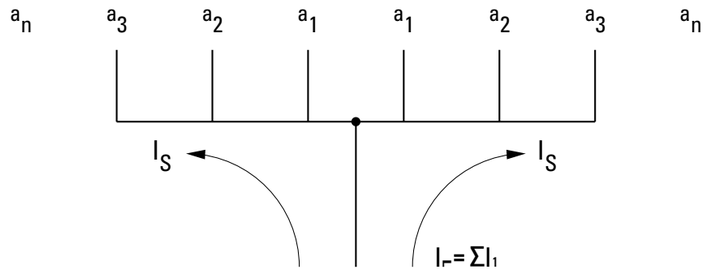
		GVK
General		
Standards		DIN EN 61439-1:2021-10 / DIN EN 61439-6:2013-06 IEC 664 / IEC 60895-2-12 / VDE 0110 / DIN EN 60754-1
Climate stability		according to IEC 68-2
Overvoltage category		III
Pollution Degree		2
Busbar Material		E-Cu-ETP
Isolation Material		PC-ABS
Endcap Material		PC-ABS
Touch protection Material		PP
Electrical		
Rated operating voltage		240/415 V AC
Rated current		
10 mm²		63 A
16 mm²		80 A
Short-circuit current strength		25 kA /100 A gI
Disruptive Strength		36 kV/mm
Surge Voltage	U_{imp}	4 kV
Mechanical		
Busbar cross section		10 and 16 mm²
Step distance		17.8 mm

Feeding

Side Feeding

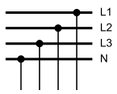


Central Feeding

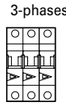
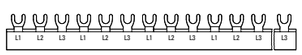
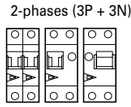
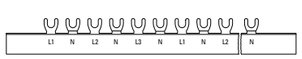
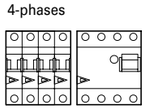
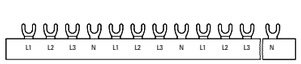


Using central supply feeding you must be sure that the sum of the output current depending on a_1 ... a_n of each busbar part is not greater than the above max. busbar current I_s / phase

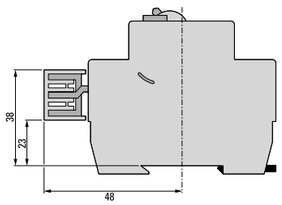
Connection diagram



Description Graphics

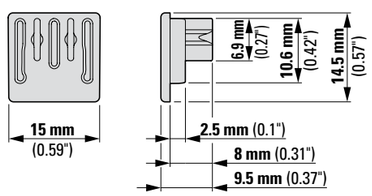
Devices to busbar	Pcs. of the devices	End caps		Type
3-phases				
	x19	EK-3/10-EVGK-GVK		GVK-10/3P-3TE
	x19	EK-3/16-EVGK-GVK		GVK-16/3P-3TE
2-phases (3P + 3N)				
	x27	EK-3N/16-EVGK-GVK		GVK-16/3P+3N-6TE
4-phases				
	x14	EK-3N/16-EVGK-GVK		GVK-16/3P+N-4TE

Dimensions (mm)

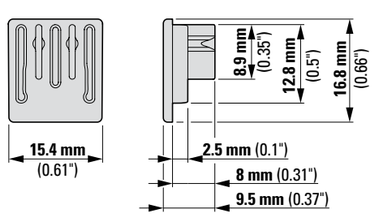


End Cap dimensions (mm)

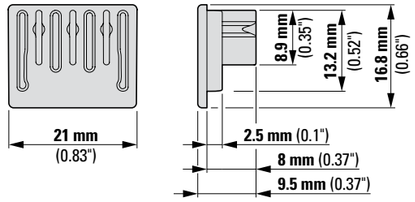
EK-3/10-EVGK-GVK



EK-3/16-EVGK-GVK

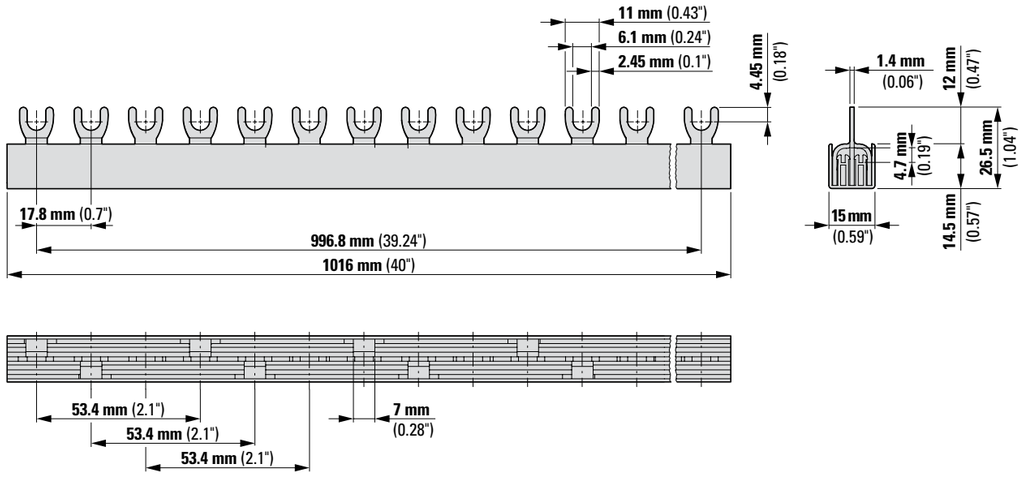


EK-3N/16-EVGK-GVK

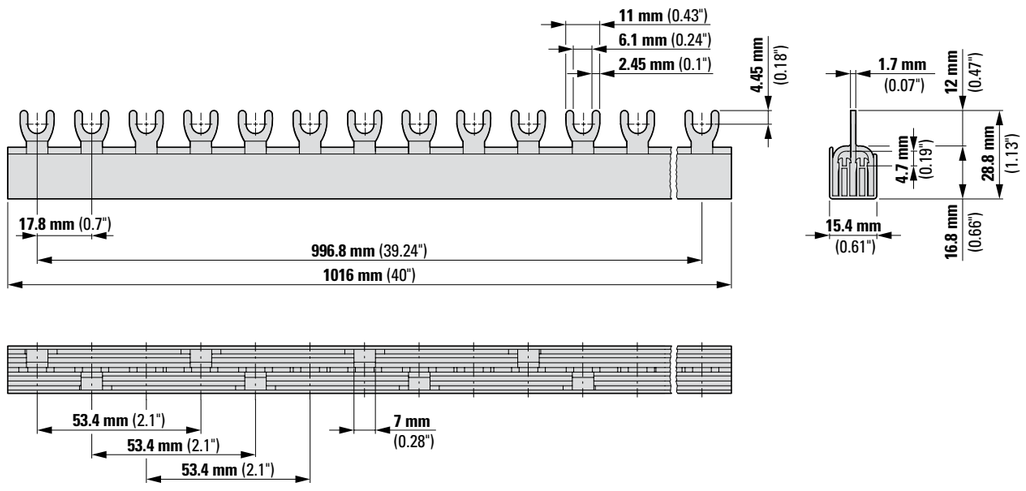


Busbar dimensions (mm)

GVK-10/3P-3TE

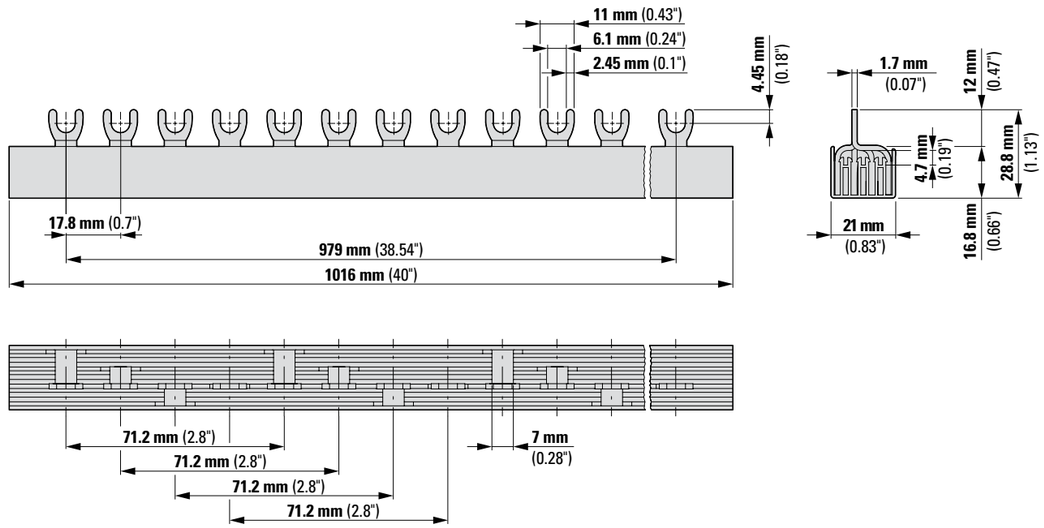


GVK-16/3P-3TE

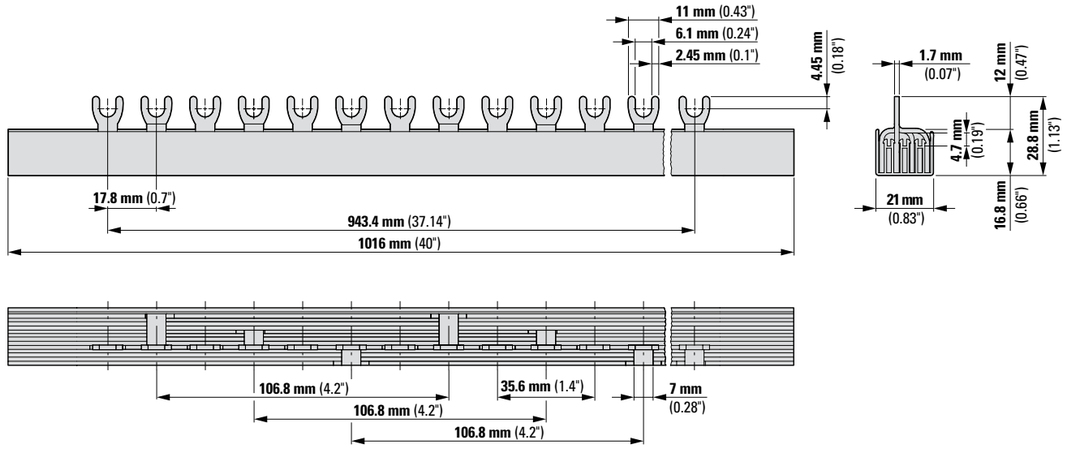


Busbar dimensions (mm)

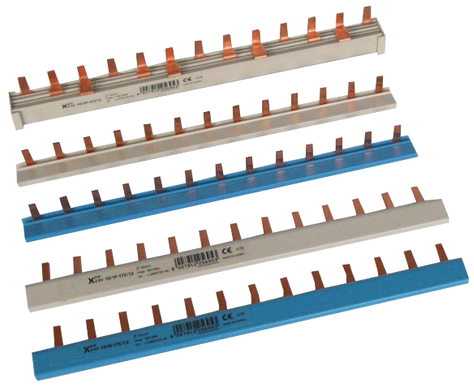
GVK-16/3P+N-4TE



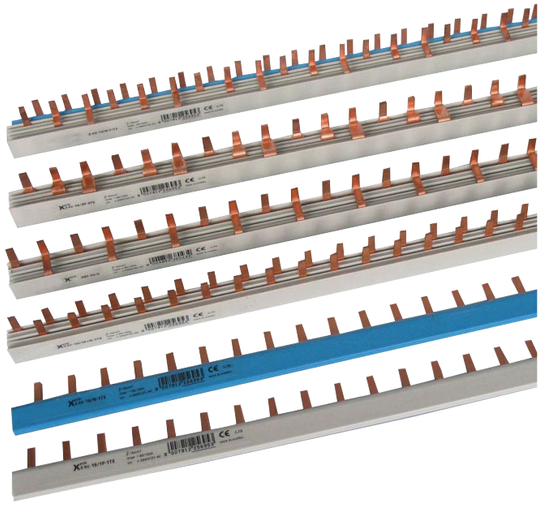
GVK-16/3P+3N-6TE



WA_SG11302



WA_SG11302



Description	Cu-factor	Type Designation	Article No.	Units per package

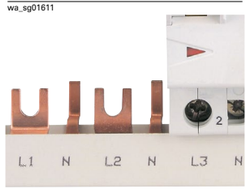
Busbar Block (Fork and Pin) Z-GSV

- for PLS.1N (1.5MU)

Busbar Block (Fork and Pin) Z-GSV

- delivered with end caps

wa_sg01611



10 mm² - Rated current 63 A

4-phases	0.208	Z-GSV-10/FI+EH+2XLS1N	113138	10
4-phases	0.277	Z-GSV-10/FI+EH+4XLS1N	113139	10

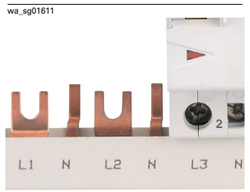
16 mm² - Rated current 80 A

4-phases 3x	0.408	Z-GSV-16/3P+3N/9	271079	15

Busbar Block (Fork and Pin) Z-GSV, 1 Meter

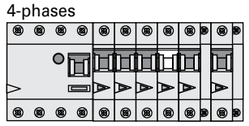
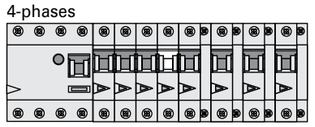
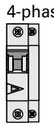
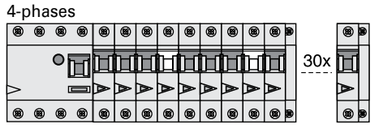
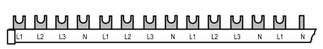
- delivered without end caps

wa_sg01611



16 mm² - Rated current 80 A

Description of the Busbar Block (Fork and Pin) Z-GSV

Devices to busbar	Pcs. of the devices	End caps	Type
4-phases 		Z-V-AK/4P 	Z-GSV-10/FI+EH+2XLS1N
4-phases 		Z-V-AK/4P 	Z-GSV-10/FI+EH+4XLS1N
2-phases 	x37 x9	Z-AK-16/2+3P 	Z-GSV-16/1P+N Z-GSV-16/1P+N/9
4-phases 	x37 x9	Z-AK-16/4P 	Z-GSV-16/3P+3N Z-GSV-16/3P+3N/9
4-phases 	30x	Z-V-AK/4P 	Z-GSV-16/FI+EH+KR+30XLS1N

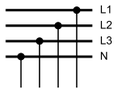
Description Busbar Block 10mm², 16mm² (Fork and Pin) Z-GSV

- Length 1m
- Delivered without end caps. Please order separately.
- Short version (/9) delivered with end caps

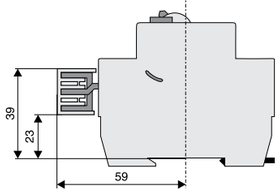
Technical Data

	Z-GSV
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	63 A
16 mm²	80 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 and 16 mm² Cu
Step distance	26.7 mm

Connection diagram



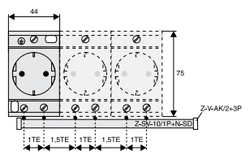
Dimensions (mm)



Description	Cu-factor	Type Designation	Article No.	Units per package

Busbar Block (Pin) Z-SV...-SD, 1 Meter

- For Protected Earth Socket Z-SD230
- delivered with end caps



10 mm² - Rated current 50 A

2-phases	0.588	Z-SV-10/1P+N-SD	269526	10
End caps		Z-V-AK/2+3P	264930	10 / 600

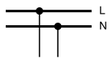
Description Busbar Block 10mm² (Pin) Z-SV ...-SD

- Delivered without end caps
- Step (distance between two pins of identical phase, i. e. L or N) 2.5 MU
- Length 1 m

Technical Data

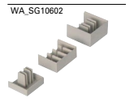
	Z-SV-10/1P+N-SD
Electrical	
Rated voltage	230/400 V, 50/60 Hz
Rated current	50 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 mm² Cu
Step distance	44 mm

Connection diagram



Accessories

WA_SG10602



End caps

WA_SG10702

Extension terminal
Z-EK/25/QL

WA_SG10702

Extension terminal
Z-EK/25

Description	Cu-factor	Type Designation	Article No.	Units per package

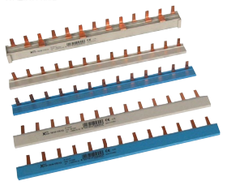
Busbar Block (Pin) Z-SV

- for PLN. (1MU), Z-SI

Busbar Block (Pin) Z-SV, 13TE

- delivered with end caps

WA_SG11302



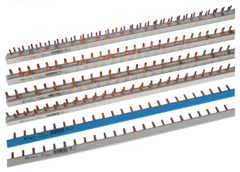
10 mm² - Rated current 50 A

1-phase straight grey	0.055	Z-SV-10/1P-1TE/13	264916	10
1-phase straight blue	0.055	Z-SV-10/N-1TE/13	264917	10
1-phase angulated grey	0.055	Z-SV-10/1P-F/13	264918	10
1-phase angulated blue	0.055	Z-SV-10/N-F/13	264919	10
2-phases	0.126	Z-SV-10/2P-2TE/13	264922	10
3-phases	0.203	Z-SV-10/3P-3TE/13	264924	10
4-phases	0.258	Z-SV-10/3P+N-4TE/12	264926	10
4-phases (for PLN.)	0.258	Z-SV-10/3P+3N-3TE/13	264927	10

Busbar Block (Pin) Z-SV, 1 Meter

- delivered without end caps

WA_SG11302



16 mm² - Rated current 63 A

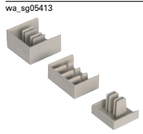
1-phase straight grey	0.385	Z-SV-16/1P-1TE	264912	25
1-phase straight blue	0.385	Z-SV-16/N-1TE	264913	25
1-phase angulated grey	0.385	Z-SV-16/1P-1TE/F	269523	25
1-phase angulated blue	0.385	Z-SV-16/1N-1TE/F	269524	25
2-phases	0.941	Z-SV-16/2P-2TE	264923	10
3-phases (for PLN.)	1.326	Z-SV-16/2P+2N-2TE	264914	7
3-phases	1.422	Z-SV-16/3P-3TE	264925	10
4-phases	2.177	Z-SV-16/3P+N-4TE	264928	7
4-phases (for PLN.)	1.807	Z-SV-16/3P+3N-3TE	264915	7

Description	Type Designation	Article No.	Units per package

Accessories

End caps, Z-V-AK/, Z-BB-EC/4P

wa_sg05413



1-phase	Z-V-AK/1P	104905	10 / 600
2+3-phases	Z-V-AK/2+3P	264930	10 / 600
4-phases	Z-BB-EC/4P [1]	183116	10 / 600

[1] only for Z-SV-16/3P+N-4TE, Article No. 264928

Extension terminals 6 - 25 mm², Z-EK/25

wa_sg02512

long, straight	Z-EK/25	264935	10 / 600
short, straight	Z-EK/25/K	269525	10 / 600
long, crosswise	Z-EK/25/QL	264937	10 / 600
short, crosswise	Z-EK/25/Q	264936	10 / 600

Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705

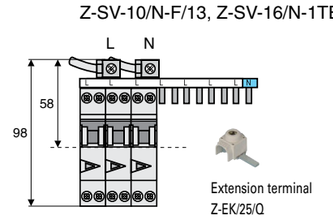
Finger and hand touch safe	ZV-BS-G	104903	10/600

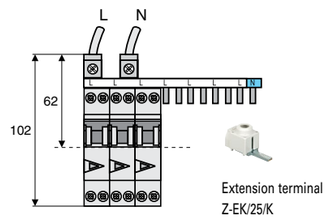
Description of the Busbar Block (Pin) Z-SV

Devices to busbar	Pcs. of the devices	End caps	Type
1-phase + 2-phases	x13 x56		Z-SV-10/1P-F/13 Z-SV-16/1P-1TE/F
	x13 x56		Z-SV-10/N-F/13 Z-SV-16/N-1TE/F
	x13 x56		Z-SV-10/1P-1TE/13 Z-SV-16/1P-1TE
	x13 x56		Z-SV-10/N-1TE/13 Z-SV-16/N-1TE
2-phases	x6 x28	Z-V-AK/2+3P	Z-SV-10/2P-2TE/13 Z-SV-16/2P-2TE
3-phases	x56	Z-V-AK/2+3P	Z-SV-16/2P+2N-2TE
	x4 x19	Z-V-AK/2+3P	Z-SV-10/3P-3TE/13 Z-SV-16/3P-3TE
4-phases	x3 x14	Z-V-AK/4P Z-BB-EC/4P	Z-SV-10/3P+N-4TE/12 Z-SV-16/3P+N-4TE
	x13 x56	Z-V-AK/2+3P	Z-SV-10/3P+3N-3TE/13 Z-SV-16/3P+3N-3TE

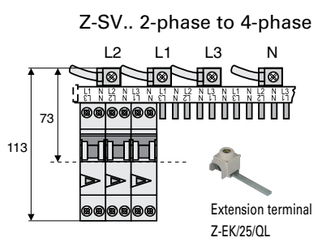
Example

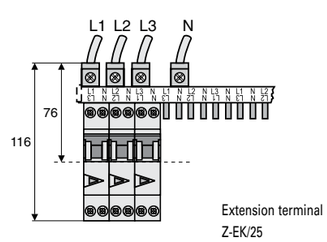
Z-SV-10/1P-F/13, Z-SV-16/1P-1TE/F
Z-SV-10/N-F/13, Z-SV-16/N-1TE/F





Z-SV.. 2-phase to 4-phase





Description Busbar Block 10mm² (Pin) Z-SV-10/, 16mm² (Pin) Z-SV-16/

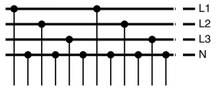
- Busbar Block 10 mm² delivered with end caps, length 13TE
- Busbar Block 16 mm² without end caps, length 1m

Technical Data

	Z-SV
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	50 A
16 mm²	63 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 and 16 mm² Cu
Step distance	17.80 mm

Connection diagram

Z-SV-../3P+N-3TE..



