

Specifications



Photo is representative



Eaton 277828

Eaton Moeller® series DILM Contactor, 3 pole, 380 V 400 V 22 kW, 190 V 50 Hz, 220 V 60 Hz, AC operation, Screw terminals

General specifications

PRODUCT NAME	Eaton Moeller® series DILM contactor
CATALOG NUMBER	277828
MODEL CODE	DILM50(190V50HZ,220V60HZ)
EAN	4015082778286
PRODUCT LENGTH/DEPTH	132.1 mm
PRODUCT HEIGHT	115 mm
PRODUCT WIDTH	55 mm
PRODUCT WEIGHT	0.872 kg
CERTIFICATIONS	CSA Certified UL Listed IEC 60947-4-1 EN 60947-4-1 IEC/EN 60947 UL File No.: E29096 CSA-C22.2 No. 60947-4-1-14 CSA CSA File No.: 012528 UL Category Control No.: NLDX VDE 0660 CE IEC/EN 60947-4-1 UL 60947-4-1 CSA Class No.: 2411-03, 3211-04 UL
CATALOG NOTES	Contacts according to EN 50012
PRODUCT TYPE	Contactors

Features Functions

NUMBER OF POLES	Three-pole
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General

APPLICATION	Contactors for Motors
FRAME SIZE	FS3
LIFESPAN, MECHANICAL	10,000,000 Operations (AC operated)
CONNECTION	Screw terminals
OPERATING FREQUENCY	5000 mechanical Operations/h (AC operated)
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
PRODUCT CATEGORY	Contactors
PROTECTION	Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274)
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	8000 V AC
RESISTANCE PER POLE	1.9 mΩ
SUITABLE FOR	Also motors with efficiency class IE3
TYPE	Full voltage non-reversing medium contactor
USED WITH	Can be combined with auxiliary contacts: DILM150-XHI(V), DILM1000-XHI(V)
UTILIZATION CATEGORY	AC-4: Normal AC induction motors: starting, plugging, reversing, inching AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3: Normal AC induction motors: starting, switch off during running
VOLTAGE TYPE	AC

Ambient conditions, mechanical

SHOCK RESISTANCE

5 g, N/C auxiliary contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms
7 g, N/O auxiliary contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms
10 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms
7 g, N/O auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms
10 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms
5 g, N/C auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms

Climatic environmental conditions

ALTITUDE	Max. 2000 m
AMBIENT OPERATING TEMPERATURE - MIN	-25 °C
AMBIENT OPERATING TEMPERATURE - MAX	60 °C
AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN	-25 °C
AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX	40 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
AMBIENT STORAGE TEMPERATURE - MAX	80 °C
CLIMATIC PROOFING	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30

Electro magnetic compatibility

EMITTED INTERFERENCE According to EN 60947-1

INTERFERENCE IMMUNITY According to EN 60947-1

Terminal capacities

TERMINALS	Screw terminals
TERMINAL CAPACITY (COPPER BAND)	2 x (6 x 9 x 0.8) mm (Number of segments x width x thickness), Main cables
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	2 x (0.75 - 25) mm ² , Main cables 2 x (0.75 - 2.5) mm ² , Control circuit cables 1 x (0.75 - 2.5) mm ² , Control circuit cables 1 x (0.75 - 35) mm ² , Main cables
TERMINAL CAPACITY (SOLID)	2 x (0.75 - 16) mm ² , Main cables 2 x (0.75 - 2.5) mm ² , Control circuit cables 1 x (0.75 - 16) mm ² , Main cables 1 x (0.75 - 4) mm ² , Control circuit cables
TERMINAL CAPACITY (SOLID/STRANDED AWG)	18 - 14, Control circuit cables Single 14 - 1, double 14 - 2, Main cables

TERMINAL CAPACITY (STRANDED)	1 x (16 - 50) mm ² , Main cables 2 x (16 - 35) mm ² , Main cables
STRIPPING LENGTH (MAIN CABLE)	14 mm
STRIPPING LENGTH (CONTROL CIRCUIT CABLE)	10 mm
SCREW SIZE	M3.5, Terminal screw, Control circuit cables M6, Terminal screw, Main cables
SCREWDRIVER SIZE	2, Terminal screw, Pozidriv screwdriver 0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver
TIGHTENING TORQUE	3.3 Nm, Screw terminals, Main cables 1.2 Nm, Screw terminals, Control circuit cables

