

Specifications



Eaton 276810

Eaton Moeller® series DILM Contactor, 380 V 400 V 4 kW, 3 N/O, 2 NC, 24 V DC, DC operation, Screw terminals

General specifications

PRODUCT NAME	Eaton Moeller® series DILM contactor
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CATALOG NUMBER	276810
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MODEL CODE	DILM9-32(24VDC)
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EAN	4015082768102
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PRODUCT LENGTH/DEPTH	117 mm
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PRODUCT HEIGHT	68 mm
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PRODUCT WIDTH	45 mm
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PRODUCT WEIGHT	0.351 kg
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CERTIFICATIONS	CSA UL 60947-4-1 UL File No.: E29096 CSA Class No.: 2411-03, 3211-04 UL CSA File No.: 012528 CSA-C22.2 No. 60947-4-1-14 IEC/EN 60947 VDE 0660 CE UL Category Control No.: NLDX IEC/EN 60947-4-1
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CATALOG NOTES	Contacts according to EN 50012
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Ambient conditions, mechanical

SHOCK RESISTANCE

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

Climatic environmental conditions

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

Contacts

NUMBER OF MAIN CONTACTS (NORMALLY OPEN CONTACT)	3
NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	2
NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	3
NUMBER OF CONTACTS (NORMALLY CLOSED CONTACTS)	2
NUMBER OF CONTACTS (NORMALLY OPEN CONTACTS)	3
NUMBER OF CONTACTS (NORMALLY CLOSED) AS MAIN CONTACT	0

Conventional thermal current I_{th}

CONVENTIONAL THERMAL CURRENT I_{TH} (1-POLE, ENCLOSED)	45 A
CONVENTIONAL THERMAL CURRENT I_{TH} (3-POLE, ENCLOSED)	18 A
CONVENTIONAL THERMAL CURRENT I_{TH} AT 55°C (3-POLE, OPEN)	21 A
CONVENTIONAL THERMAL CURRENT I_{TH} AT 60°C (3-POLE, OPEN)	20 A
CONVENTIONAL THERMAL CURRENT I_{TH} OF MAIN CONTACTS (1-POLE, OPEN)	50 A

Design verification

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.
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	Does not apply, since the

Electrical rating

RATED BREAKING CAPACITY AT 220/230 V	90 A
RATED BREAKING CAPACITY AT 380/400 V	90 A
RATED BREAKING CAPACITY AT 500 V	70 A
RATED BREAKING CAPACITY AT 660/690 V	50 A
RATED INSULATION VOLTAGE (UI)	690 V
RATED MAKING CAPACITY UP TO 690 V (COS PHI TO IEC/EN 60947)	126 A
RATED OPERATIONAL CURRENT (IE) AT AC-1, 380 V, 400 V, 415 V	22 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	9 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	9 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V	9 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	7 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	5 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	6 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	6 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	5 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	4.5 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 110 V	20 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 220 V	15 A

AGAINST ELECTRIC SHOCK	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.
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.
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	0.9 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0.3 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	9 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	4.5 W

RATED OPERATIONAL CURRENT (IE) AT DC-1, 60 V	20 A
RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	3 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	4 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	4.5 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	4.5 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	1.5 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	1.6 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	2.8 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	3 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	2.8 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	3.6 kW
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	690 V

Electro magnetic compatibility

EMITTED INTERFERENCE	According to EN 60947-1
INTERFERENCE IMMUNITY	According to EN 60947-1

Features & functions

FITTED WITH:	Varistor suppressor circuit Mirror contact
NUMBER OF POLES	Three-pole

General information

APPLICATION	Contactors for Motors
CONNECTION	Screw terminals
DEGREE OF PROTECTION	IP20
LIFESPAN, MECHANICAL	7,000,000 Operations (Coil 50/60 Hz) 10,000,000 Operations (DC operated)
OPERATING FREQUENCY	5000 mechanical Operations/h (DC 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	4.6 mΩ
SUITABLE FOR	Also motors with efficiency class IE3
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	DC