Accessories

SG4800

End caps

WA_SG10702

Extension terminal
Z-EK/25/Q

SG07703

Extension terminal
Z-EK/25/K

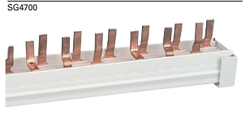
WA_SG10702

Extension terminal
Z-EK/25/QL

WA_SG10702

Extension terminal
Z-EK/25

SG4700



Description	Cu-factor	Type Designation	Article No.	Units per package
Busbar Block 12MU (Fork and Pin) Z-GSV-10				
• for PLN. (1MU) + FI				
• delivered with end caps				
10 mm² - Rated current 50 A				
below				
2-phases, RCD-2p + 4xPLN	0.07	Z-GSV-10/1P+N-NL/6	274297	10 / 200
2-phases, RCD-2p + 10xPLN	0.131	Z-GSV-10/1P+N/12-U	274299	10 / 100
4-phases, RCD-4p + 4xPLN	0.13	Z-GSV-10/3P+N-NL/8	116858	10
4-phases, RCD-4p + 8xPLN	0.463	Z-GSV-10/3P+N/12-U	274400	10 / 100
4-phases, RCD-4p + 3xPLS.. + 5xPLN	0.463	Z-GSV-10/3P+N/12H-U	274401	10 / 100
above				
2-phases, RCD-2p + 10xPLN	0.131	Z-GSV-10/1P+N/12-O	274402	10 / 100
4-phases, RCD-4p + 8xPLN	0.463	Z-GSV-10/3P+N/12-O	274403	10 / 100

Description of the Busbar Block 12MU (Fork and Pin) Z-GSV-10

Devices to busbar	Pcs. of the devices	End caps	Type
2-phases	xPLN	Z-V-AK/2+3P	Z-GSV-10/1P+N-NL/6
	x10	Z-V-AK/2+3P	Z-GSV-10/1P+N/12-O
		Z-V-AK/2+3P	Z-GSV-10/1P+N/12-U
4-phases	5	Z-V-AK/4P	Z-GSV-10/3P+N/12H-U
	x8	Z-V-AK/4P	Z-GSV-10/3P+N/12-O
		Z-V-AK/4P	Z-GSV-10/3P+N/12-U
	4xPLN	Z-V-AK/4P	Z-GSV-10/3P+N-NL/8

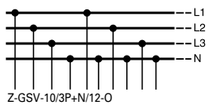
Description Busbar Block 12MU 10mm² (Fork and Pin) Z-GSV-10

- 12MU busbar elements incl. end caps

Technical Data

	Z-GSV-10
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	50 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 mm² Cu
Step distance	17.95 mm

Connection diagram



Z-GSV-10/3P+N/12-O

Accessories

WA_SG10702


Extension terminal
Z-EK/25/QL

WA_SG10702

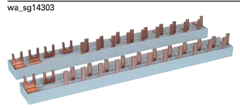

Extension terminal
Z-EK/25

Description	Cu-factor	Type Designation	Article No.	Units per package

Busbar Block 13MU (Fork and Pin) Z-GSV-10

- for 1x RCD + PLG. (1MU)
- Do not cut!!

wa_sg14303



10 mm² - Rated current 63 A

above				
2-phases, RCD-2p + 11xPLG	0.251	Z-GSV-10/1P+N-F/13	264920	10

Description	Type Designation	Article No.	Units per package

Accessories

Extension terminals 6 - 25 mm², Z-EK/25

wa_sg02512

long, straight	Z-EK/25	264935	10 / 600
long, crosswise	Z-EK/25/QL	264937	10 / 600

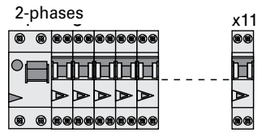
Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705

Finger and hand touch safe	ZV-BS-G	104903	10/600

Description of the Busbar Block 13MU (Fork and Pin) Z-GSV-10

Devices to busbar	Pcs. of the devices	Type
2-phases	x11	Z-GSV-10/1P+N-F/13



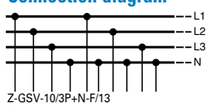
Description Busbar Block 13MU 10mm² (Fork and Pin) Z-GSV-10

- 13MU busbar elements without end caps

Technical Data

	Z-GSV-10
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	63 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 mm² Cu
Step distance	17.95 mm

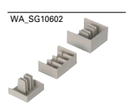
Connection diagram



Z-GSV-10/3P+N-F/13

Accessories

WA_SG10602


End caps

WA_SG10702


Extension terminal
Z-EK/25/QL

WA_SG10702

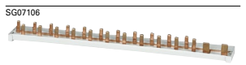

Extension terminal
Z-EK/25

Description	Cu-factor	Type Designation	Article No.	Units per package

Busbar Block (Pin) Z-SV-../1P+N-F

- for 1x PFGC + PLGC. (1MU)
- 2-phases
- Do not cut!!

SG07106



10 mm² - Rated current 50 A

PFGC + 4x PLGC	0.105	Z-SV-10/1P+N-F/6	107944	10 / 100
PFGC + 7x PLGC	0.155	Z-SV-10/1P+N-F/9	107943	10 / 100
PFGC + 11x PLGC	0.22	Z-SV-10/1P+N-F/13	107942	10 / 100

16 mm² - Rated current 63 A

PFGC + 4x PLGC	0.155	Z-SV-16/1P+N-F/6	191245	10 / 100
PFGC + 7x PLGC	0.231	Z-SV-16/1P+N-F/9	191244	10 / 100
PFGC + 8x PLGC	0.259	Z-SV-16/1P+N-F/10	191246	10 / 100
PFGC + 11x PLGC	0.328	Z-SV-16/1P+N-F/13	191243	10 / 100

Accessories

Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705

Finger and hand touch safe	ZV-BS-G	104903	10/600

Description of the Busbar Block (Pin) Z-SV-../1P+N-F

Devices to busbar	Pcs. of the devices		Type
2-phases	x4	N L N L N L N L	Z-SV-../1P+N-F/6
	x7	N L N L N L N L N L N L N L	Z-SV-../1P+N-F/9
	x8	N L N L N L N L N L N L N L N L	Z-SV-16/1P+N-F/10
	x11	N L N L N L N L N L N L N L N L N L N L	Z-SV-../1P+N-F/13

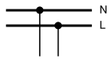
Description Busbar Block 10/16mm² (Pin) Z-SV-../1P+N-F

- Busbar elements without end caps

Technical Data

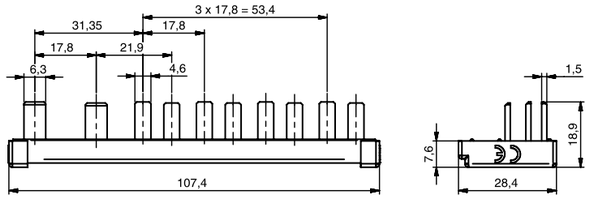
		Z-SV-../1P+N-F
Electrical		
Rated voltage		240/415 V, 50/60 Hz
Rated current		
10 mm²		50 A
16 mm²		63 A
Overvoltage category		III
Rated peak withstand voltage	U_{imp}	4 kV
Conditional rated short circuit current AC with 125 A gG		10 kA
Mechanical		
Busbar cross section		10 and 16 mm² Cu
Step distance		17.8 mm
Flame class according to UL94		V0, glowing wire test 960 °C
Pollution degree		2
Comparative tracking index		CTI 300
Air gap		≥ 5.5 mm
Minimum creepage distance		≥ 5 mm

Connection diagram

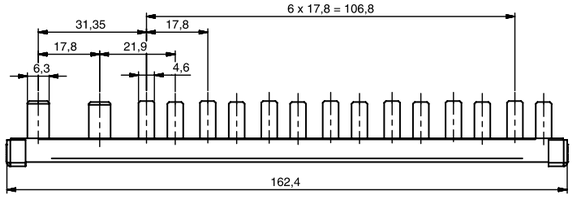


Dimensions (mm)

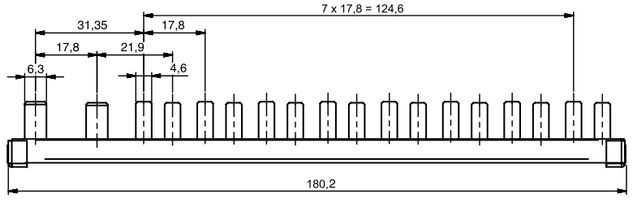
Z-SV-10/1P+N-F/6, Z-SV-16/1P+N-F/6



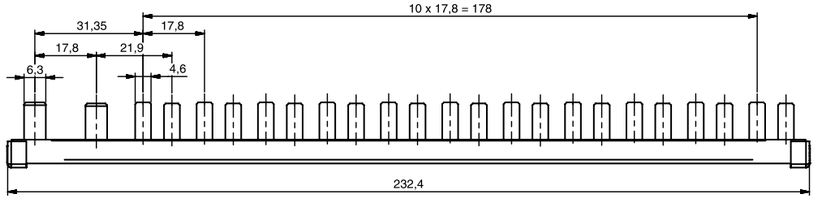
Z-SV-10/1P+N-F/9, Z-SV-16/1P+N-F/9



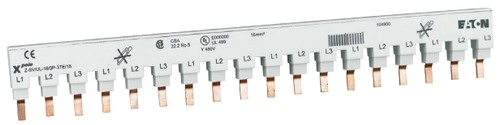
Z-SV-16/1P+N-F/10



Z-SV-10/1P+N-F/13, Z-SV-16/1P+N-F/13



wa_sg03511



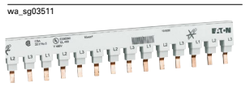
Description

- For MCB FAZ-NA/RT
- 16 mm²
- Pin busbar
- Accessories available:

  Terminals

  Busbar tag shrouds
- Several length

wa_sg03511



Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
For FAZ-NA/RT, not sliceable!!					
• Delivered with end caps					
16 mm², Rated current 80 A					
1-phase, 6MU	17.6	0.035	Z-SV/UL-16/1P-1TE/6	104892	10
1-phase, 12MU	17.6	0.07	Z-SV/UL-16/1P-1TE/12	104893	10
1-phase, 18MU	17.6	0.105	Z-SV/UL-16/1P-1TE/18	104894	10
2-phase, 6MU	17.6	0.07	Z-SV/UL-16/2P-2TE/6	104895	10
2-phase, 12MU	17.6	0.14	Z-SV/UL-16/2P-2TE/12	104896	10
2-phase, 18MU	17.6	0.21	Z-SV/UL-16/2P-2TE/18	104897	10
3-phase, 6MU	17.6	0.14	Z-SV/UL-16/3P-3TE/6	104898	10
3-phase, 12MU	17.6	0.221	Z-SV/UL-16/3P-3TE/12	104899	10
3-phase, 18MU	17.6	0.332	Z-SV/UL-16/3P-3TE/18	104900	10

Accessories

Terminals

SG07506

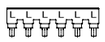
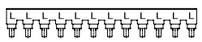
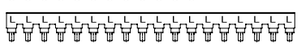
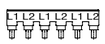
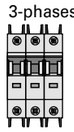
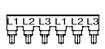
2,5 - 35 mm²	-	0.035	Z-EK/35/UL	104901	3
1,5 - 50 mm²	-	0.038	Z-EB/50/UL	104902	3

Busbar Tag Shrouds

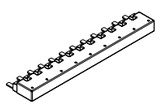
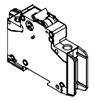
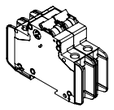
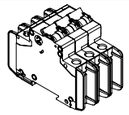
SG07706

for 3 pins	-	-	ZV-BS-UL	104904	10

Description of UL489-Busbar

Devices to busbar	Pcs. of the devices		Type
1-phase			
	x6		Z-SV/UL-16/1P-1TE/6
	x12		Z-SV/UL-16/1P-1TE/12
	x18		Z-SV/UL-16/1P-1TE/18
2-phases			
	x3		Z-SV/UL-16/2P-2TE/6
	x6		Z-SV/UL-16/2P-2TE/12
	x9		Z-SV/UL-16/2P-2TE/18
3-phases			
	x2		Z-SV/UL-16/3P-3TE/6
	x4		Z-SV/UL-16/3P-3TE/12
	x6		Z-SV/UL-16/3P-3TE/18

Description of the Busbar UL489 Z-SV/UL-16 for FAZ-NA/RT

Article No.				
104892	Z-SV/UL-16/1P-1TE/6	6	-	-
104893	Z-SV/UL-16/1P-1TE/12	12	-	-
104894	Z-SV/UL-16/1P-1TE/18	18	-	-
104895	Z-SV/UL-16/2P-2TE/6	-	3	-
104896	Z-SV/UL-16/2P-2TE/12	-	6	-
104897	Z-SV/UL-16/2P-2TE/18	-	9	-
104898	Z-SV/UL-16/3P-3TE/6	-	-	2
104899	Z-SV/UL-16/3P-3TE/12	-	-	4
104900	Z-SV/UL-16/3P-3TE/18	-	-	6
104901	Z-EK/35/UL	-	-	-
104902	Z-EB/50/UL	-	-	-
104904	ZV-BS-UL	-	-	-

Technical Data

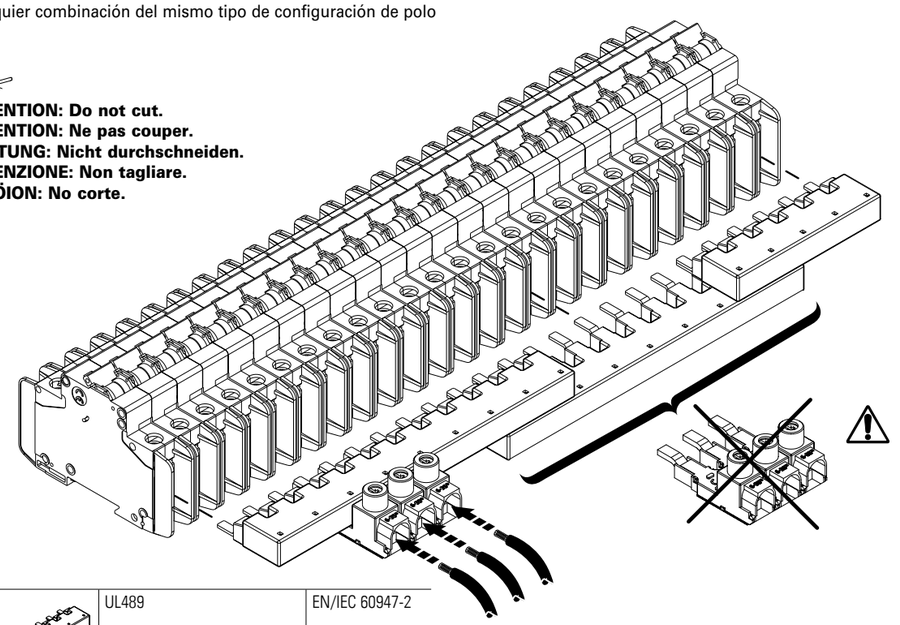
		Z-SV/UL16
General		
Heat deflection temperature		125°C - UL94 V0
Standards		
Busbar		UL489, DIN EN 60947-1, VDE 0660 Teil 100 = IEC 60947-1:2004, IEC 60947-2:2003
Terminal		IEC 60999:2000, UL489, UL486A, CSA C22.2
Climate stability		according to DIN EN 60068
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Impulse voltage strenght		≥ 9.5 kV (1 kV / mmLS)
Min. air distance		> 9.5 mm/25.4 mm (proprietary/external)
Min. creeping distance		> 12.7 mm/50.8 mm (proprietary/external)
Max. operating voltage		
1-, 3-phase		690 V IEC
		480Y/277V & 240 V AC
Terminals		1,000 V AC/DC
Max. busbar current	I_s/Phase	80 A
Protection class		IP20
Short circuit rating		15 kA mit NH3 355 A gL 500 V JM / 7.5 kA 3 cycles @ 600 V
Dielectric strenght		>30 kV/mm

Connection diagram

Mounting example of busbar UL489 Z-SV/UL-16 for FAZ-NA/RT

ATTENTION: Maximum of 3 commoning links allowed. Any combination of same pole configuration.
ATTENTION: 3 liaisons communes autorisées au maximum. Toute combinaison de configurations de polarité identiques.
ACHTUNG: Maximal 3 Schienenblöcke. Beliebige Kombination gleichpoliger Konfigurationen.
ATTENZIONE: Sono consentiti al massimo 3 pettini di collegamento in qualsiasi combinazione della stessa configurazione di poli.
ATEÖION: Se permite un máximo de 3 enlaces comunes. Cualquier combinación del mismo tipo de configuración de polo

ATTENTION: Do not cut.
ATTENTION: Ne pas couper.
ACHTUNG: Nicht durchschneiden.
ATTENZIONE: Non tagliare.
ATEÖION: No corte.