Electrical rating

RATED BREAKING CAPACITY AT 220/230 V	500 A
RATED BREAKING CAPACITY AT 380/400 V	500 A
RATED BREAKING CAPACITY AT 500 V	500 A
RATED BREAKING CAPACITY AT 660/690 V	320 A
RATED OPERATIONAL CURRENT (IE) AT AC-1, 380 V, 400 V, 415 V	80 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	50 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	50 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V	50 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	50 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	32 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	21 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	21 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	21 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	17 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 60 V	60 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 110 V	50 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 220 V	45 A
RATED MAKING CAPACITY UP TO 690 V (COS PHI TO IEC/EN 60947)	700 A

Short-circuit rating

SHORT-CIRCUIT CURRENT RATING (BASIC RATING)	5 kA, 250 A max. fuse, SCCR (UL/CSA) 5 kA, 250 A max. CB, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 480 V)	100 kA, 150 A CLASS J max. fuse, SCCR (UL/CSA) 65 kA, 100 A max. CB, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)	100 kA, 150 A CLASS J max. fuse, SCCR (UL/CSA)
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 400 V	160 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 690 V	80 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 400 V	80 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 690 V	63 A gG/gL

RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	17 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	22 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	30 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	32 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	36 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	30 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	6 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	6.5 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	11 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	12 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	13 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	14 kW
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	690 V
RATED INSULATION VOLTAGE (UI)	690 V

Conventional thermal current I_{th}

CONVENTIONAL THERMAL CURRENT I_{TH} (1-POLE, ENCLOSED)	145 A
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CONVENTIONAL THERMAL CURRENT I_{TH} (3-POLE, ENCLOSED)	58 A
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CONVENTIONAL THERMAL CURRENT I_{TH} AT 55°C (3-POLE, OPEN)	68 A
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CONVENTIONAL THERMAL CURRENT I_{TH} OF MAIN CONTACTS (1- POLE, OPEN)	162 A
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Switching capacity

SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	80 A, Maximum motor rating (UL/CSA)
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Magnet system

ARCING TIME	10 ms
DROP-OUT VOLTAGE	AC operated: 0.6 - 0.3 x Uc, AC operated
DUTY FACTOR	100 %
PICK-UP VOLTAGE	0.8 - 1.1 V AC x Uc
POWER CONSUMPTION	22 kW
POWER CONSUMPTION, PICK-UP, 50 HZ	149 VA, Dual-frequency coil in a cold state and 1.0 x Us, at 50 Hz
POWER CONSUMPTION, PICK-UP, 60 HZ	178 VA, Dual-frequency coil in a cold state and 1.0 x Us, at 60 Hz
POWER CONSUMPTION, SEALING, 50 HZ	4.1 W, Dual-frequency coil in a cold state and 1.0 x Us, at 50 Hz 16 VA, Dual-frequency coil in a cold state and 1.0 x Us, at 50 Hz
POWER CONSUMPTION, SEALING, 60 HZ	19 VA, Dual-frequency coil in a cold state and 1.0 x Us, at 60 Hz 4.1 W, Dual-frequency coil in a cold state and 1.0 x Us, at 60 Hz
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN	190 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX	190 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN	220 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	220 V
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MIN	12 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	18 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MIN	8 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	13 ms

Motor rating

ASSIGNED MOTOR POWER AT 115/120 V, 60 HZ, 1-PHASE	3 HP
ASSIGNED MOTOR POWER AT 200/208 V, 60 HZ, 3-PHASE	15 HP
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 1-PHASE	10 HP
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 3-PHASE	20 HP
ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 3-PHASE	40 HP
ASSIGNED MOTOR POWER AT 575/600 V, 60 HZ, 3-PHASE	50 HP

DELAY) - MAX

COIL VOLTAGE 190-220 Vac, 50/60 Hz

Communication

**CONNECTION TO
SMARTWIRE-DT** No

Safety

SAFE ISOLATION 440 V AC, Between the
contacts, According to EN
61140
440 V AC, Between coil
and contacts, According to
EN 61140

Contacts

**NUMBER OF AUXILIARY
CONTACTS (NORMALLY
CLOSED CONTACTS)** 0

**NUMBER OF AUXILIARY
CONTACTS (NORMALLY
OPEN CONTACTS)** 0

Special purpose ratings

**SPECIAL PURPOSE
RATING OF BALLAST
ELECTRICAL DISCHARGE
LAMPS** 79 A (600V 60Hz 3phase,
347V 60Hz 1phase)
79 A (480V 60Hz 3phase,
277V 60Hz 1phase)