Magnet system

ARCING TIME	10 ms
DROP-OUT VOLTAGE	0.6 - 0.15 x UC, DC operated At least smoothed two-phase bridge rectifier or three-phase rectifier
DUTY FACTOR	100 %
PICK-UP VOLTAGE	0.8 - 1.1 V DC x Uc 0.7 - 1.3 V DC x Uc (without auxiliary contact module and at ambient air temperature + 40 °C) 0.85 - 1.1 V DC x Uc (only with auxiliary contact module with 3 or more N/C contacts)
POWER CONSUMPTION (PICK-UP) AT DC	4.5 W
POWER CONSUMPTION (SEALING) AT DC	4.5 W
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	24 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	24 V
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	31 ms
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	12 ms

Motor rating

**ASSIGNED MOTOR
POWER AT 115/120 V, 60
HZ, 1-PHASE** 0.5 HP

**ASSIGNED MOTOR
POWER AT 200/208 V, 60
HZ, 3-PHASE** 3 HP

**ASSIGNED MOTOR
POWER AT 230/240 V, 60
HZ, 1-PHASE** 1.5 HP

**ASSIGNED MOTOR
POWER AT 230/240 V, 60
HZ, 3-PHASE** 3 HP

**ASSIGNED MOTOR
POWER AT 460/480 V, 60
HZ, 3-PHASE** 5 HP

**ASSIGNED MOTOR
POWER AT 575/600 V, 60
HZ, 3-PHASE** 7.5 HP

Short-circuit rating

**SHORT-CIRCUIT CURRENT
RATING (BASIC RATING)** 5 kA, 30 A max. fuse, SCCR
(UL/CSA)
5 kA, 30 A max. CB, SCCR
(UL/CSA)

**SHORT-CIRCUIT CURRENT
RATING (HIGH FAULT AT
480 V)** 100 kA, 20 A CLASS J max.
fuse, SCCR (UL/CSA)
30 kA, 25 A CLASS RK5
max. fuse, SCCR (UL/CSA)
65 kA, 16 A max. CB, SCCR
(UL/CSA)

**SHORT-CIRCUIT CURRENT
RATING (HIGH FAULT AT
600 V)** 100 kA, 20 A CLASS J max.
fuse, SCCR (UL/CSA)
30 kA, 25 A CLASS RK5
max. fuse, SCCR (UL/CSA)

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 1 COORDINATION)
AT 400 V** 35 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 1 COORDINATION)
AT 690 V** 20 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 2 COORDINATION)
AT 400 V** 20 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 2 COORDINATION)
AT 690 V** 16 A gG/gL

Safety

SAFE ISOLATION 400 V AC, Between coil
and contacts, According to
EN 61140
400 V AC, Between the
contacts, According to EN
61140

Special purpose ratings

**SPECIAL PURPOSE
RATING OF DEFINITE
PURPOSE RATING** 9 A, FLA 480 V 60 Hz 3-ph,
100,000 cycles acc. to UL
1995, (UL/CSA)
54 A, LRA 480 V 60 Hz 3-
ph, 100,000 cycles acc. to
UL 1995, (UL/CSA)

**SPECIAL PURPOSE
RATING OF ELEVATOR
CONTROL** 6.8 A, 240 V 60 Hz 3-ph,
(UL/CSA)
3 HP, 480 V 60 Hz 3-ph,
(UL/CSA)
2 HP, 200 V 60 Hz 3-ph,
(UL/CSA)
5 HP, 600 V 60 Hz 3-ph,
(UL/CSA)
7.8 A, 200 V 60 Hz 3-ph,
(UL/CSA)
4.8 A, 480 V 60 Hz 3-ph,
(UL/CSA)
6.1 A, 600 V 60 Hz 3-ph,
(UL/CSA)
2 HP, 240 V 60 Hz 3-ph,
(UL/CSA)