	UL489		EN/IEC 60947-2
U_e	480 V AC	96 V DC	240/415 V AC
f	50/60 Hz	—	50/60 Hz
U_{imp}	—		9,5 kV
I_e	80 A @ 40°C		80 A @ 30°C
Terminal capacity	—		16 mm²

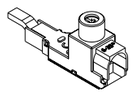
Z-EB/50/UL

	UL489		EN/IEC 60947-2
U_e	480 V AC	96 V DC	240/415 V AC
f	50/60 Hz	—	50/60 Hz
U_{imp}	—		9,5 kV

Cross section:

	U - single wire	K - fine wire (with sleeve)	Torque
	R - multi wire	F - fine wire (with sleeve)	
Max. cross section	50 mm² 1 AWG copper wire	35 mm² 2 AWG copper wire	4 Nm 35 lbf.in
Min. cross section	1,5 mm² 14 AWG copper wire		
Busbar-side	Pin max. 5,5x2 / 0.2"x0.07" Länge min. 12,7 mm / Length min. 0.5"		2,5 Nm 22 lbf.in

Z-EK/35/UL

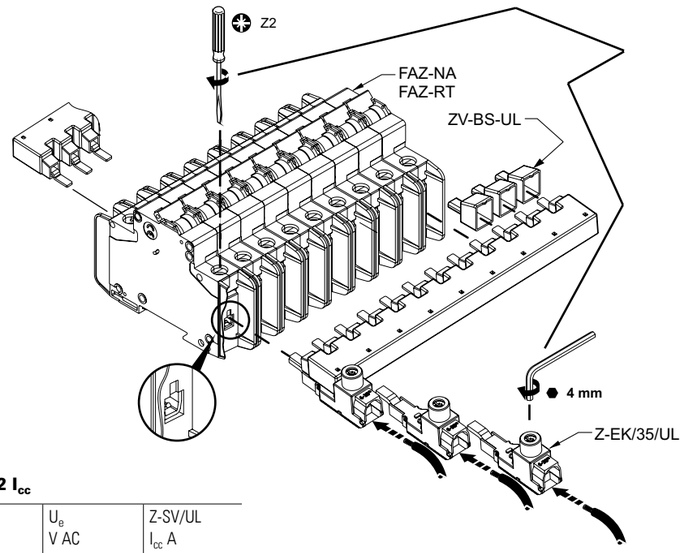


	UL489		EN/IEC 60947-2
U_e	480 V AC	96 V DC	240/415 V AC
f	50/60 Hz	—	50/60 Hz
U_{imp}	—		9,5 kV

Cross section:

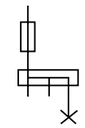
	U - single wire	K - fine wire (with sleeve)	Torque
	R - multi wire	F - fine wire (with sleeve)	
Max. cross section	35 mm² 2 AWG copper wire		5,5 Nm 50 lbf.in
Min. cross section	2,5 mm² 14 AWG copper wire		

Mounting example of busbar UL489 Z-SV/UL-16 for FAZ-NA/RT



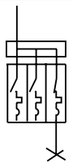
AWG	lb-in	Nm
14	21	2.3
12-8	25	2.8
6-2	36	4.0

IEC/EN 60947-2 I_{cc}



U_e V AC	Z-SV/UL I_{cc} A
240/415	15000

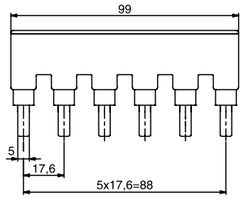
UL SCCR



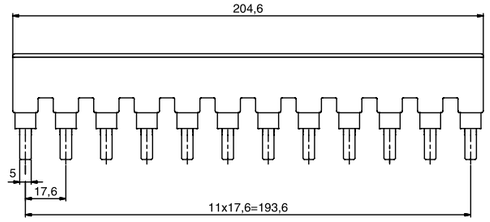
FAZ-NA FAZ-RT I_n A	U_e V AC	Z-SV/UL SCCR RMS Sym A
0.5-32	480Y/277	10000
35-40	240	10000

Dimensions (mm)

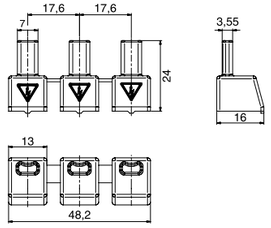
Z-SV/UL-16/.TE/6



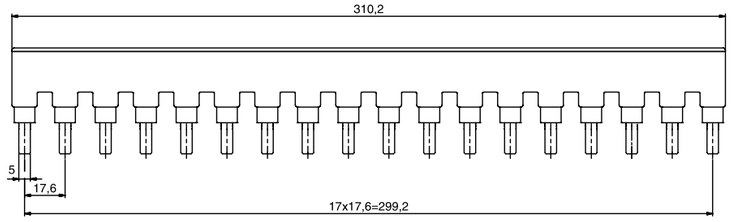
Z-SV/UL-16/.TE/12



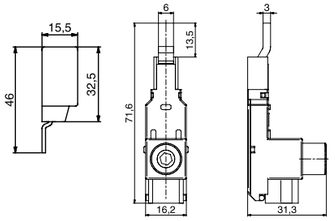
ZV-BS-UL



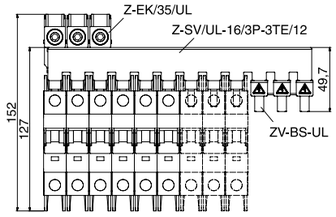
Z-SV/UL-16/.TE/18



Z-EK/35/UL



Example



Z-EK/35/UL

	UL489	IEC/EN60947-2
	# 2-14 AWG	2.5-35 mm²
	60/75 °C Cu	Cu
	0.56 in	14 mm

testet acc. to		Tightening torque
UL486A	# 14 AWG	≥ 2.3 Nm
UL486B	# 8-12 AWG	≥ 2.8 Nm
UL486E	# 6-1 AWG	4 Nm

Description	Cu-factor	Type Designation	Article No.	Units per package

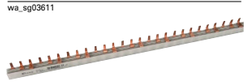
Busbar Block (Pin) Z-SV

- delivered without end caps

Busbar Block (Pin) Z-SV-16/3P

- for Z-SLS, PLHT, D0.-SO/.. (1.5MU)

wa_sg03611



16 mm² - Rated current 80 A

3-phases	0.84	Z-SV-16/3P	271072	20

Accessories for Z-SV-16/3P

Extension terminal

wa_sg05913

Extension terminal 6-50 mm²		Z-EK/50	264934	3 / 180

End cap

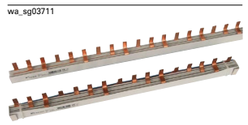
SG4800

End cap		Z-V-35/AK/3P	264932	10 / 600

Busbar Block (Pin) Z-SV-35

- for Z-SLS, PLHT, D0.-SO/.. (1.5MU), PLHT-V (1.5MU)

wa_sg03711



35 mm² - Rated current 110 A

1-phase angulated grey	0.83	Z-SV-35/1P	113135	1
3-phases	2.74	Z-SV-35/3P	264938	4
3-phases	2.74	Z-SV-35/PLHT-V	264939	4
4-phases*	1.57	Z-SV-35/3P+N-6TE	263110	4

* delivered with end caps

Accessories for Z-SV-35

End cap

SG4800

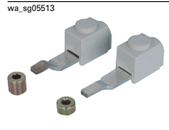
End cap		Z-V-35/AK/3P	264932	10 / 600

Accessories for Z-SV-35

Extension terminals Z-EK/95

- 25-95 mm² single-/multi-wire
- 16-70 mm² fine wires with wire end sleeve
- Max. tightening torque: 19 Nm

wa_sg05513

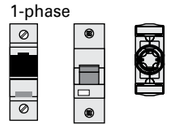


for Z-SV-35/1P		Z-EK/95-1	113136	3 / 90
for Z-SV-... 3-phases		Z-EK/95	264933	3 / 90
for Z-SV-35/3P+N		Z-EK/95-3N	264911	4 / 120

Description of the Busbar Block (Pin) Z-SV

Devices to busbar	Pcs. of the devices	End caps	Type

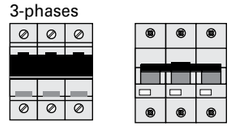
1-phase



x36

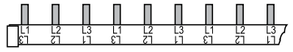
Z-SV-35/1P

3-phases



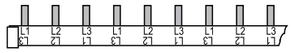
x12

Z-AK-16/2+3P

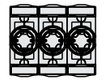


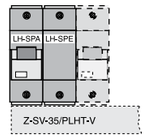
Z-SV-16/3P

Z-V-35AK/3P



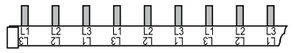
Z-SV-35/3P





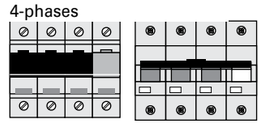
x33

Z-V-35AK/3P



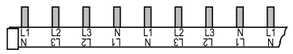
Z-SV-35/PLHT-V

4-phases



x4

Z-V-35AK/3P



Z-SV-35/3P+N-6TE

Description Busbar Block (Pin) Z-SV

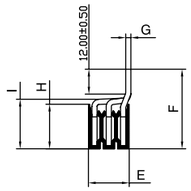
- End caps are to be ordered separately, exception Z-SV-35/3P+N-6TE
- Halogenfree plastic

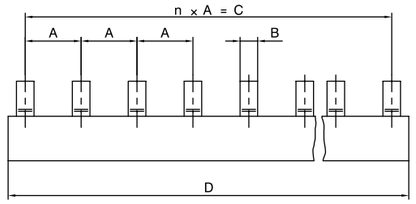
Technical Data

		Z-SV-16	Z-SV-35
Electrical			
Rated operational voltage		240/415 V AC	240/415 V AC
Rated frequency		50/60 Hz	50/60 Hz
Rated voltage		500 V	690 V
Overvoltage category		III	III
Rated peak withstand voltage	U_{imp}	4 kV	6 kV
Rated current		80 A	110 A
Conditional rated short circuit current AC with 250 A gG		50 $kA_{r.m.s.}$	100 $kA_{r.m.s.}$
Mechanical			
Busbar cross section		16 mm² Cu	35 mm² Cu
Step distance		27 mm	27 mm (Z-SV-35/PLHT-V 30.5 mm)
Flame class according to UL94		V0, glowing wire test 960 °C	V0, glowing wire test 850 °C
Degree of protection, with end caps		IP20	IP20
Pollution degree		2	2
Comparative tracking index		CTI 300	CTI 600
Air gap		≥ 5 mm	≥ 4.3 mm
Minimum creepage distance		≥ 10.2 mm	≥ 6.7 mm

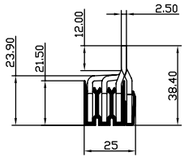
Dimensions (mm)

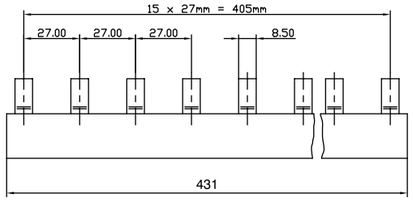
	n	A	B	C	D	E	F	G	H	I
Z-SV-16/3P	35	27	5	945	971	14.9	31	1.5	17	19
Z-SV-35/3P	35	27	8.5	945	1000	19.7	38.4	2.5	21.5	23.9
Z-SV-35/PLHT-V	32	30.5	8.5	976	1000	19.7	38.4	2.5	21.5	23.9



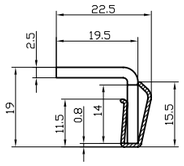


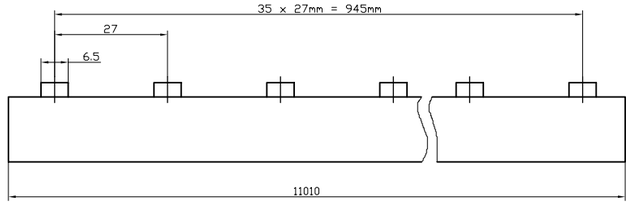
Z-SV-35/3P+N-6TE





Z-SV-35/1P





Accessories for Z-SV-16

Wa_sg10802

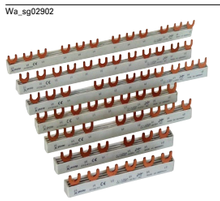
Extension terminal
Z-EK/50

Accessories for Z-SV-35

Wa_sg10802

Extension terminaln
Z-EK/95, Z-EK/95-3N,
Z-EK/95-1

Wa_sg02902



Euro-Vario-Busbar (Fork) EVG

- for PLS., PKN., PFIM, PFHM, PFNM
- no end caps necessary
- Do not cut!!

10 mm² - Rated current 63 A

1- to 4-phases

Phases	MU	Cu-factor	Type Designation	Article No.	Units per package
1-phase	2	0.015	EVG-1PHAS/2MODUL	215646	40 / 800
1-phase	6	0.039	EVG-1PHAS/6MODUL	215638	40 / 800
1-phase	12	0.046	EVG-1PHAS/12MODUL	215637	40 / 400
2-phases	4	0.051	EVG-2PHAS/4MODUL	268220	20 / 400
2-phases	6	0.079	EVG-2PHAS/6MODUL	215642	20 / 400
2-phases	12	0.150	EVG-2PHAS/12MODUL	215641	20 / 200
3-phases	6	0.086	EVG-3PHAS/6MODUL	215640	20 / 400
3-phases	9	0.128	EVG-3PHAS/9MODUL	215645	20 / 200
3-phases	12	0.168	EVG-3PHAS/12MODUL	215639	20 / 200
3-phases	16	0.230	EVG-3PHAS/16MODUL	285381	20
3-phases	20	0.310	EVG-3PHAS/20MODUL	285383	20 / 180
3-phases	12	0.240	EVG-3P+3N/12MODUL	121091	20
4-phases	16	0.320	EVG-3P+3N/16MODUL	105215	20
4-phases	18	0.350	EVG-3P+3N/18MODUL	274161	20
4-phases	8	0.219	EVG-4PHAS/8MODUL	215644	10 / 100
4-phases	12	0.324	EVG-4PHAS/12MODUL	215643	10 / 100

For 2-pole Combined RCD/MCB Device with a width of 3MU

1-phase	2-5	0.045	EVG-1PHAS/N/2-5MODUL/FILS	285384	40 / 800

For combination RCD/MCBs with RCD 4-pole

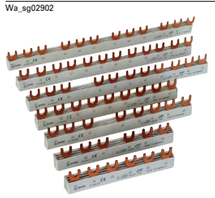
3-phases	4+5	0.138	EVG-3PHAS/N/5MODUL/LS	215659	20 / 200
3-phases	4+8	0.188	EVG-3PHAS/N/8MODUL/LS	215660	20 / 200

Wa_sg01602

For applications with Auxiliary Switch

1-phase	2.5	0.008	EVG-1PHAS/2MODUL/HI	215655	40 / 200
1-phase	13	0.096	EVG-1PHAS/9MODUL/HI	215656	40
2-phases	4.5	0.015	EVG-2PHAS/4MODUL/HI	219573	20 / 400
2-phases	12	0.160	EVG-2PHAS/10MODUL/HI	215657	20
3-phases	6.5	0.100	EVG-3PHAS/6MODUL/HI	216411	20 / 200
3-phases	13.5	0.200	EVG-3PHAS/12MODUL/HI	215658	20

Wa_sg02902



16 mm² - Rated current 80 A

1- to 4-phases

1-phase	2	0.023	EVG-16/1PHAS/2MODUL	291464	40 / 800
1-phase	6	0.059	EVG-16/1PHAS/6MODUL	291465	40 / 800
1-phase	12	0.113	EVG-16/1PHAS/12MODUL	291466	40 / 400
2-phases	4	0.080	EVG-16/2PHAS/4MODUL	291467	20 / 400
2-phases	6	0.120	EVG-16/2PHAS/6MODUL	291468	20 / 400
2-phases	12	0.225	EVG-16/2PHAS/12MODUL	291469	20 / 200
3-phases	6	0.112	EVG-16/3PHAS/6MODUL	291470	20 / 400
3-phases	9	0.163	EVG-16/3PHAS/9MODUL	291471	20 / 200
3-phases	12	0.218	EVG-16/3PHAS/12MODUL	291472	20 / 200
3-phases	16	0.300	EVG-16/3PHAS/16MODUL	291473	20 / 80
3-phases	20	0.363	EVG-16/3PHAS/20MODUL	291474	10 / 100
4-phases	8	0.200	EVG-16/4PHAS/8MODUL	291475	10 / 100
4-phases	12	0.284	EVG-16/4PHAS/12MODUL	291476	10 / 100

Phases	MU	Cu-factor	Type Designation	Article No.	Units per package
For 2-pole Combined RCD/MCB Device with a width of 3MU					
4-phases	18	0.260	EVG-16/4PHAS/L-N-X/6PC	116880	10
4-phases	24	0.360	EVG-16/4PHAS/L-N-X/8PC	116881	10
For combination RCD/MCBs with RCD 4-pole					
3-phases	4+5	0.179	EVG-16/3PHAS/N/5MODUL/LS	291477	20 / 200
3-phases	4+8	0.244	EVG-16/3PHAS/N/8MODUL/LS	291478	20 / 200
For applications with Auxiliary Switch					
1-phase	2.5	0.038	EVG-16/1PHAS/2MODUL/HI	291479	40 / 800
1-phase	8.5	0.105	EVG-16/1PHAS/6MODUL/HI	291480	40 / 400
1-phase	13	0.162	EVG-16/1PHAS/9MODUL/HI	291481	40 / 160
2-phases	4.5	0.080	EVG-16/2PHAS/4MODUL/HI	291482	20 / 400
2-phases	7	0.120	EVG-16/2PHAS/6MODUL/HI	291483	20 / 200
2-phases	12	0.200	EVG-16/2PHAS/10MODUL/HI	291484	20 / 200
3-phases	6.5	0.130	EVG-16/3PHAS/6MODUL/HI	291485	20 / 200
3-phases	13.5	0.260	EVG-16/3PHAS/12MODUL/HI	291486	20 / 80
3x1-phase	8.5	0.231	EVG-16/3x1PHAS/6MODUL/HI	291487	20 / 200
3x1-phase	11.5	0.300	EVG-16/3x1PHAS/8MODUL/HI	291488	20 / 200
3x1-phase	13	0.344	EVG-16/3x1PHAS/9MODUL/HI	291489	20 / 80

Wa_sg01602

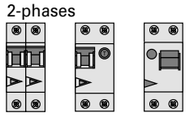
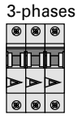
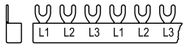
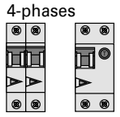
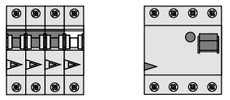
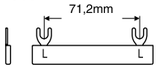
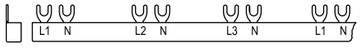
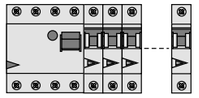
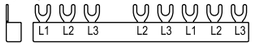
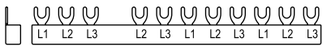
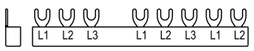
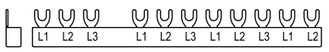
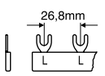
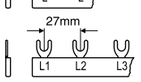
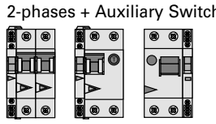
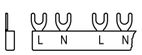
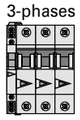
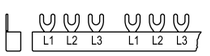
Description Euro-Vario-Busbar (Fork) EVG

- Euro Vario busbars (EVG) offer maximum user comfort and a high degree of safety.
- Using EVG busbars helps to save up to 30 % assembly time as compared to conventional systems.
- The danger of flashover is minimised since there is no need of cutting, burring, or cleaning.
- No end caps are needed.