**SPECIAL PURPOSE
RATING OF ELEVATOR
CONTROL** 10 HP, 200 V 60 Hz 3-ph,
(UL/CSA)
30 HP, 480 V 60 Hz 3-ph,
(UL/CSA)
32.2 A, 200 V 60 Hz 3-ph,
(UL/CSA)
42 A, 240 V 60 Hz 3-ph,
(UL/CSA)
15 HP, 240 V 60 Hz 3-ph,
(UL/CSA)
40 A, 480 V 60 Hz 3-ph,
(UL/CSA)
41 A, 600 V 60 Hz 3-ph,
(UL/CSA)
40 HP, 600 V 60 Hz 3-ph,
(UL/CSA)

**SPECIAL PURPOSE
RATING OF RESISTANCE
AIR HEATING** 79 A, 480 V 60 Hz 3phase,
277 V 60 Hz 1phase,
(UL/CSA)
79 A, 600 V 60 Hz 3phase,
347 V 60 Hz 1phase,
(UL/CSA)

**SPECIAL PURPOSE
RATING OF TUNGSTEN
INCANDESCENT LAMPS** 74 A, 600 V 60 Hz 3phase,
347 V 60 Hz 1phase,
(UL/CSA)
74 A, 480 V 60 Hz 3phase,
277 V 60 Hz 1phase,
(UL/CSA)

Design verification

EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	9.9 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	3.3 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	50 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	4.1 W
10.2.2 CORROSION RESISTANCE	Meets the product standard's requirements.
10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES	Meets the product standard's requirements.
10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT	Meets the product standard's requirements.
10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS	Meets the product standard's requirements.
10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION	Meets the product standard's requirements.
10.2.5 LIFTING	Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 MECHANICAL IMPACT	Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 INSCRIPTIONS	Meets the product standard's requirements.
10.3 DEGREE OF PROTECTION OF ASSEMBLIES	Does not apply, since the entire switchgear needs to be evaluated.
10.4 CLEARANCES AND CREEPAGE DISTANCES	Meets the product standard's requirements.
10.5 PROTECTION AGAINST ELECTRIC SHOCK	Does not apply, since the entire switchgear needs to be evaluated.
10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS	Does not apply, since the entire switchgear needs to be evaluated.

Resources

CATALOGS	eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf
CHARACTERISTIC CURVE	eaton-contactors-switch-dilm-characteristic-curve.eps eaton-contactors-switch-dilm-characteristic-curve-002.eps eaton-contactors-component-dilm-characteristic-curve-003.eps
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-uk251225en.pdf eaton-contactor-declaration-of-conformity-eu250742en.pdf
DRAWINGS	eaton-contactors-dilm-dimensions-002.eps eaton-contactors-dilm-dimensions-012.eps eaton-contactors-mounting-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions.eps eaton-contactors-mounting-dilm-3d-drawing.eps eaton-general-ie-ready-dilm-contactor-standards.eps eaton-contactors-dilm-3d-drawing-011.eps
ECAD MODEL	ETN.277828.edz
INSTALLATION INSTRUCTIONS	IL03407033Z
INSTALLATION VIDEOS	WIN-WIN with push-in technology
MCAD MODEL	eaton-iec-contactors-mcad-drawings-dil-m40-65-22.dwg

10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS	Is the panel builder's responsibility.
10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS	Is the panel builder's responsibility.
10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH	Is the panel builder's responsibility.
10.9.3 IMPULSE WITHSTAND VOLTAGE	Is the panel builder's responsibility.
10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL	Is the panel builder's responsibility.
10.10 TEMPERATURE RISE	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 SHORT-CIRCUIT RATING	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 ELECTROMAGNETIC COMPATIBILITY	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 MECHANICAL FUNCTION	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

	eaton-iec-contactors-mcad-drawings-dil-m40-72.dwg DA-CS-dil_m40_72
PEP ECO-PASSPORT	eaton-iec-contactors-pep-eato-00126-v0101-en.pdf
SPECIFICATIONS AND DATASHEETS	Eaton Specification Sheet - 277828
SYSTEM OVERVIEW	eaton-contactors-dilm-contactor-system-overview.eps
WIRING DIAGRAMS	eaton-contactors-contact-dilm-wiring-diagram-003.eps

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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