**SPECIAL PURPOSE
RATING OF
REFRIGERATION
CONTROL (CSA ONLY)** 60 A, LRA 480 V 60 Hz
3phase; (CSA)
60 A, LRA 600 V 60 Hz
3phase; (CSA)
10 A, FLA 600 V 60 Hz
3phase; (CSA)
10 A, FLA 480 V 60 Hz
3phase; (CSA)

**SPECIAL PURPOSE
RATING OF RESISTANCE** 18 A, 480 V 60 Hz 3phase,
277 V 60 Hz 1phase,

AIR HEATING	(UL/CSA) 18 A, 600 V 60 Hz 3phase, 347 V 60 Hz 1phase, (UL/CSA)
SPECIAL PURPOSE RATING OF TUNGSTEN INCANDESCENT LAMPS	14 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (UL/CSA) 14 A, 600 V 60 Hz 3phase, 347 V 60 Hz 1phase, (UL/CSA)
SPECIAL PURPOSE RATING OF BALLAST ELECTRICAL DISCHARGE LAMPS	18 A (600V 60Hz 3phase, 347V 60Hz 1phase) 18 A (480V 60Hz 3phase, 277V 60Hz 1phase)

Switching capacity	
SWITCHING CAPACITY (AUXILIARY CONTACTS, GENERAL USE)	1 A, 250 V DC, (UL/CSA) 10 A, 600 V AC, (UL/CSA)
SWITCHING CAPACITY (AUXILIARY CONTACTS, PILOT DUTY)	P300, DC operated (UL/CSA) A600, AC operated (UL/CSA)
SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	20 A, Maximum motor rating (UL/CSA)

Terminal capacities	
SCREW SIZE	M3.5, Terminal screw
SCREWDRIVER SIZE	0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver 2, Terminal screw, Pozidriv screwdriver
STRIPPING LENGTH (CONTROL CIRCUIT CABLE)	10 mm
STRIPPING LENGTH (MAIN CABLE)	10 mm
TERMINAL CAPACITY (SOLID)	2 x (0.75 - 2.5) mm ² 1 x (0.75 - 2.5) mm ² 1 x (0.75 - 4) mm ²
TIGHTENING TORQUE	1.2 Nm, Screw terminals
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	2 x (0.75 - 2,5) mm ² 1 x (0.75 - 2.5) mm ² 2 x (0.75 - 2.5) mm ²
TERMINAL CAPACITY (SOLID/STRANDED AWG)	Single 18 - 10, double 18 - 14

Resources

CATALOGUES	Product Range Catalog Switching and protecting motors
	SmartWire-DT Catalog eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf

CHARACTERISTIC CURVE	eaton-contactors-component-dilm-characteristic-curve-003.eps
	eaton-contactors-switch-dilm-characteristic-curve-002.eps
	eaton-contactors-switch-dilm-characteristic-curve.eps
	eaton-contactors-short-time-loading-dilm-characteristic-curve.eps

DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-uk251209en.pdf
	eaton-contactor-declaration-of-conformity-eu250726en.pdf

DRAWINGS	eaton-contactors-mounting-dilm-dimensions.eps
	eaton-contactors-mounting-dilm-dimensions-002.eps
	eaton-contactors-frame-dilm-dimensions.eps
	eaton-contactors-module-dilm-dimensions-002.eps
	eaton-contactors-module-dilm-dimensions.eps
	eaton-general-ie-ready-dilm-contactor-standards.eps eaton-contactors-contact-dilm-3d-drawing.eps

ECAD MODEL	ETN.276810.edz
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INSTALLATION INSTRUCTIONS	IL03407043Z
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INSTALLATION VIDEOS	WIN-WIN with push-in technology
MCAD MODEL	eaton-iec-contactors-mcad-drawings-dil-m7-15-a-xhi.dwg DA-CS-dil_m7_15_a_xhi
PEP ECO-PASSPORT	eaton-iec-contactors-pep-eato-00123-v0101-en.pdf
WIRING DIAGRAMS	2100SWI-128

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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