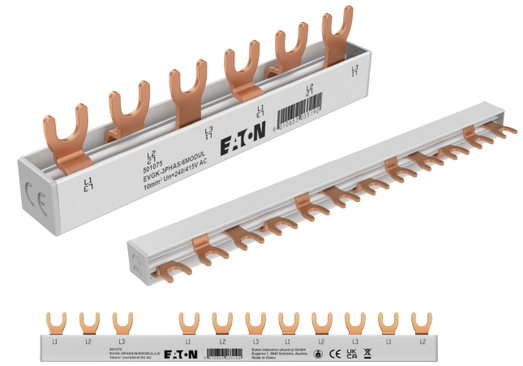
Technical Data

	EVG
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	63 A
16 mm²	80 A
Short-circuit current strength	25 kA
Mechanical	
Busbar length	2, 6, 9, 12, 16, 20 MU
Busbar cross section	10 and 16 mm² Cu
Step distance	
10 mm²	17.8 mm / 26.8 mm / 71.2 mm
16 mm²	17.8 mm / 27 mm / 71.2 mm

Description of Euro-Vario-Busbar (Fork) EVG

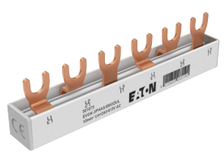
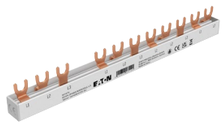
Devices to busbar	Pcs. of the devices	Type
1-phase		
	x2 x6 x12 	EVG-../1PHAS/2MODUL EVG-../1PHAS/6MODUL EVG-../1PHAS/12MODUL
2-phases		
	x2 x3 x6 	EVG-../2PHAS/4MODUL EVG-../2PHAS/6MODUL EVG-../2PHAS/12MODUL
3-phases		
	x2 x3 x4 x5 x6 	EVG-../3PHAS/6MODUL EVG-../3PHAS/9MODUL EVG-../3PHAS/12MODUL EVG-../3PHAS/16MODUL EVG-../3PHAS/20MODUL
4-phases		
	x8 x9 	EVG-3P+3N/16MODUL EVG-3P+3N/18MODUL
	x2 x3 	EVG-../4PHAS/8MODUL EVG-../4PHAS/12MODUL
For 2-pole Combined RCD/MCB Device, 1-phase		
	x2 	EVG-1PHAS/2-5MODUL/FILS
For 2-pole Combined RCD/MCB Device, 4-phases		
	x6 x8 	EVG-16/4PHAS/L-N-X/6PC EVG-16/4PHAS/L-N-X/8PC
For combination RCD/MCBs with RCD 4-pole, 3-phases		
		EVG-3PHAS/N/5MODUL/LS
		EVG-3PHAS/N/8MODUL/LS
		EVG-16/3PHAS/N/5MODUL/LS
		EVG-16/3PHAS/N/8MODUL/LS
1-phase + Auxiliary Switch		
	x2 x6 x9 	EVG-../1PHAS/2MODUL/HI EVG-16/1PHAS/6MODUL/HI EVG-../1PHAS/9MODUL/HI
	x6 x8 x9 	EVG-16/3x1PHAS/6MODUL/HI EVG-16/3x1PHAS/8MODUL/HI EVG-16/3x1PHAS/9MODUL/HI
2-phases + Auxiliary Switch		
	x2 x3 x5 	EVG-../2PHAS/4MODUL/HI EVG-16/2PHAS/6MODUL/HI EVG-../2PHAS/10MODUL/HI
3-phases + Auxiliary Switch		
	x2 x4 	EVG-../3PHAS/6MODUL/HI EVG-../3PHAS/12MODUL/HI

WA_REN_SG_01622_L, WA_REN_SG_01722_R, WA_REN_SG_01822_C



Description

- Available in 10 mm² cross section
- Fork type
- Comes with end caps
- Busbar can be cut to desired length
- End caps can be ordered separately as replacement

	Phases	MU	Cu-factor	Type Designation	Article No.	Units per package
Busbar (Fork) EVGK						
10 mm² - Rated current 63 A						
WA_REN_SG_01622_L 	3-phases	6	0.026	EVGK-3PHAS/6MODUL	EP-501075	20 / 400
	3-phases	12	0.068	EVGK-3PHAS/12MODUL	EP-501069	20 / 200
WA_REN_SG_01822_L 	**For combination RCD/MCBs with RCD 4-pole**					
	3-phases	4+8	0.065	EVGK-3PHAS/N/8MODUL/LS	EP-501070	20 / 400

	Description	Type Designation	Article No.	Units per package
Accessories				
WA_REN_SG_00822_L 	End cap 3-phases (10 mm²)	EK-3/10-EVGK-GVK	EP-501076	10 / 5000

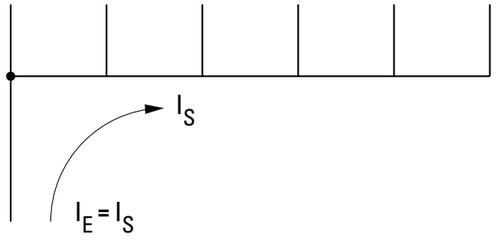
	Description	Type Designation	Article No.	Units per package
Accessories				
Busbar Tag Shrouds for busbar, yellow ZV-BS-G				
SG05705 	Finger and hand touch safe	ZV-BS-G	104903	10 / 600

Technical Data

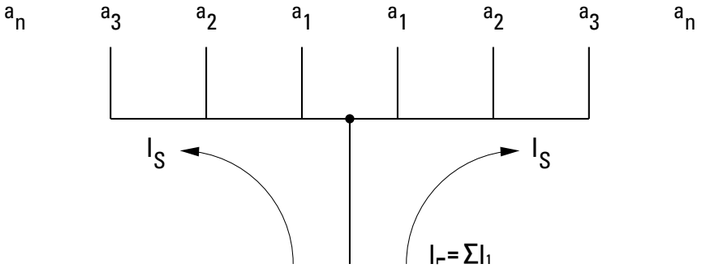
		EVGK
General		
Standards		DIN EN 61439-1:2021-10 / DIN EN 61439-6:2013-06 IEC 664 / IEC 60895-2-12 / VDE 0110 / DIN EN 60754-1
Climate stability		according to IEC 68-2
Overvoltage category		III
Pollution Degree		2
Busbar Material		E-Cu-ETP
Isolation Material		PC-ABS
Endcap Material		PC-ABS
Touch protection Material		PP
Electrical		
Rated operating voltage		240/415 V AC
Rated current		
10 mm²		63 A
16 mm²		80 A
Short-circuit current strength		25 kA /100 A gl
Disruptive Strength		36 kV/mm
Surge Voltage	U_{imp}	4 kV
Mechanical		
Busbar cross section		10 mm²
Step distance		17.8 mm

Feeding

Side Feeding

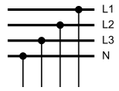


Central Feeding

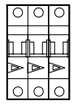
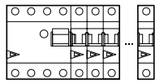


Using central supply feeding you must be sure that the sum of the output current depending on a_1 ... a_n of each busbar part is not greater than the above max. busbar current I_s / phase

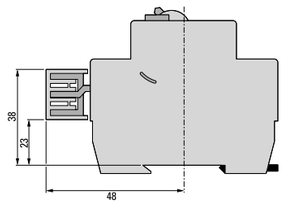
Connection diagram



Description Graphics

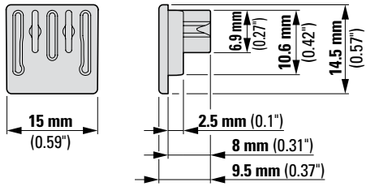
Devices to busbar	Pcs. of the devices	End caps		Type
3-phases				
	x2	EK-3/10-EVGK-GVK		EVGK-3PHAS/6MODUL
	x4			EVGK-3PHAS/12MODUL
For combination of RCD/MCBs. 4+8 MU				
		EK-3/10-EVGK-GVK		EVGK-3PHAS/N/8MODUL/LS

Dimensions (mm)

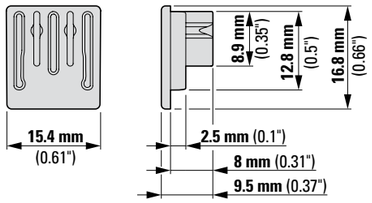


End Cap dimensions (mm)

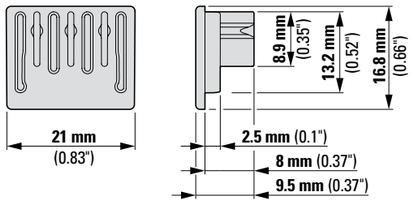
EK-3/10-EVGK-GVK



EK-3/16-EVGK-GVK

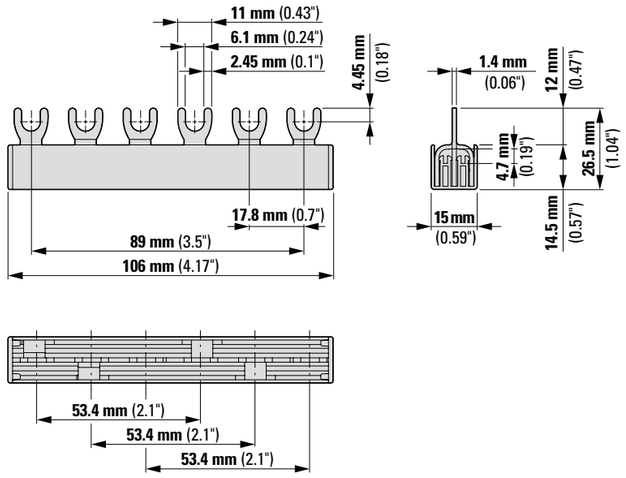


EK-3N/16-EVGK-GVK



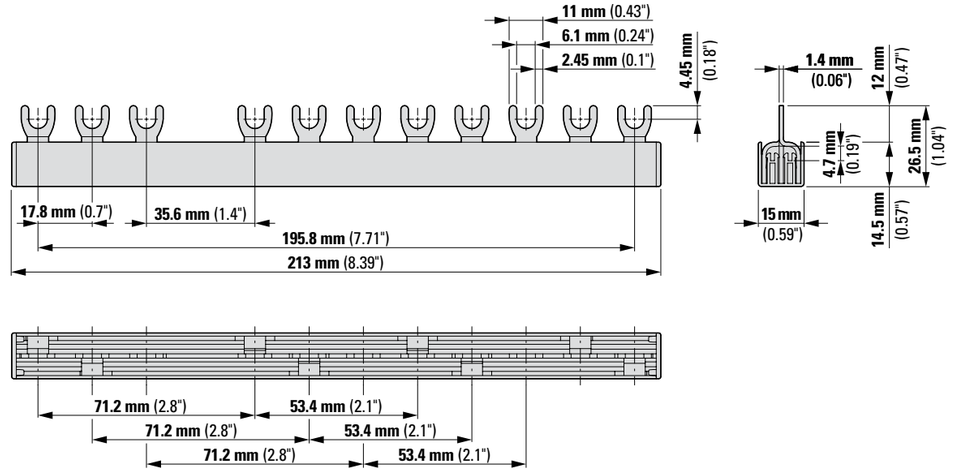
Dimensions (mm)

EVGK-3PHAS/6MODUL

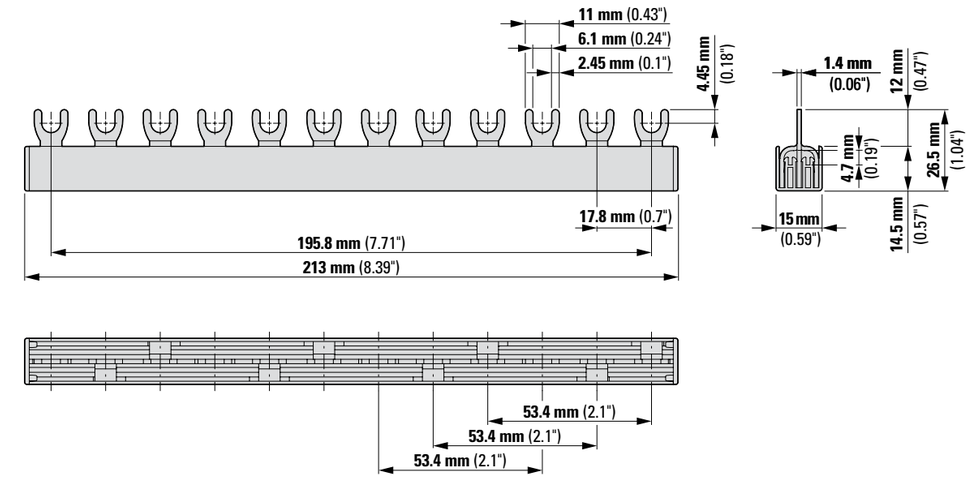


Dimensions (mm)

EVGK-3PHAS/8MODUL/LS



EVGK-3PHAS/12MODUL



wa_sg02616

xPole

Description	Type Designation	Article No.	Units per package
Vertical Busbar 16mm² BB-V-16/1P+N			
2-phases	BB-V-16/1P+N	186887	5

wa_sg02616

Description Vertical Busbar 16mm² BB-V-16/1P+N

Attention:
The thermal overload protection for the RCCB installing next to the vertical busbar must be considered (please refer to our catalogue register RCCB
I_n = 16A RCCB => 10 A gG/gL Fuse/Main Incomer
I_n = 25-40A RCCB => 25 A gG/g Fuse/Main Incomer
I_n = 63A RCCB => 40 A gG/gL Fuse/Main Incomer
or country specific wiring regulations).

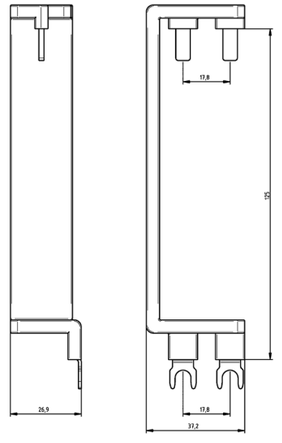
The thermal emission from the vertical busbar can affect the tripping characteristics of the neighboring RCDs, please follow notes in our product documentation regarding possible temperature derating.
Thermal overload protection for the vertical busbar according to EN61439-3 must be considered => nominal current 80A, max. 84A for 15 minutes, maximum setting for ELCB NF: 60A.

Products are EU comform and correspond to the RoHS of the EU

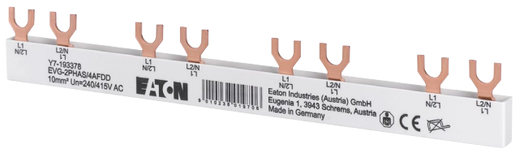
Technical Data

		BB-V-16/1P+N
General		
Busbar		Copper
Surface busbar		plain
Insulation		PA66
Surface insulation		grey RAL 7035
Standards		EN 60947-1:2007 / IEC 60947-1:2007
Temperature resistance		125 °C – UL94 V0
CTI Insulation		600 V
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Max. electrical load		690 V AC
Protection class		IP20
Rated peak withstand voltage	U_{imp}	6 kV
Rated insulation voltage	U_i	800 V
Capacity at 35 °C ambient temperature		
Max. current with bar cross section 16 mm²	I_e/Phase	80 A

Dimensions (mm)



sg05517



sg05517

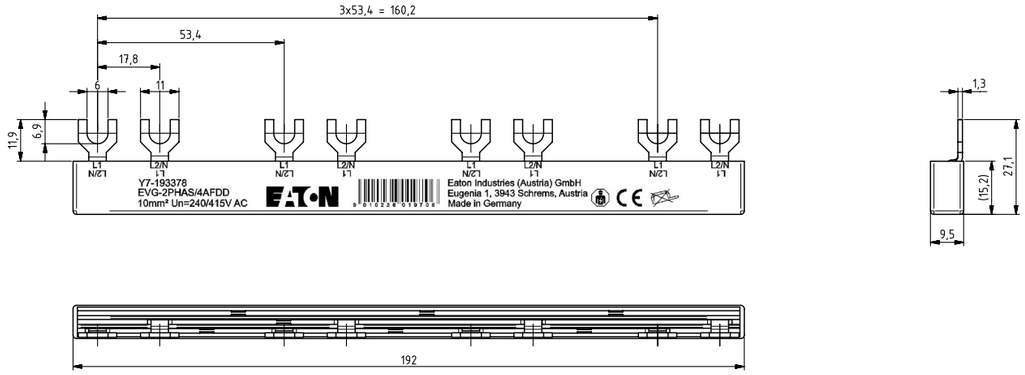
10 mm²				
2-phase	0.114	EVG-2PHAS/4AFDD	193378	10

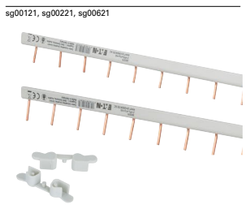
Technical Data

Products are EU comform and correspond to the RoHS of the EU

		EVG-2PHAS/4AFDD
General		
Busbar		Copper
Surface busbar		plain
Insulation		PC/ABS
Surface insulation		grey
Standards		EN 60947-1:2007 / IEC 60947-1:2007
Heat deflection temperature		90 °C – UL94 V0
Glow Wire Flammability Index		960 °C / 1 mm
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Max. operating voltage		690 V AC/DC
Protection class		IP20
Rated impulse withstand voltage	U_{imp}	≥4,5 kV
Max. operating voltage		
1-, 3-phase		690 V IEC
		480Y/277V & 240 V AC
Load Capacity at 35 °C ambient temperature depending of feeding point		
Max. busbar current feeding at beginning / ending	I_e/Phase	50 A
Busbar cross section		10 mm²
Connection cross section		10 mm²

Dimensions (mm)




sg00121, sg00221, sg00621

Description	Type Designation	Article No.	Units per package
Busbar for auxiliary contact			
4 mm²			
Short pin	Z-VPS-4/1p+HS	302375	20/200
Long pin	Z-VPL-4/1p+HS	302376	20/200
End cap	Z-VP-AK/1p	302377	10/500

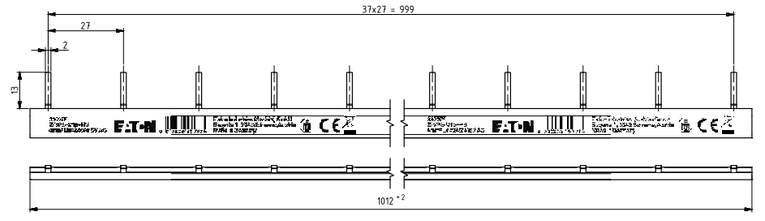
Description Busbar 4 mm²

Products are CE comform and correspond to the RoHS of the EU

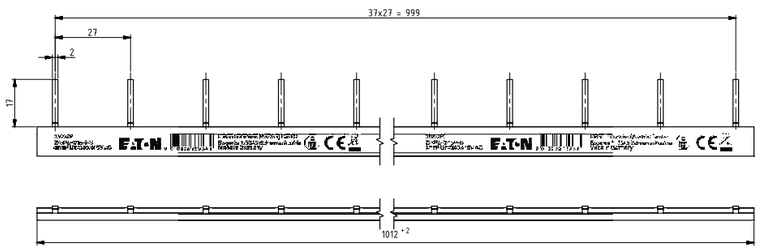
Technical Data

	Z-VPS / Z-VPL
General	
Busbar	Copper
Surface busbar	plain
Insulation	PC/ABS
Surface insulation	grey
Standards	EN 60947-1:2007 / IEC 60947-1:2007
Heat deflection temperature	90 °C flame-retardant
Comparative Tracking Index	PLC 1
Insulation coordination	Overvoltage category III / Pollution degree 2
Electrical	
Max. operating voltage	1000 V AC / 1500V DC
Protection class	IP20
Load Capacity at 35 °C ambient temperature depending of feeding point	
Max. busbar current feeding at beginning / ending I_s/Phase	32 A
Busbar cross section	4 mm²

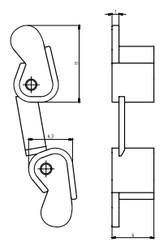
Dimensions (mm)



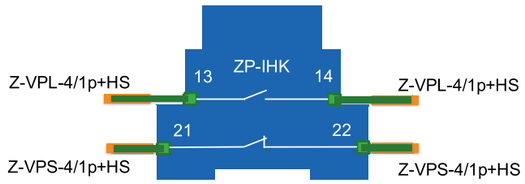
Z-VPS-4/1p+HS

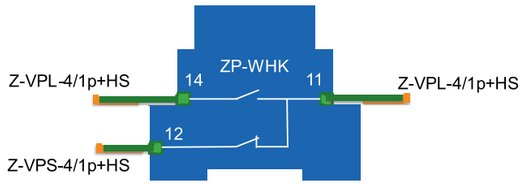


Z-VPL-4/1p+HS


Z-VP-AK/1p

Connection examples





Busbar EVG-3PHAS/N/6MODUL/LS

10 mm², 16 mm², 25 mm²

3-phases	EVG-3PHAS/N/6MODUL/LS	303366	10

Description Busbar EVG-3PHAS/N/6/MODUL/LS

Products are EU comform and correspond to the RoHS of the EU

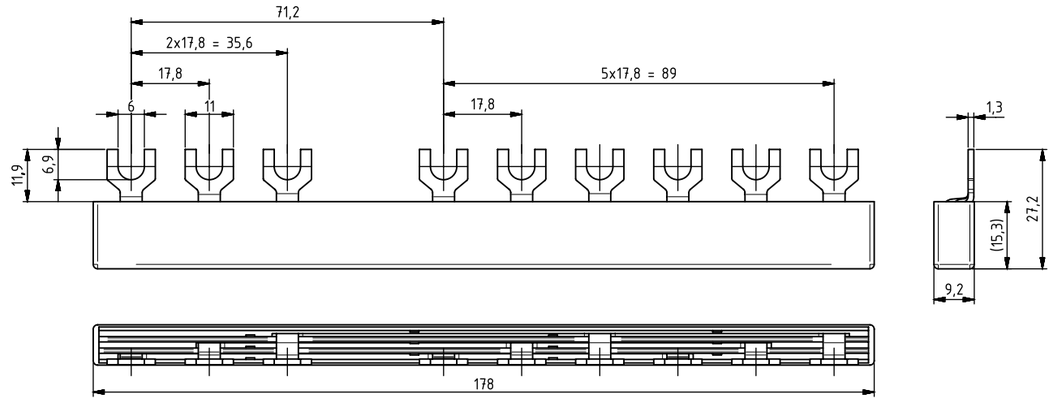
Technical Data

	EVG3/PHAS/N/6/MODUL/LS
General	
Busbar	Copper
Surface busbar	plain
Insulation	PC/ABS
Surface insulation	grey
Standards	EN 60947-1:2007 / IEC 60947-1:2007
Temperature resistance	90 °C flammgeschützt
CTI Insulation	300 V
Insulation coordination	Overvoltage category III / Pollution degree 2
Electrical	
Impulse voltage strenght	≥ 4.5 kV
Min. air distance	> 5.5 mm
Min. creeping distance	> 5 mm
Max. operating voltage	1Ph: 1000V AC/DC 2Ph-4Ph : 690 V AC/DC
Protection class	IP20
Short circuit rating	ICC 15 kA - NH3 250 A gC500V JM
Dielectric strenght	> 32 kV / mm

Load Capacity at 35 °C ambient temperature depending of feeding point

Busbar cross section	10 mm²	16 mm²	25 mm²
Feeding at beginning / ending			
Max. busbar current I_z/Phase	63 A	80 A	100 A
Connection cross section mm²	10 mm²	16 mm²	25 mm²

Dimensions (mm)



SG3197

Poles	Type Designation	Article No.	Units per package
Row-connectors-system for compact distribution boards with 125 mm row spacing			
1	RVS-1PHAS/125	215610	3
N	RVS-1N/125	215612	3
1+N	RVS-1PHAS+N/125	215615	3
3	RVS-3PHAS/125	215617	3
3+N	RVS-3PHAS+N/125	215620	3

SG3097

Row-connectors-system for distribution boards with 150 mm row spacing			
1	RVS-1PHAS/150	215611	3
N	RVS-1N/150	215613	3
1+N	RVS-1PHAS+N/150	216410	3
3	RVS-3PHAS/150	215618	3
3+N	RVS-3PHAS+N/150	215621	3

SG3297

Row-connectors-system for connections across 2 rows with 125 mm row spacing			
1	RVS-1PHAS/250	216409	3
N	RVS-1N/250	215614	3
1+N	RVS-1PHAS+N/250	215616	3
3	RVS-3PHAS/250	215619	3
3+N	RVS-3PHAS+N/250	215622	3

Specification | Rigid Row Connectors

Description

The row connectors offer the greatest possible application comfort with the highest level of safety. The use of the row connectors results in a large saving of assembly time compared to conventional systems.
The rigid row connectors are used for the safe distribution of phases to several DIN rail rows. Thanks to the flattened connection pieces, two rigid wiring bridges can be fed into one lift terminal at the same time.

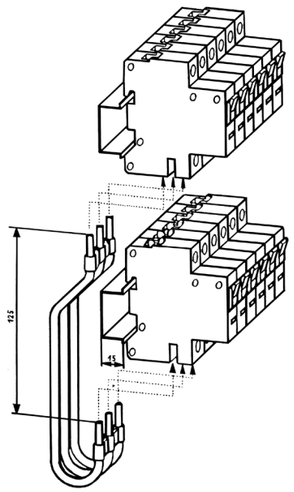
The row connectors can be folded up between the individual phases thanks to the flexible retaining bridges and can therefore also be used in extremely flat distribution boards.
If required, the row connectors can also be easily separated at these distance holders.

Technical Data

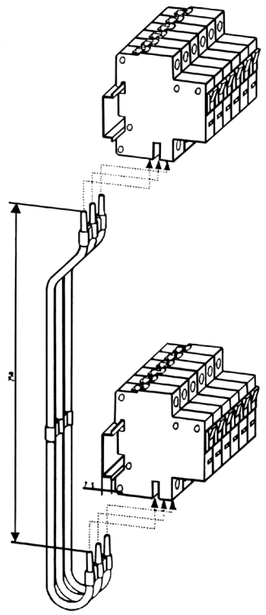
	RVS
Electrical	
Standards and regulations	IEC 60664
Rated voltage	max. 500 V
Capacity	max. 120 A
Short circuit rating	25 kA
Mechanical	
Length	125, 150, 250 mm
Phase indication labels available	Phase black, N-conductor blue, earth conductor yellow/green
Conductor material	Copper
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Ambient temperature	-20°C to +40°C
Resistance to climatic conditions	according to IEC 60068

Dimensions (mm)

RVS-3PHAS/125

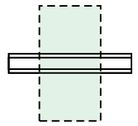


RVS-3PHAS/250



SG80911

Mounting



Frame

D0	D0 Fuse-Bases
D0	D0 Switch-Disconnectors
C	Cylindrical Switch-Disconnectors

xPole

D0

Fuse-Base D01+D02

Fuse-Base FCFBD02DI

- One design for Fuse-Links size D02 and D01, because adapter springs for screw caps D02 are in scope of delivery
- Only screw cap D02 for all applications necessary
- Mounting on DIN-rail or mounting plate possible
- Finger and hand touch safe according to DGUV VS3, EN 50274
- Fuse-Base is equipped with holes for sealing

SG80211

Rated current (A)	Poles	Width (mm)	Type Designation	Article No.	Units per package
63	1	27	FCFBD02DI-1	148599	15
63	3	81	FCFBD02DI-3	148810	5

Screw Caps Z-D0./SK

wa_sg04013

Description	Type Designation	Article No.	Units per package
D01 max. 16 A	Z-D01/SK	100650	20
D02 max. 63 A	Z-D02/SK	100651	20

Adapter Spring Z-D02/SIKA-HF

- To apply D01-Fuse-Links into the screw cap Z-D02/SK

wa_sg02612

D02-D01	Z-D02/SIKA-HF	263149	50 / 3000

Accessories for FCFBD02DI-.

Fuse-Links Z-D0./SE-...
Cartridge-ring adapter inserts Z-D02-PE-… and Z-D02-D01-PE-…
Adapter Spring Z-D02/SIKA-HF (scope of delivery)
Cartridge-ring adapter insert plier Z-D0-PE-Zsee chapter Accessories Fuse Devices.
For busbar blocks and feed terminals refer to fuse-switch-disconnector and busbar systems.

Description Fuse-Base FCFBD02DI

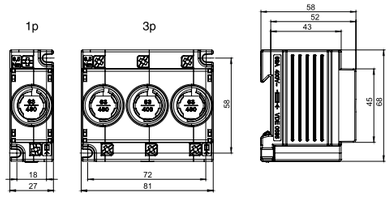
- According to DIN VDE 0636-301
- For Fuse-Links size D02 and D01
- Can be sealed with leads
- Silicone-, halogen- and phosphorfree
- Cartridge-ring adapter inserts Z-D02-PE and Z-D02-D01-PE required for current coding
- Low-loss stainless steel terminal (anti-magnetic)

D0

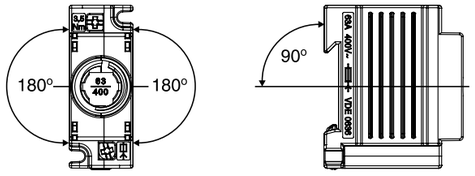
Technical Data

	FCFBD02DI
Electrical	
Number of poles	1P, 3P
Rated voltage	400 V AC, 250 V DC
Rated current	
D01	16 A
D02	63 A
Conditional rated short circuit current tested with inserts Operating class gG (gL)	
AC	50 kA
DC	8 kA
Short-circuit current strength	25 kA
Mechanical	
Frame size	45 mm
Device height	68 mm
Device width	27 mm per pole
Weight	
1P	74 g
3P	213 g
Mounting	Quick fastening on DIN rail according to IEC/EN 60715
	Screw fastening on mounting plate screw ≤4 mm, head ≤7 mm
Upper and lower terminals	lift terminals
Terminal capacity	1.5-35 mm²
Tightening torque of terminal screws	3.5 Nm
Flame class according to UL94	V0
Comparative tracking index	CTI 600

Dimensions (mm)

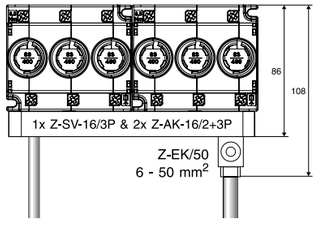


Operation position



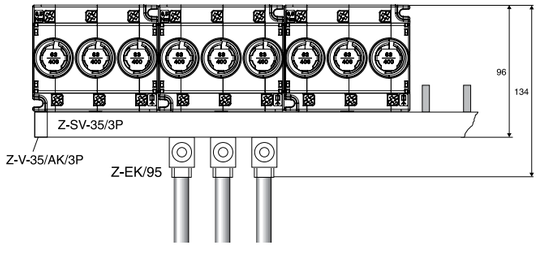
Examples

3-phases **16 mm²**

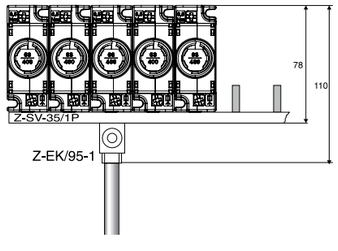


Terminal capacity Z-EK/95, Z-EK/95-1:
25-95 mm² single-/fine-wire
16-70 mm² fine wires with wire end sleeve

3-phases **35 mm²**



1-phase **35 mm²**



D0

Switch-Disconnector-Fuse D01

With visual tripping indicator Z-SLS/D01 (empty)

- Rated operational voltage 230/400 V AC
  1-pole 60 V DC, 2-pole 110 V DC
- Suitable for fuse-links with operating classes gG (gL), aM
- Mechanical current coding is integrated
- Can be sealed with leads
- Supply side from top or bottom

SG80411

Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
1	max. 16	Z-SLS/D01/1	263155	18
1+N	max. 16	Z-SLS/D01/1+N	263158	9
2	max. 16	Z-SLS/D01/2	263156	9
3	max. 16	Z-SLS/D01/3	263157	6
3+N	max. 16	Z-SLS/D01/3+N	263159	4

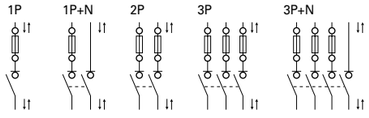
Accessories

Fuse-Links Z-D01/SE-..see chapter Accessories Fuse Devices

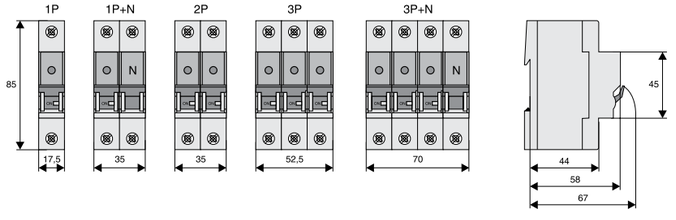
Description Switch-Disconnector-Fuse D01

- Design according to IEC/EN 60947-3
- Mechanical current coding by means of integrated, adjustable coding ring
- Plug-in technology without screw caps
- Visual tripping indicator is flashing
- Suitable for the following fuse-links
  D01: 2, 4, 6, 10, 16 A

Connection diagram



Dimensions (mm)

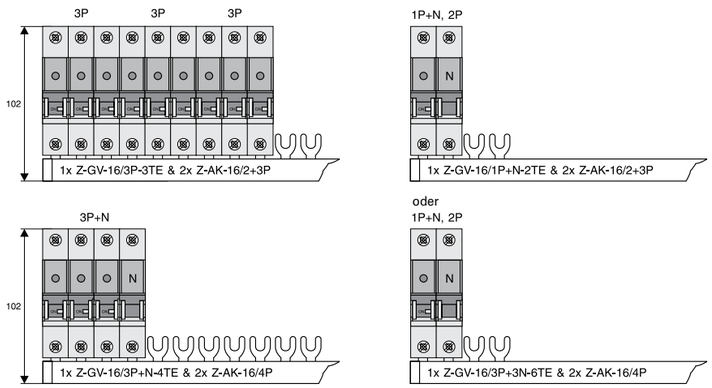


D0

Technical Data

		Z-SLS/D01
Electrical		
Number of poles		1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_e	
AC		400 V
DC		1P to 60 V / 2P to 110 V
Rated operational current	I_e	16 A
Rated constant current	I_u	16 A
Conditional rated short circuit current		50 $kA_{r.m.s.}$
Utilization category		AC 22B, DC 21B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		0.64 W
Power loss per current path with fuse-link I_e		2.24 W
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		17.5 mm per pole (1MU)
Weight		
1P		90 g
1P+N		170 g
2P		180 g
3P		270 g
3P+N		350 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		lift terminals
Terminal capacity		1.5-25 mm^2
Tightening torque of terminal screws		max. 2.5 Nm
Temperature range		-25 to +60 °C
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Examples



D0

Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
Fuse-Switch-Disconnector D02+D01				
Standard Z-SLS/NEOZ (empty)				
1	max. 63	Z-SLS/NEOZ/1	248235	12
1+N	max. 63	Z-SLS/NEOZ/1+N	248237	6
2	max. 63	Z-SLS/NEOZ/2	248233	6
3	max. 63	Z-SLS/NEOZ/3	248234	4
3+N	max. 63	Z-SLS/NEOZ/3+N	248236	3
3+PEN	max. 63	Z-SLS/NEOZ/3+PEN	182399	3

- Rated operational voltage 1-pole 230 V AC / 110 V DC
  2-pole 400 V AC / 250 V DC
  1+N, 3-pole, 3+N, 3+PEN 400 V AC
- Suitable for fuse-links with operating classes gG (gL), aM
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom

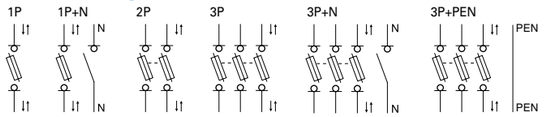
Accessories

Plastic locking device for 1-pole Z-SLZ/SP
Fuse-Link set with visual tripping indicator Z-SLS/B-..
Plug-in Busbars ...

Description Fuse-Switch-Disconnector Z-SLS/NEOZ, Standard

- Design according to IEC/EN 60947-3
- Mechanical current coding
- Plug-in technology without screw caps
- Suitable for the following fuse-links
  D01: 1, 2, 4, 6, 10, 13, 16 A
  D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads

Connection diagram

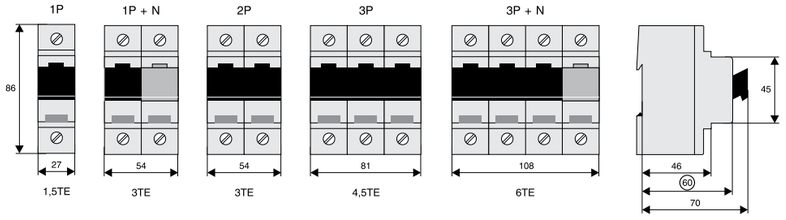


D0

Technical Data

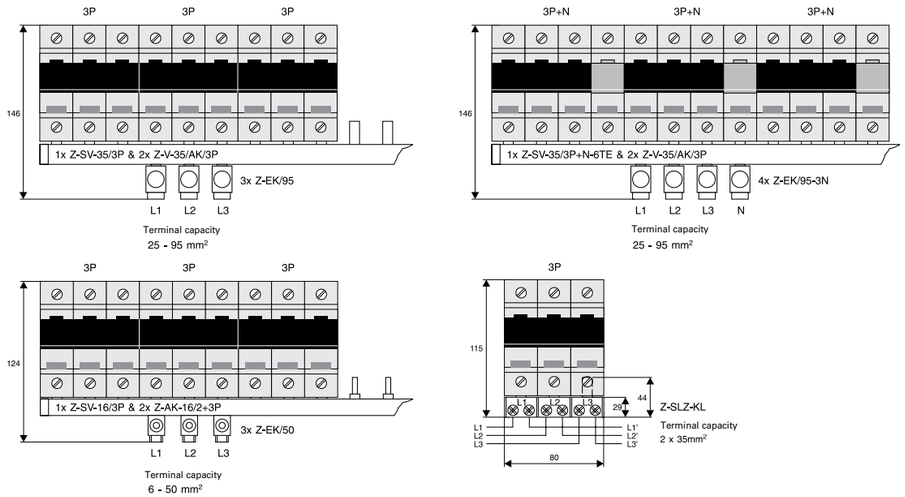
		Z-SLS/NEOZ
Electrical		
Number of poles		1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_e	
AC 1P, 1P+N		230 V
2P, 3P, 3P+N		400 V
DC 1P		bis 110 V
2P		bis 250 V
Rated operational current	I_e	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 $kA_{r.m.s.}$
Utilization category		AC 22B/400V/63A, DC 21B/110V/63A per pole
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		
L1, L2, L3		0.5 W
N		1 W
Power loss per current path with fuse-link I_e L1, L2, L3		6.6 W
Max. permissible power loss of fuse-links		5.5 W
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		27 mm per pole (1.5MU)
Weight		
1P		113 g
1P+N		225 g
2P		224 g
3P		450 g
3P+N		472 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (behind front plate)		IP20C
Upper and lower terminals		lift terminals
Terminal capacity		1.5-35 mm^2
Tightening torque of terminal screws		max. 4 Nm
Temperature range		
Ambient air		-25 to +40 °C, on 24h average ≤+35 °C
Storage		-25 to +60 °C
Temperature rise limits		
Terminals		≤+70 °K
Manual operating means		≤+25 °K
Parts intended to be touched		≤+40 °K
Parts need not to be touched		≤+50 °K
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Dimensions (mm)



D0

Examples



D0

SG80711

Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
1pole	10	Z-SLS/CEK10/1	272587	12
1pole	16	Z-SLS/CEK16/1	263135	12
1pole	25	Z-SLS/CEK25/1	263136	12
3pole	16	Z-SLS/CEK16/3	248243	4
3pole	25	Z-SLS/CEK25/3	248244	4
3pole	35	Z-SLS/CEK35/3	248245	4
3pole	40	Z-SLS/CEK40/3	150687	4
3pole	50	Z-SLS/CEK50/3	248246	4
3pole	63	Z-SLS/CEK63/3	263160	4

Fuse-Switch-Disconnector D02+D01

Complete with captive current code Z-SLS/CEK

- Rated operational voltage 1-pole 50-230 V AC / 50 - 110 V DC
  3-pole 50-400 V AC
- Fuse carrier with visual tripping indicator and fuses inclusive
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom

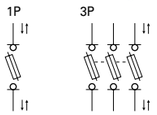
Accessories

Plastic locking device for 1-pole Z-SLZ/SP
Fuse-Link set with visual tripping indicator Z-SLS/B-..
Plug-in Busbars ...

Description Fuse-Switch-Disconnector Z-SLS/CEK, complete with captive current code

- Design according to IEC/EN 60947-3
- Can be used as main fuse downstream of the meter according to the Technical Connection Rules of the Austrian Power Supply Companies („TAEV“)
- Current coding by the manufacturer
- Plug-in technology without screw caps
- Suitable for the following fuse-links
  D01: 10, 16 A
  D02: 25, 35, 40, 50, 63 A
- Can be sealed with leads
- Visual tripping indicator included

Connection diagram

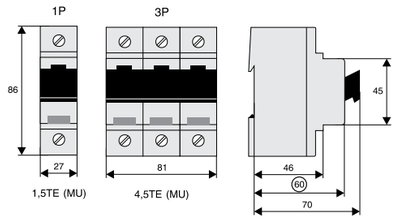


D0

Technical Data

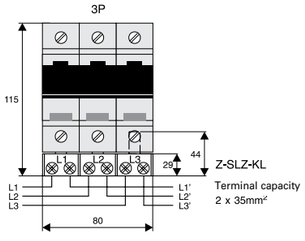
		Z-SLS/CEK
Electrical		
Number of poles		1P, 3P
Rated operational voltage	U_e	
1P		50-230 V AC / 50-110 V DC
3P		50-400 V AC
Rated constant current	I_u	
1P		10, 16, 25 A
3P		16, 25, 35, 40, 50, 63 A
Conditional rated short circuit current		50 $kA_{r.m.s.}$
Utilization category		AC 22B/400V/63A, DC 21B/110V/63A per pole
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path at 63A L1, L2, L3		0.5 W
Power loss per current path		
with fuse-link		L1, L2, L3
10 A		2.0 W
16 A		2.5 W
25 A		3.7 W
35 A		4.3 W
40 A		5.2 W
50 A		5.7 W
63 A		6.6 W
Max. permissible power loss of fuse-links		5.5 W
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		27 mm per pole (1.5MU)
Weight		
1P		147 g
3P		441 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (behind front plate)		IP20C
Upper and lower terminals		lift terminals
Terminal capacity		1.5-35 mm^2
Tightening torque of terminal screws		max. 4 Nm
Temperature range		
Ambient air		-25 to +40 °C, on 24h average ≤+35 °C
Storage		-25 to +60 °C
Temperature rise limits		
Terminals		≤+70 °K
Manual operating means		≤+25 °K
Parts intended to be touched		≤+40 °K
Parts need not to be touched		≤+50 °K
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Dimensions (mm)



D0

Example



D0

Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
Fuse-Switch-Disconnector D02+D01				
With fuse monitoring Z-SLK/NEOZ (empty)				
1+HS	max. 63	Z-SLK/NEOZ/1	248238	6
2+HS	max. 63	Z-SLK/NEOZ/2	248239	4
3+HS	max. 63	Z-SLK/NEOZ/3	248240	3
3+N+HS	max. 63	Z-SLK/NEOZ/3+N	248241	2

- Rated operational voltage 1-pole 50-230 V AC / 50-110 V DC
  2-pole 50-400 V AC / 50-250 V DC
  3-pole, 3+N 50-400 V AC
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom

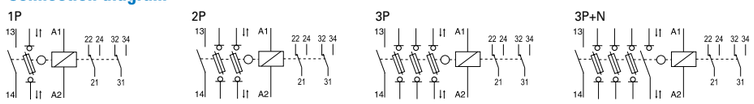
Accessories

Plastic locking device for 1-pole Z-SLZ/SP
Fuse-Link set with visual tripping indicator Z-SLS/B-..
Plug-in Busbars ...

Description Fuse-Switch-Disconnector Z-SLK/NEOZ, with fuse monitoring

- Design according to IEC/EN 60947-3
- Fuse monitoring by relay contact
- Mechanical current coding
- Plug-in technology without screw caps
- Suitable for the following fuse-links
  D01: 1, 2, 4, 6, 10, 13, 16 A
  D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads
- Other AC/DC voltages requires special types

Connection diagram



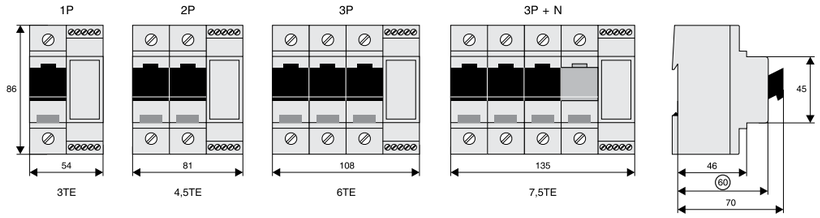
D0

Technical Data

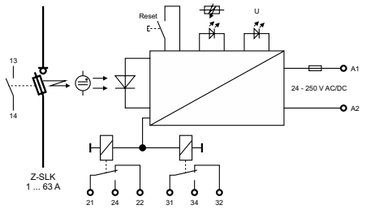
		Z-SLK/NEOZ
Electrical		
Number of poles		1P, 2P, 3P, 3P+N
Rated operational voltage	U_e	
AC 1P		50-230 V AC
2P, 3P, 3P+N		50-400 V
DC 1P		50-110 V DC
2P		50-250 V
Rated operational current	I_e	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 $kA_{r.m.s.}$
Utilization category		AC 22B/400V/63A, DC 21B/110V/63A per pole
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		
L1, L2, L3		0.5 W
N		1 W
Power loss per current path with fuse-link I_e L1, L2, L3		6.6 W
Max. permissible power loss of fuse-links		5.5 W
Auxiliary Switch 1 NO		5 A / 250 V AC
Relay Component electrical components		
Rated operational voltage range		24-250 V AC/DC
Rated operational voltage tolerance		±10%
Power consumption		1.25 VA
Frequency		DC (0Hz) 50-60 Hz
Function display		
Line voltage		1 LED green
Trouble		1 LED red
Duty		100%
Responding delay		approx. 100 ms - 1s
Reset time		1 s
Relay contacts		2 CO, 5 A / 250 V AC
Auxiliary switch rated impulse withstand voltage		4 kV
Overvoltage category		III
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		27 mm/pole (1.5MU) + 27 mm
Weight		
1P		224 g
2P		345 g
3P		450 g
3P+N		590 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (behind front plate)		IP20C
Upper and lower terminals		lift terminals
Terminal capacity		1.5-35 mm^2
Tightening torque of terminal screws		max. 4 Nm
Temperature range		
Ambient air		-25 to +40 °C, on 24h average ≤+35 °C
Storage		-25 to +60 °C
Temperature rise limits		
Terminals		≤+70 °K
Manual operating means		≤+25 °K
Parts intended to be touched		≤+40 °K
Parts need not to be touched		≤+50 °K
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600
Relay Component mechanical components		
Upper and lower terminals		lift terminals
Terminal capacity		
solid		0.14-4 mm^2
fine-wire		0.14-2.5 mm^2
Tightening torque of terminal screws		0.5-0.7 Nm

D0

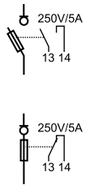
Dimensions (mm)



Simplified diagram

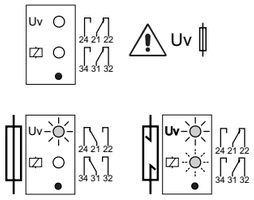


Function - Switch position



Relay - Fuse monitoring

Uv . . . Supply voltage relay



D0

Rated current (A)	Type Designation	Article No.	Units per package

Fuse-Link sets complete Z-SLS/B

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ
- 1 set consists of 3 fuse-links, 3 gauge-pieces, 1 plastic box in the color of the visual tripping indicator - to snap on DIN rail

With visual tripping indicator Z-SLS/B

- Rated operational voltage 50-400 V AC / 50-250 V DC

SG81211

1	Z-SLS/B-1A	268983	1 / 12
2	Z-SLS/B-2A	268984	1 / 12
4	Z-SLS/B-4A	268985	1 / 12
6	Z-SLS/B-6A	268986	1 / 12
10	Z-SLS/B-10A	268987	1 / 12
13	Z-SLS/B-13A	289972	1 / 12
16	Z-SLS/B-16A	268988	1 / 12
20	Z-SLS/B-20A	268989	1 / 12
25	Z-SLS/B-25A	268990	1 / 12
32	Z-SLS/B-32A	289973	1 / 12
35	Z-SLS/B-35A	268991	1 / 12
40	Z-SLS/B-40A	289974	1 / 12
50	Z-SLS/B-50A	268992	1 / 12
63	Z-SLS/B-63A	268993	1 / 12

With visual tripping indicator Z-SLS/B

- Rated operational voltage 24-60 V AC / V DC

2	Z-SLS/B/24-2A	268995	1 / 12
4	Z-SLS/B/24-4A	268996	1 / 12
6	Z-SLS/B/24-6A	268997	1 / 12
10	Z-SLS/B/24-10A	268998	1 / 12
13	Z-SLS/B/24-13A	289975	1 / 12
16	Z-SLS/B/24-16A	268999	1 / 12
20	Z-SLS/B/24-20A	269000	1 / 12
25	Z-SLS/B/24-25A	269001	1 / 12
32	Z-SLS/B/24-32A	289976	1 / 12
35	Z-SLS/B/24-35A	269002	1 / 12
40	Z-SLS/B/24-40A	289977	1 / 12
50	Z-SLS/B/24-50A	269003	1 / 12
63	Z-SLS/B/24-63A	269004	1 / 12

D0

Description Fuse-Link sets complete Z-SLS/B

- Fuse-Links with flashing function (Z-SLS/B) in case of disconnection
- Supplied as a set with 3 fuse-links and 3 gauge-pieces in plastic box of different colours which can be mounted onto DIN rail.
- Dimensions of plastic box:
  Frame size 45 mm
  Depth 75 mm
  Width 54 mm

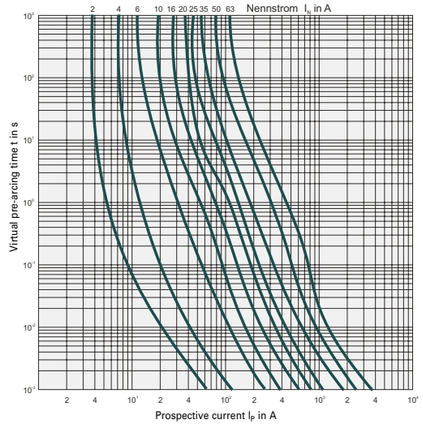
Connection diagram

Technical Data

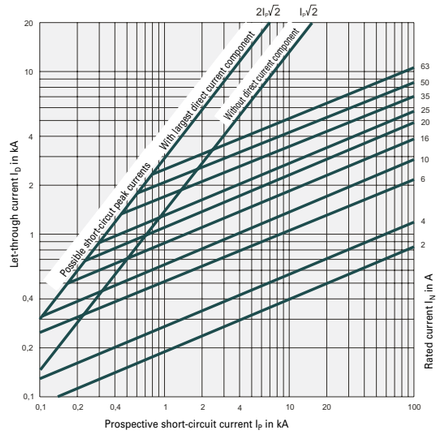
	Z-SLS/B
Electrical	
Operating class	gG (gL)
Rated voltage	
Z-SLS/B/24	24-60 V AC, 24-60 V DC
Z-SLS/B	50-400 V AC / 50-250V DC
Test voltage	5 kV
Mechanical	
Size	
D01	1, 2, 4, 6, 10, 13, 16 A
D02	20, 25, 32, 35, 40, 50, 63 A

Characteristics

Time/current characteristics of D0-Fuse-Links 2 ... 63A gG(gL)



Let-through characteristics of D0-Fuse-Links 2 ... 63A gG(gL)



D0

Rated current (A)	Type Designation	Article No.	Units per package

Solid-link Set complete Z-SLS/TR-SET

- For Z-SLS/NEOZ, Z-SLK/NEOZ, Z-SLS/CEK
- 1 set consists of 3 solid-link inserts, 3 gauge-pieces, 1 plastic box to be snapped onto DIN rail
- By installing this set, the fuse-switch-disconnector is converted into a switch-disconnector

SG81311

63	Z-SLS/TR-SET	100660	1 / 12

Description Solid-link Set complete Z-SLS/TR-SET

- Supplied as a set with 3 solid-links inserts and 3 gauge-pieces in plastic box which can be mounted onto DIN rail.
- Dimensions of plastic box:
  Frame size 45 mm
  Depth 75 mm
  Width 54 mm

Connection diagram

Technical Data

		Z-SLS/TR-SET
Electrical		
Rated voltage		400 V AC
Rated constant current	I_u	63 A
Test voltage		5 kV
Mechanical		
Size D02		63 A

D0

Description	Type Designation	Article No.	Units per package

Switch-on-locking Z-SLZ/SP

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ
- Only one lock per device required

SG81011

Plastic lock	Z-SLZ/SP	268981	1 / 12

D0

SG80811

Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
Fuse-Switch-Disconnector D02+D01				
With visual tripping indicator Z-SLS/CB - Current coding by cartridge-ring adapter inserts				
1	max. 63	Z-SLS/CB/1	248247	12
1+N	max. 63	Z-SLS/CB/1+N	167282	6
2	max. 63	Z-SLS/CB/2	248248	6
3	max. 63	Z-SLS/CB/3	248249	4
3+N	max. 63	Z-SLS/CB/3+N	167283	3

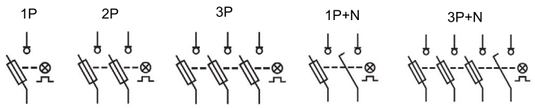
Accessories

Fuse-Links Z-D0./SE-..
Cartridge-ring adapter inserts D01 Z-D02-D01/PE-..
Cartridge-ring adapter inserts D02 Z-D02/PE-..
Adapter Spring D01 Z-SLS/CB-HF see chapter Accessories Fuse Devices

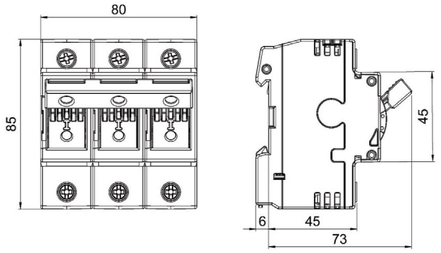
Description Fuse-Switch-Disconnector with visual tripping indicator Z-SLS/CB - Current coding by cartridge-ring adapter inserts

- Design according to IEC/EN 60947-3
- Current coding by means of cartridge-ring adapter inserts
- Visual tripping indicator is flashing
- Suitable for the following fuse-links
  D01: 2, 4, 6, 10, 13, 16 A with cartridge-ring adapter insert Z-D02-D01/PE-.. and Adapter Spring Z-SLS/CB-HF
  D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads

Connection diagram



Dimensions (mm)



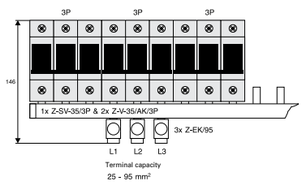
Poles	Dimension a [mm]
1P	27
1+N	53
2P	53
3P	80
3+N	107

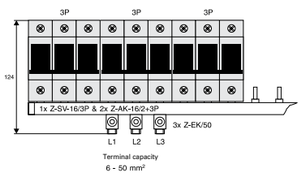
D0

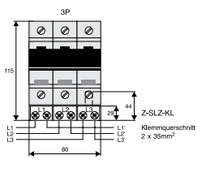
Technical Data

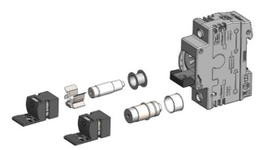
		Z-SLS/CB
Electrical		
Number of poles		1P, 1+N, 2P, 3P, 3+N
Rated operational voltage	U_e	
1P, 1P+N		230 V AC
2P, 3P, 3P+N		400 V AC
Minimum operational voltage		50 V AC
Rated insulation voltage	U_i	800 V AC
Rated operational current	I_e	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 $kA_{r.m.s.}$
Utilization category		AC 22B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path	I_e	
L1, L2, L3		1.6 W
N		1.2 W
Max. power loss of fuse-link	P_n	5.5 W
Voltage range of blink indicator		50 - 400 V AC
Mechanical		
Device depth		79 mm
Device height		85 mm
Device width		
1P		27 mm
2P, 1P+N		53 mm
3P		80 mm
3P+N		107 mm
Weight		
1P		102 g
1P+N		201 g
2P		206 g
3P		308 g
3P+N		410 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		lift terminal, stainless steel anti-magnetic
Terminal capacity		1.5 - 35 mm^2
		AWG 2 - 16
Tightening torque of terminal screws		max. 3 Nm
Degree of protection		IP20
Temperature range		
Ambient air		-25 to +40°C, ≤ +35°C 24 h average.
Storage		-25 to +55°C
Temperature-rise limits (IEC 61439-1)		
Terminals (supply and load)		≤ +70°K
Manual operating means		≤ +25°K
Parts intended to be notched but not hand-held		≤ +40°K
Parts not to be touched during normal operation		≤ +50°K
Flame class		V0, glowing wire test 960°C (UL94)
Pollution degree		3
Comparative tracking index		CTI 600
Plastic		Halogen, silicone, and phosphor free

Examples





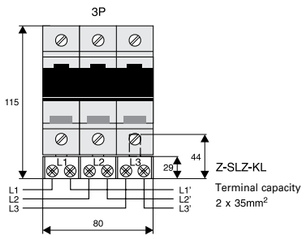




D0

	Size	Type Designation	Article No.	Units per package
Adapter Spring Z-SLS/CB-HF				
• For Z-SLS/CB/. for the use of fuse-links size D01				
wa_sg02712 	D01	Z-SLS/CB-HF	263154	12 / 288

	Description	Type Designation	Article No.	Units per package
Double Terminal Z-SLZ/KL				
• For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ				
SG60212 	Terminal 2 x 3x35 mm²	Z-SLZ/KL	268982	15



Accessories for Z-SLS

For busbar blocks and feed terminals refer to the technical part, fuse-switch-disconnector, and ordering part, busbar systems.

D0 C

	Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
Switch-Disconnector-Fuse D02+D01					
D02-LTS					
• Operation indication • Fuse monitoring and thermal monitoring • Version with auxiliary Switch: D02-LTS/63-3-HK					
SG80711 	3	max. 63	D02-LTS/63-3	114320	3
	3	max. 63	D02-LTS/63-3-HK	114322	3
	3N	max. 63	D02-LTS/63-3N	114321	3
D02-LTS/P					
• Phase indication and rotation field indication • Fuse monitoring and thermal monitoring • Version with Error Relay: D02-LTS/P63-3N-R					
	3N	max. 63	D02-LTS/P63-3N	EP-504771	3
	3N	max. 63	D02-LTS/P63-3N-R	EP-504772	4
	D02 fuse link included				
	3N	20	D02-LTS/P63/FF20-3N	EP-504773	3
	3N	25	D02-LTS/P63/FF25-3N	EP-504774	3
	3N	35	D02-LTS/P63/FF35-3N	EP-504775	3
	3N	40	D02-LTS/P63/FF40-3N	EP-504776	3
	3N	50	D02-LTS/P63/FF50-3N	EP-504777	3

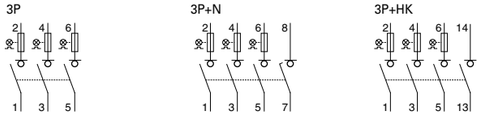
Accessories for D02-LTS....

	Rated current (A)		Type Designation	Article No.	Units per package
SG81811 					
Adapter Spring Z-D02-LTS-HF					
• To accommodate D01 fuse-links or cylindrical fuse-links 10x38 in the Switch-disconnetor fuse D02-LTS/.....					
	16	D02-D01	Z-D02-LTS-HF	114323	12 / 288
	32	C 10x38			
	Fuse links				
	D01/D02 neozed fuses		Refer to chapter „Fuse-Links Z-D0./SE, Operating class gG (gL)"		
	Cylindrical fuse size 10x38		Refer to catalog CA134002EN chapter: „Cylindrical fuse links"		

Description

- Design according to IEC/EN 60947-3
- Suitable for components according to DIN VDE 0636-3, DIN VDE 0636-2
- To be operated by ordinary persons according to IEC/EN 61439-3 (VDE 0660-600-3)
- Current coding by means of cartridge-ring adapter inserts
- Only 4MU in width, busbar compatible to xPole switchgear
- Visual tripping indication (operation indication for D02-LTS and phase indication for D02-LTS/P)
- Rotary field indication (D02-LTS/P)
- Temperature monitoring
- Suitable for fuse-links with operating classes gG (gL), aM
  D01: 2, 4, 6, 10, 13, 16 A with cartridge-ring adapter insert Z-D02-D01/PE-.. and Adapter Spring Z-D02-LTS-HF
  D02: 20, 25, 32, 35, 50, 63 A
  Cylindrical 10x38 up to 32 A with adapter spring Z-D02-LTS-HF
- Can be sealed with leads

Connection diagram

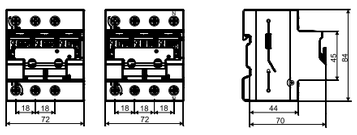


D0 C

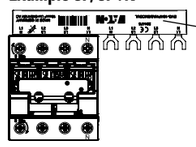
Technical Data

		D02-LTS	D02-LTS/P
Electrical			
Number of poles		3P, 3P+N, 3P+HK	3P+N, 3P+N+R
Rated operational voltage	U_e	400 V AC	
Rated operational current	I_e	D0: 63 A	
		10x38: 32A	
Rated constant current	I_u	D0: 63 A	
		10x38: 32 A	
Conditional rated short circuit current	I_q	50 $kA_{r.m.s.}$	
Utilization category		AC 22B	
Overvoltage category		IV	
Rated insulation voltage	U_i	400 V AC	
Rated peak withstand voltage	U_{imp}	6 kV	
Power loss per current path with fuse-link(L1,L2,L3)	I_e	1.8 W	
Power loss per current path without fuse-link (N)	I_e	1.1 W	
Max. power loss of fuse-link	P_n	5.5 W	
Electronic Circuit:			
Rated operational voltage range		400 +/- 10% V AC	
Power consumption		3 x 176 mVA	
Auxiliary switch:			
Contacts		1 NO	
Rated operating Voltage/Current	U_e / I_e	250V / 5A AC	
Max. thermal back-up protection		50 - 400 V AC	
Relay:			
Rated operational voltage / current	U_e / I_e		cosΦ=1 85°C: 250 V / 5 A AC
			AC-15: 240 V / 0.75 A AC
			AC-15: 120 V / 1.5 A DC
			DC-13: 24 V / 1 A DC
Dielectric Strength Coil-contact circuit			4 $kV_{eff / r.m.s.}$
Dielectric Strength Open contact circuit			1 $kV_{eff / r.m.s.}$
Electrical			
Device depth		76 mm	
Device height		84 mm	
Device width		72 mm	
Weight			
3P		325 g	
3P+N		365 g	
3P+HK / 3P+N+R		382 g	
Mounting		Quick fastening on DIN rail according to IEC/EN 60715	
Degree of protection		IP20	
Upper and lower terminals		lift terminal (stainless steel anti-magnetic)	
Terminal capacity		1.5 - 25 mm^2	
		AWG 4 - 16	
Tightening torque of terminal screws		max. 3 Nm	
Temperature range			
Ambient air		-25 to +40 °C, ≤ +35°C 24h average.	
Storage		-25 to +60 °C	
Temperature-rise limits (IEC 61439-1)			
Terminals (supply and load)		≤ +70 °K	
Manual operating means		≤ +25 °K	
Parts intended to be notched but not hand-held		≤ +40 °K	
Parts not to be touched during normal operation		≤ +50 °K	
Flame class		V0, glowing wire test 960°C (UL94)	
Pollution degree		3	
Comparative tracking index	CTI	600	
Plastic		Halogen, silicone, and phosphor free	

Dimensions (mm)



Example 3P, 3P+N



EVG-16/4PHAS/8MODUL

C

Fuse-Disconnector (empty)

- For cylindrical fuse-links
- The visual tripping indicator indicates the tripped fuse-link
- Can be sealed with leads

SG81211

SG36412

For industry Z-SH

Without visual tripping indicator

Poles	Size	Type Designation	Article No.	Units per package
1	10x38	Z-SH/1	263876	12 / 120
1+N	10x38	Z-SH/1N	263877	12 / 120
2	10x38	Z-SH/2	263878	6 / 60
3	10x38	Z-SH/3	263879	4 / 40
3+N	10x38	Z-SH/3N	263880	4 / 40

With visual tripping indicator

Poles	Size	Type Designation	Article No.	Units per package
1	10x38	Z-SHL/1	263883	12 / 120
1+N	10x38	Z-SHL/1N	263884	12 / 120
2	10x38	Z-SHL/2	263885	6 / 60
3	10x38	Z-SHL/3	263886	4 / 40
3+N	10x38	Z-SHL/3N	263887	4 / 40

SG00412

For household applications Z-SI, 1pole

Without visual tripping indicator

Rated current (A)	Size	Type Designation	Article No.	Units per package
10	8.5x23	Z-SI/10/1	263889	12 / 120
16	10.3x25.8	Z-SI/16/1	263890	12 / 120
20	8.5x31.5	Z-SI/20/1	263891	12 / 120
25	10.3x31.5	Z-SI/25/1	263892	12 / 120
32	10.3x38	Z-SI/32/1	263893	12 / 120

With visual tripping indicator

20	8.5x31.5	Z-SIL/20/1	263901	12 / 120
25	10.3x31.5	Z-SIL/25/1	263902	12 / 120
32	10.3x38	Z-SIL/32/1	263903	12 / 120

SG53912

For household applications Z-SI, 1+Npole

Without visual tripping indicator

10	8.5x23	Z-SI/10/1N	263894	12 / 120
16	10.3x25.8	Z-SI/16/1N	263895	12 / 120
20	8.5x31.5	Z-SI/20/1N	263896	12 / 120
25	10.3x31.5	Z-SI/25/1N	263897	12 / 120
32	10.3x38	Z-SI/32/1N	263898	12 / 120

With visual tripping indicator

20	8.5x31.5	Z-SIL/20/1N	263938	12 / 120
25	10.3x31.5	Z-SIL/25/1N	263939	12 / 120
32	10.3x38	Z-SIL/32/1N	263940	12 / 120

Accessories for Z-SH, Z-SI

Fuse Link	
Cylindrical fuse size 10x38	Refer to catalog CA134002EN chapter: “Cylindrical fuse links”

C

Description Fuse-Disconnector for Industrial Applications Z-SH

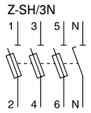
- Design according to IEC/EN 60947-3
- Design
  without visual tripping indicator Z-SH
  with visual tripping indicator Z-SHL
- Can be sealed with leads
- Supplied without fuse-links

Technical Data

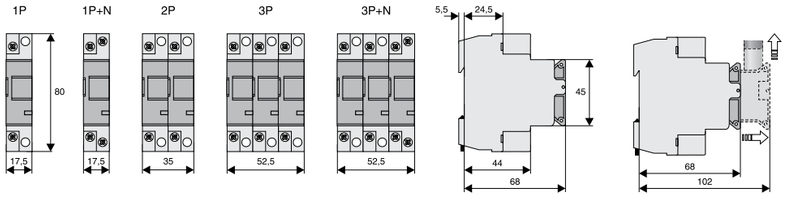
		Z-SH	
Electrical			
Number of poles		1P, 1P+N, 2P, 3P, 3P+N	
Rated voltage			
1P, 1P+N		230 V AC	
2P, 3P, 3P+N		400 V AC	
Rated operational current	I_e	32 A	
Conditional short-circuit current		10 $kA_{r.m.s.}$	
Utilization category		AC 20B	
Overvoltage category		IV	
Rated peak withstand voltage	U_{imp}	4 kV	
Fuse-Links		10, 16, 20, 25, 32 A	
Operating class		gG(gL) / aM	
Max. Power loss per current path		3.2 W	
Mechanical			
Frame size		45 mm	
Device height		80 mm	
Device width		according to dimensioned drawing	
Weight		Z-SH	Z-SHL
1P		74 g	76 g
1P+N		84 g	86 g
2P		156 g	158 g
3P		234 g	236 g
3P+N		244 g	246 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715	
Degree of protection (built-in)		IP20 (IP40)	
Upper and lower terminals		lift terminals	
Terminal capacity		1.5-10 mm^2	
Tightening torque of terminal screws		max. 2 Nm	
Temperature range		-25 to +60 °C	
Dimensions of fuse-link		10.3 x 38 mm	

Connection diagram

Z-SH/3N



Dimensions (mm)



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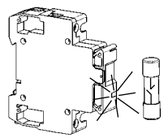
Visual Tripping Indicator



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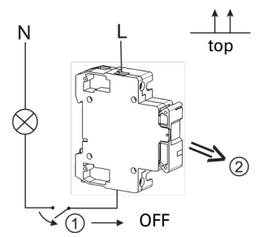
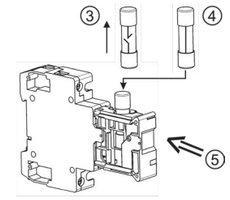




Do not switch the fuse-disconnector under load

C

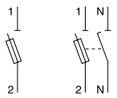
Description Fuse-Disconnector for Household Applications Z-SI

- Design according to IEC/EN 60947-3
- Design
  without visual tripping indicator Z-SI
  with visual tripping indicator Z-SIL
- Can be sealed with leads
- The open fuse drawer can be secured against re-switch-on by means of a padlock
- Supplied without fuse-links

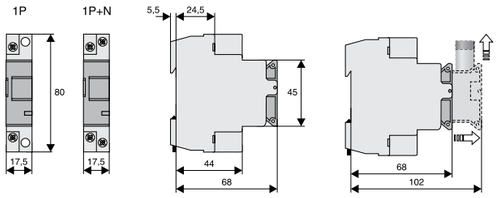
Technical Data

		Z-SI	
Electrical			
Number of poles		1P, 1P+N	
Rated voltage		230 V AC	
Rated operational current	I_e	32 A	
Conditional short-circuit current		10 $kA_{r.m.s.}$	
Utilization category		AC 20B	
Rated peak withstand voltage	U_{imp}	4 kV	
Fuse-Links		10, 16, 20, 25, 32 A	
Operating class		gG(gL) / aM	
Max. Power loss per current path		3.2 W	
Mechanical			
Frame size		45 mm	
Device height		80 mm	
Device width		17.5 mm	
Weight		Z-SI	Z-SIL
1P		74 g	76 g
1P+N		84 g	86 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715	
Degree of protection (built-in)		IP20 (IP40)	
Upper and lower terminals		lift terminals	
Terminal capacity		1.5-10 mm^2	
Tightening torque of terminal screws		max. 2 Nm	
Dimensions of fuse-link			
Rated current (A)		mm	
10		8.5 x 23	
16		10.3 x 25.8	
20		8.5 x 31.5	
25		10.3 x 31.5	
32		10.3 x 38	

Connection diagram

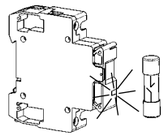


Dimensions (mm)



C

Visual Tripping Indicator



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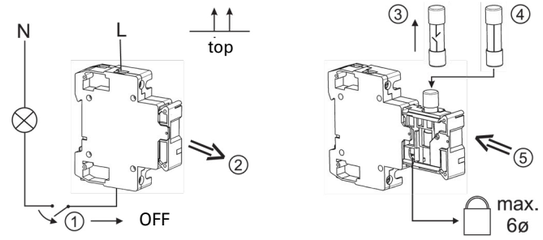


Do not switch the fuse-disconnector under load

C

SG27212

wa_sg01917

wa_sg02017

Poles	Size	Type Designation	Article No.	Units per package

Fuse-Switch-Disconnector (empty) C10-SLS, VLCE

- The visual tripping indicator indicates the tripped fuse-link
- Rated operational voltage 690 V AC
- For cylindrical fuse-links with operating classes gG (gL), aM
- Can be sealed with leads
- Supply side from top or bottom

Size 10x38, Rated operational current 32 A, C10-SLS

Without Visual Tripping Indicator

1	10x38	C10-SLS/32/1	112220	12 / 108
1+N	10x38	C10-SLS/32/1N	112221	12 / 108
2	10x38	C10-SLS/32/2	112222	6 / 54
3	10x38	C10-SLS/32/3	112223	4 / 36
3+N	10x38	C10-SLS/32/3N	112224	4 / 36

With Visual Tripping Indicator

1	10x38	C10-SLS/32/1-L 1	112225	12 / 108
2	10x38	C10-SLS/32/2-L	112227	6 / 54
3	10x38	C10-SLS/32/3-L	112228	4 / 36

Size 14x51, Rated operational current 50 A, VLCE14

Without Visual Tripping Indicator

1	14x51	VLCE14-1P	192373	12 / 96
1+N	14x51	VLCE14-1P+N	192375	6 / 48
2	14x51	VLCE14-2P	192376	6 / 48
3	14x51	VLCE14-3P	192377	4 / 32
3+N	14x51	VLCE14-3P+N	192379	3 / 24

With Visual Tripping Indicator

1	14x51	VLCE14-1P/L	192374	12 / 96
3	14x51	VLCE14-3P/L	192378	4 / 32

Size 22x58, Rated operational current 100 A, VLCE22

Without Visual Tripping Indicator

1	22x58	VLCE22-1P	192380	3 / 105
1+N	22x58	VLCE22-1P+N	192381	2 / 48
2	22x58	VLCE22-2P	192382	2 / 48
3	22x58	VLCE22-3P	192370	1 / 35
3+N	22x58	VLCE22-3P+N	192372	1 / 24

With Visual Tripping Indicator

3	22x58	VLCE22-3P/L	192371	1 / 35

Accessories

Fuse Link	
Cylindrical fuse size 10x38	Refer to catalog CA134002EN chapter: “Cylindrical fuse links“

C

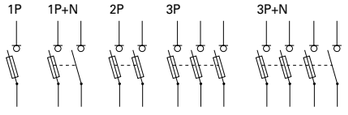
Description Fuse-Switch-Disconnector C10-SLS, VLCE

- Design according to IEC/EN 60947-3
- Design /L with visual tripping indicator (flashing)
- Suitable for cylindrical fuse-links with operating classes gG, aM
  - 10x38 C10-SLS
  - 14x51 VLCE14
  - 22x58 VLCE22
- Can be sealed with leads
- Supplied without fuse-links

Technical Data

		C10-SLS	VLCE14	VLCE22
Electrical				
Number of poles		1P, 1P+N, 2P, 3P, 3P+N	1P, 1P+N, 2P, 3P, 3P+N	1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_e			
1P		690 V, 50 Hz	690 V, 50 Hz	690 V, 50 Hz
1P+N		400 V, 50 Hz	690 V, 50 Hz	690 V, 50 Hz
2P, 3P, 3P+N		690 V, 50 Hz	690 V, 50 Hz	690 V, 50 Hz
Rated operational current	I_e	32 A	50 A	100 A
Conditional rated short circuit current		100 kA (at 400 V)	120 kA	120 kA
Rated short-time withstand current	I_{cw}	300 A	600 A	1200 A
Utilization category	U_i	AC 22B	AC 22B	AC 21B
Rated insulation voltage		690 V	690 V	690 V
Overvoltage category		II	III	III
Rated impulse withstand voltage	U_{imp}	4 kV	8 kV	8 kV
Power loss per current path without fuse-link		0.9 W	1 W	3.1 W
Maximum permissible power loss of fuse-links				
gG		3 W	5 W	9.5 W
aM		1.2 W	3 W	7 W
Mechanical				
Frame size		45 mm	45 mm	45 mm
Device height		83.3 mm	94 mm	121 mm
Device width		17.5 mm / pole	W = 27 mm / pole	W = 36 mm / pole
Weight				
1P		58 g	100 g	156 g
1P+N		70 g	222 g	351 g
2P		120 g	206 g	317 g
3P		180 g	310 g	476 g
3P+N		195 g	434 g	671 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715		
Degree of protection		IP20	IP20	IP20
Upper and lower terminals		lift terminals	lift terminals	lift terminals
Terminal capacity		0.5 - 10 mm²	1.5 - 35 mm²	4 - 50 mm²
		AWG 20-8	AWG 18-6	AWG 12-2
Tightening torque of terminal screws		≤ 1.2 Nm	2.5 - 3 Nm	2.5 - 3 Nm
Ambient temperature range		-25 to +40 °C	-25 to +40 °C	-25 to +40 °C
Flame class		glow wire 960 °C	glow wire 960 °C	glow wire 960 °C
Pollution degree		2	3	3
Comparative tracking index		CTI 450	CTI 450	CTI 450

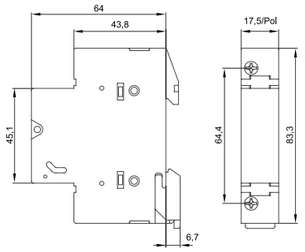
Connection diagram



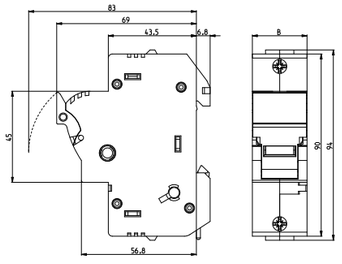
C

Dimensions (mm)

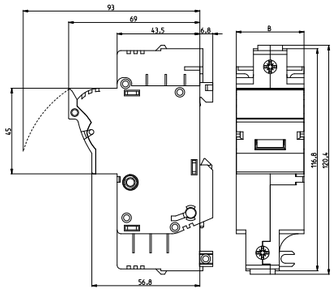
C10-SLS



VLCE14



VLCE22



D0

Size	Rated current (A)	Type Designation	Article No.	Units per package

Fuse-Links Z-D0./SE, Operating class gG (gL)

- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

D01	2	Z-D01/SE-2	288934	12/288
D01	4	Z-D01/SE-4	288935	12/288
D01	6	Z-D01/SE-6	288936	12/288
D01	10	Z-D01/SE-10	288937	12/288
D01	13	Z-D01/SE-13	288938	12/288
D01	16	Z-D01/SE-16	288939	12/288

D02	20	Z-D02/SE-20	288940	12/144
D02	25	Z-D02/SE-25	288941	12/144
D02	32	Z-D02/SE-32	288942	12/144
D02	35	Z-D02/SE-35	288943	12/144
D02	40	Z-D02/SE-40	288944	12/144
D02	50	Z-D02/SE-50	288945	12/144

Description Fuse-Links Z-D0./SE, Operating class gG (gL)

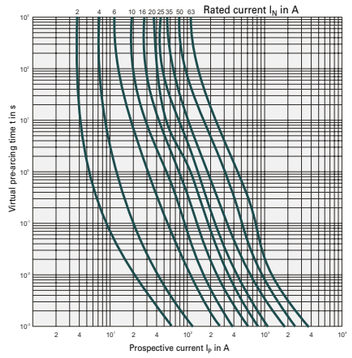
- According to DIN VDE 0636, DIN 49522
- For Fuse-Switch-Disconnector Z-SLS, -SLK
- For Fuse-Bases D0.-SO and Z-D02/R/3

Technical Data

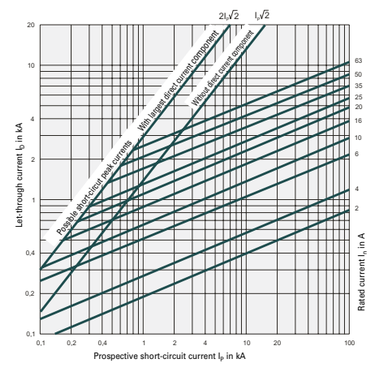
		Z-D0./SE
Electrical		
Operating class		gG (gL)
Rated voltage		
AC		400 V
DC		250 V
Rated frequency		45-65 Hz
Rated insulation voltage	U_i	2500 V
Rated short-circuit breaking capacity		
AC		50 kA
DC		8 kA
Mechanical		
Size		
D01		1, 2, 4, 6, 10, 13, 16 A
D02		20, 25, 32, 35, 40, 50, 63 A

Characteristics Z-D0./SE

Time/current characteristics of Z-D0-Fuse-Links 2 ... 63A gG(gL)



Let-through characteristics of Z-D0-Fuse-Links 2 ... 63A gG(gL)



D0

Size	Rated current (A)	Type Designation	Article No.	Units per package

Cartridge-Ring Adapter Insert

Cartridge-Ring Adapter Insert Z-D0./PE

- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

SG81611

D01	2	Z-D01/PE-2	288909	12/288
D01	4	Z-D01/PE-4	288910	12/288
D01	6	Z-D01/PE-6	288911	12/288
D01	10, 13	Z-D01/PE-10	288912	12/288
D02	20	Z-D02/PE-20	288913	12/288
D02	25	Z-D02/PE-25	288914	12/288
D02	35, 32	Z-D02/PE-35	288915	12/288
D02	40	Z-D02/PE-40	288916	12/288
D02	50	Z-D02/PE-50	288917	12/288

Cartridge-Ring Adapter Insert Z-D02-D01/PE

- D01 for Fuse-Base D02 and Fuse-Switch-Disconnector D02
- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

SG81511

Description Cartridge-Ring Adapter Insert Z-D0./PE, Z-D02-D01/PE

- According to DIN 49523
- Used for current coding of D0.-SO, Z-D02/R/3, Z-SLS/CB

Technical Data

	Z-D0./PE, Z-D02-D01/PE
Electrical	
Rated current	
D01	2 - 10 A
D02	20 - 50 A
D02-D01	2 - 16 A

D0

Size	Rated current (A)	Type Designation	Article No.	Units per package

Screw Caps Z-D0./SK

wa_sg04013

D01	max. 16	Z-D01/SK	100650	20
D02	max. 63	Z-D02/SK	100651	20

Description Screw Caps Z-D0./SK

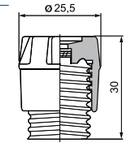
- Used for D0.-SO, Z-D02/R/3
- Adapter Spring Z-D02/SIKA-HF for application of D01 fuse-links into the screw cap Z-D02/SK available

Technical Data

	Z-D0./SK
Electrical	
Rated current	
D01	max. 16 A
D02	max. 63 A
Mechanical	
Electrical thread	
D01	E14
D02	E18

Practical Hint

A complete and functioning D-fuse system consists of base + fuse-link + cartridge-ring adapter insert + screw cap.
The cartridge-ring adapter insert is not required for the highest rated current of each size (D01...16A and D02...63A).



Size	Type Designation	Article No.	Units per package

Adapter Spring Z-D02/SIKA-HF

- To apply D01-Fuse-Links into the screw cap Z-D02/SK

wa_sg02612

Cartridge-ring adapter insert plier Z-D0-PE-Z

SG19707

D01, D02	Z-D0-PE-Z	114324	1 / 10

D

Screw-in Gauge Ring Z-DII./PS

wa_sg03312

Size	Rated current (A)	Type Designation	Article No.	Units per package
DII E27	2	Z-DII/PS-2A	112138	25/1500
DII E27	4	Z-DII/PS-4A	112139	25/1500
DII E27	6	Z-DII/PS-6A	112140	25/1500
DII E27	10	Z-DII/PS-10A	112141	25/1500
DII E27	16	Z-DII/PS-16A	112142	25/1500
DII E27	20	Z-DII/PS-20A	112143	25/1500
DII E27	25	Z-DII/PS-25A	112144	25/1500
DIII E33	35	Z-DIII/PS-35A	112145	25/850
DIII E33	50	Z-DIII/PS-50A	112146	25/850
DIII E33	63	Z-DIII/PS-63A	112147	25/850

Description Screw-in Gauge Ring Z-DII./PS

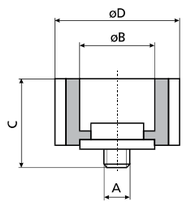
- Used for current coding of DII.-SO/...-PS

Technical Data

	Z-DII./PS
Electrical	
Rated current	
DII	2 - 25 A
DIII	35 - 63 A

Dimensions (mm)

I_n (A)	A	B	C	D
DII for Fuse-Base E27				
2	3/16"	6.5	17	24
4	3/16"	6.5	17	24
6	3/16"	6.5	17	24
10	3/16"	8.5	17	24
16	3/16"	10.5	17	24
20	3/16"	12.5	17	24
25	3/16"	14.5	17	24
DIII for Fuse-Base E33				
35	3/16"	16.5	17	24
50	3/16"	18.5	17	24
63	3/16"	20.5	17	24



D

Screw Caps CD, Z-DII./SK

SG07608

Size	Rated voltage (V AC)	Type Designation	Article No.	Units per package
DIII E33	690	Z-DIII/SK-690	118904	3

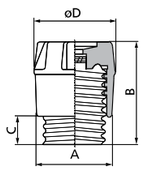
Description Screw Caps CD, Z-DII./SK

- Used for DII.-SO

Technical Data

Dimensions (mm)

I_n (A)	A	B	C	D
CD27	E27	44	12	34
CD33	E33	44	12	43
Z-DIII/SK-690	43	65	12	43



Practical Hint

A complete and functioning D-fuse system consists of
– base for screw-in gauge ring + fuse-link + screw-in gauge ring + screw cap
– base for gauge ring + fuse-link + gauge ring + screw cap
The gauge ring is not required for the highest rated current of each size (DII ... 25 A and DIII ... 63 A).

NH

	Size	Type Designation	Article No.	Units per package
	Solid-Links Z-NH-../TR			
wa_sg04413 	00	Z-NH-00/TR	263114	3 / 180
	1	Z-NH-1/TR	263115	6 / 60
	2	Z-NH-2/TR	263116	6 / 60
	3	Z-NH-3/TR	263117	3 / 30

NH

	Size	Rated current (A)	Type Designation	Article No.	Units per package
	NH-Fuse-Links, 500 V AC, Z-NH				
	• Operating class gG (gL)				
wa_sg03412 	1	63	Z-NH-1/63	290011	3
	1	80	Z-NH-1/80	290012	3
	2	250	Z-NH-2/250	290022	3

Description NH-Fuse-Links, 500 V AC, Z-NH

- Design according to ÖVE-SN 40, IEC 60269, VDE 0636, SEV 1066
- Dimensions according to Austrian standard ÖNORM E-6020, DIN 43.620
- NH-fuse-links of operating class gG/gL are used for line protection. They reliably disconnect overcurrent and short-circuit current above the permitted levels up to the nominal breaking current.
- gG/gL NH-fuse-links also protect electrical systems and equipment against the electrodynamic effects of high short-circuit currents.
- Insulating bodies of steatite/corderite
- Full contact blade of silver-plated copper
- Double blow-out indicator (flat indicator and centre indicator), live grips
- Corrosion-proof
- NH-fuse-links have a selectivity of 1:1.6 (ratio of the series-connected nominal currents), permitting optimum utilization and protection of line cross-sections.
- Strict current limitation permits reduced mechanical dimensions of electrical systems
- High breaking capacity of 120 kA

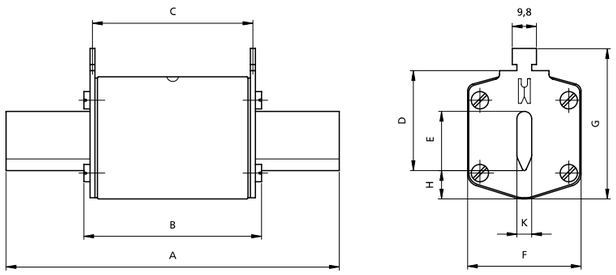
NH

Technical Data

	Z-NH-1/	Z-NH-2/
Electrical		
Rated voltage		
AC	500 V	500 V
DC	440 V	440 V
Nominal current	50-250 A	100-400 A
Rated frequency	45-62 Hz	45-62 Hz
Nominal breaking capacity		
AC	120 kA	120 kA
DC	25 kA	25 kA
Nominal breaking capacity		
I_n = 10 A	-	-
16 A	-	-
20 A	-	-
25 A	-	-
35 A	-	-
40 A	-	-
50 A	5.4 W	-
63 A	6.3 W	-
80 A	7.2 W	-
100 A	8.6 W	8.8 W
125 A	11.9 W	12.1 W
160 A	13.9 W	14.0 W
200 A	15.2 W	15.2 W
250 A	21.8 W	21.8 W
315 A	-	23.7 W
400 A	-	30.5 W
500 A	-	-
630 A	-	-

Dimensions (mm)

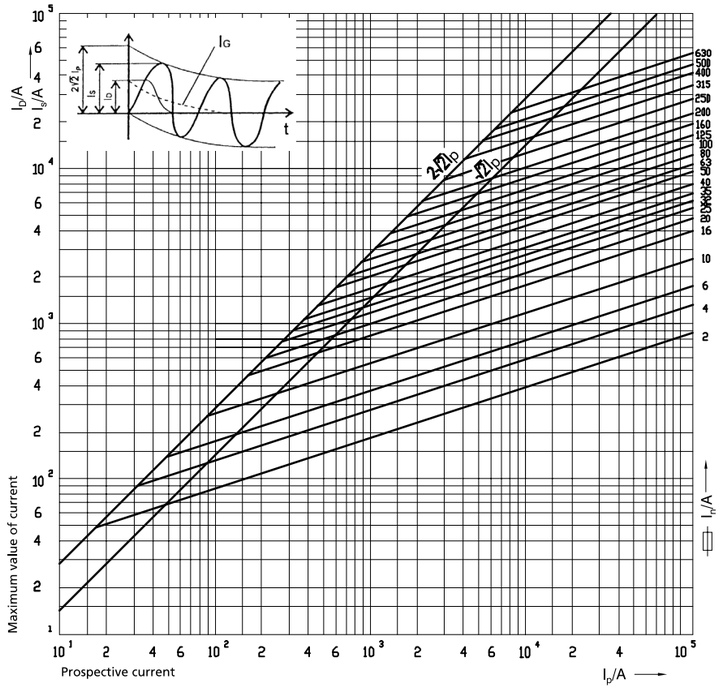
Type		Size	A	B	C	D	E	F	G	H	K
Z-NH-00/	up to 100 A	000	79	53	47	35	15	21	52	7.5	6
	125 - 160 A	00	79	53	47	35	15	28	56	12	6
Z-NH-1/	up to 160 A	1C	135	68	65	40	15	28	61	12	6
	200 - 250 A	1	135	72	65	40	20	46	65	14	6
Z-NH-2/	up to 250 A	2C	150	72	65	48	20	46	73	14	6
	315 - 400 A	2	150	72	65	48	26	54	73	14	6
Z-NH-3/	up to 400 A	3C	150	72	65	60	26	54	84	14	6
	500 - 630 A	3	150	72	65	60	33	65	84	14	6



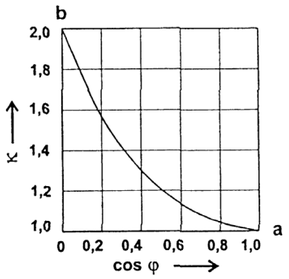
NH

Let-through Current Characteristic, Current Limitation Diagram

The characteristic shows the limited let-through current values (peak values) depending on the prospective short-circuit current (r. m. s.) under unfavourable connection conditions and depending on the respective nominal current.



Correction Factor for DC Component



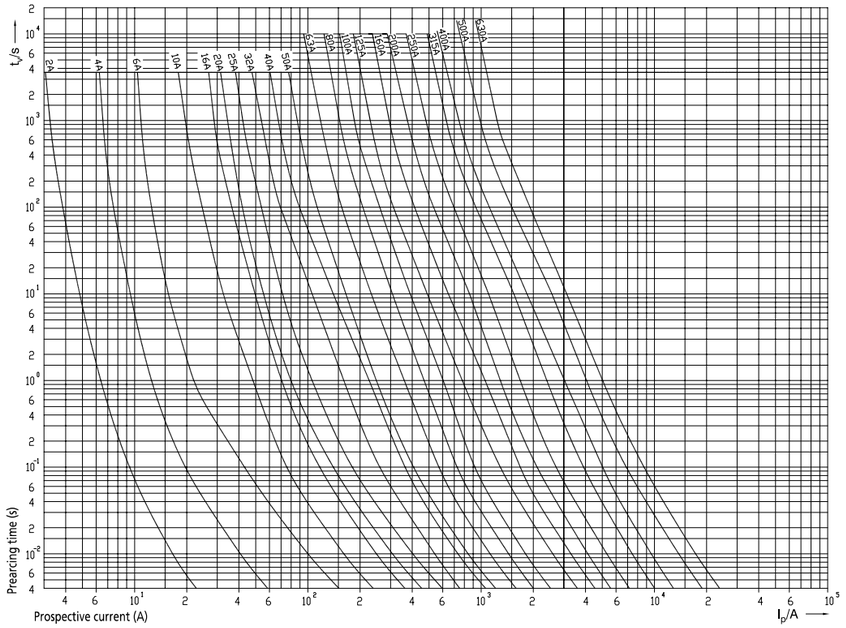
a Surge short-circuit current without DC component (κ = 1)
b Surge short-circuit current with maximum DC component (κ = 2)

I_D let-through current
I_G declining DC component
I_p prospective short-circuit current
I_s surge short-circuit current = $I_p \cdot \kappa \cdot \sqrt{2}$
κ κ=2 for cosρ=0, κ=1 for cosρ=1

Time-Current Characteristics

For NH-fuse-links 2 - 630 A operating class gL/gG

The time-current characteristics are valid at an ambient temperature of 20±5°C C and for the cable (line) cross-sections assigned in the regulations for test arrangements.



sg68912

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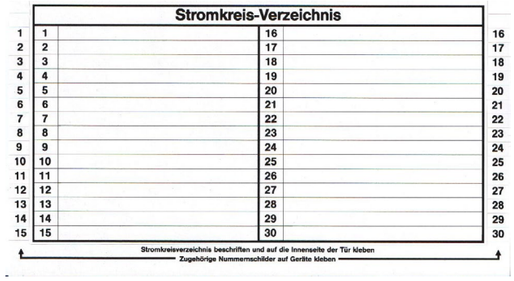


sg68912

	Type Designation	Article No.	Units per package
Schuko socket outlet Z-SD230			
Schuko Standard	Z-SD230	266875	10 / 50
Earth pin with integrated increased protection against accidental contact	Z-SD230-BS	266876	10 / 50
Accessories Busbar Block			
Busbar	Z-SV-10/1P+N-SD	269526	10
End caps	Z-V-AK/2+3P	264930	10 / 600

Description Schuko socket outlet Z-SD230

- Design according to VDE, ÖVE, IEC 60884-1, DIN 49440-1
- Modular busbar connection system L/N
- Screw fastening is possible
- Width 2.5MU
- Busbar block Z7-SD/1P+N 10 mm2 available
- Model -BS with integrated increased protection against accidental contact and earth pin

Technical Data

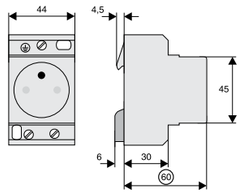
	Z-SD230
Electrical	
Standards	IEC 60884-1, DIN 49440-1
Rated voltage	250 V AC
Rated current	10/16 A
Mechanical	
Frame size	45 mm
Device height	76 mm
Device width	44 mm
Mounting	quick fastening on DIN rail IEC/EN 60715, screw-mounting possible
Degree of protection, built-in	IP40, IP20 without front cover
Upper and lower terminals	lift terminals
Terminal capacity	1 to 2x2.5 mm^2
Ambient operational temperature	-5° C ....+40° C; max. Ø 35° C @ 24 h
Recommended torque for Terminals L, N, PE	0.8 Nm

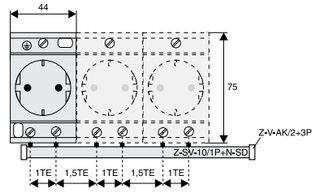
Connection diagram

Dimensions (mm)

Z-SD230

Z-SD230-BS





	Rated current / Design	Type Designation	Article No.	Units per package
Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D				
SG59511	63 A	Z-D63	248267	12/120
	63 A with test socket	Z-D63/P	248268	12/120
	100 A	Z-D80	248269	12/120

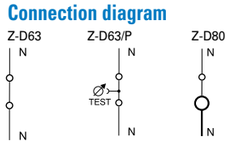
Description Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D

- Compatible with standard busbar to Xtra Combination devices
- Z-D80: Feeder block for busbar system 80 A.
  Lift terminal (35 mm²) and open mouthed terminal above, lift terminal (50 mm²) below.
  Busbar positioning optionally above or below
- Z-D80: with testing bush 4 mm Ø, 10 A for N-conductor

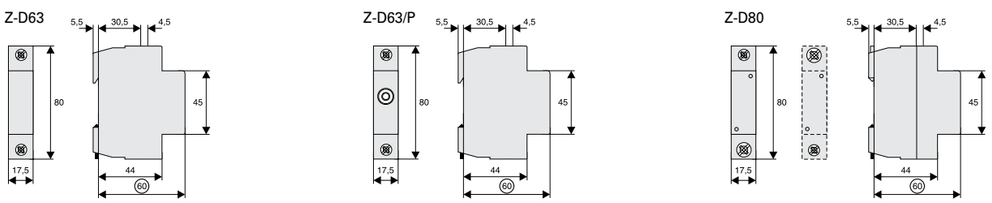
Technical Data

	Z-D63	Z-D63/P	Z-D80
Electrical			
Rated current	63 A	63 A	100 A
Frequency	50-60 Hz	50-60 Hz	50-60 Hz
N-conductor test bush	–	10 A, Ø 4 mm	–
Mechanical			
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		
Degree of protection, built-in	IP40	IP40	IP40
Terminals			
above	open mouthed/lift terminals	open mouthed/lift terminals	open mouthed/lift terminals
below	open mouthed/lift terminals	open mouthed/lift terminals	lift terminals
Terminal capacity			
above	1-25 mm²	1-25 mm²	1-35 mm²
below	1-25 mm²	1-25 mm²	2.5-50 mm²
Busbar thickness	0.8 - 2 mm	0.8 - 2 mm	0.8 - 2 mm

Connection diagram



Dimensions (mm)



	Type Designation	Article No.	Units per package
Front Plate Tripping Device Z-MFPA			
SG58911	Z-MFPA	248302	6 / 60
			

Description Front Plate Tripping Device Z-MFPA

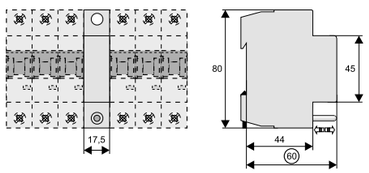
- Mechanical tripping device for PXF, PXK, FAZ, PLSM, Z-A40, PKNM and PKDM, responds when the front plate of a distribution box is removed
- Maximum tripping capacity: 4 + 4 poles symmetrically
- Can be interlocked by twisting when the tripping pin is in the pressed position

Technical Data

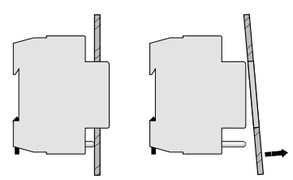
	Z-MFPA
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40

Function Diagram

Dimensions (mm)



Function



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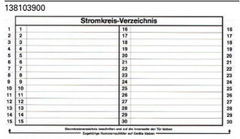

Number of Circuits	Dimensions (mm)	Type Designation	Article No.	Units per package
Circuit Description GR				
30	210x120	GR-2	138103900	1
90	210x300	GR-3	138104100	1

SG81411

Colour	Dimensions (mm)	Type Designation	Article No.	Units per package
Plastic Box Z-BOX				
blue	45x54x75	Z-BOX/BLA	286062	12/120

SG15911

Description	Type Designation	Article No.	Units per package
Neutral disconnector			
Neutral disconnector	Z-NTS	248443	1

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