Specifications





Eaton 277780

Eaton Moeller® series DILM Contactor, 3 pole, 380 V 400 V 18.5 kW, RDC 24: 24 - 27 V DC, DC operation, Screw terminals DILM40(RDC24)

General specifications

PRODUCT NAME	Eaton Moeller® series DILM contactor
CATALOG NUMBER	277780
MODEL CODE	DILM40(RDC24)
EAN	4015082777807
PRODUCT LENGTH/DEPTH	132.1 mm
PRODUCT HEIGHT	115 mm
PRODUCT WIDTH	55 mm
PRODUCT WEIGHT	1.052 kg
CERTIFICATIONS	UL 60947-4-1 CE UL File No.: E29096 CSA Class No.: 2411-03, 3211-04 CSA File No.: 012528 UL Category Control No.: NLDX UL IEC/EN 60947 VDE 0660 IEC/EN 60947-4-1 CSA CSA-C22.2 No. 60947-4-1-14
CATALOG NOTES	Contacts according to EN 50012

Powering Business Worldwide

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, 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 5 g, N/C auxiliary 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 when tabletop-mounted, Half-sinusoidal shock 10 ms 10 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27, 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, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78

Communication

CONNECTION TO SMARTWIRE-DT	No

Contacts

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

Conventional thermal current Ith

CONVENTIONAL THERMAL CURRENT ITH (1-POLE, ENCLOSED)	112 A
CONVENTIONAL THERMAL CURRENT ITH (3-POLE, ENCLOSED)	45 A
CONVENTIONAL THERMAL CURRENT ITH AT 55°C (3-POLE, OPEN)	55 A
CONVENTIONAL THERMAL CURRENT ITH AT 60°C (3-POLE, OPEN)	50 A
CONVENTIONAL THERMAL CURRENT ITH OF MAIN CONTACTS (1-POLE, OPEN)	125 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

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	6.6 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	2.2 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	40 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	1 W

Electrical rating

RATED BREAKING CAPACITY AT 220/230 V	400 A
RATED BREAKING CAPACITY AT 380/400 V	400 A
RATED BREAKING CAPACITY AT 500 V	400 A
RATED BREAKING CAPACITY AT 660/690 V	250 A
RATED INSULATION VOLTAGE (UI)	690 V
RATED MAKING CAPACITY UP TO 690 V (COS PHI TO IEC/EN 60947)	560 A
RATED OPERATIONAL CURRENT (IE) AT AC-1, 380 V, 400 V, 415 V	60 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	40 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	40 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V	40 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	40 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	25 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	18 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	18 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	18 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	14 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 110 V	50 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 220 V	45 A

Electro magnetic compatibility

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

RATED OPERATIONAL CURRENT (IE) AT DC-1, 60 V	50 A
RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	13.5 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	18.5 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	24 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	25 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	28 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	23 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	5 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	9.5 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	10 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	11 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	12 kW
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	690 V

Features & functions

FITTED WITH:	Suppressor circuit in actuating electronics
NUMBER OF POLES	Three-pole

General information

APPLICATION	Contactors for Motors
CONNECTION	Screw terminals
DEGREE OF PROTECTION	IP00
LIFESPAN, MECHANICAL	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	1.9 mΩ
SUITABLE FOR	Also motors with efficiency class IE3
UTILIZATION CATEGORY	AC-3: Normal AC induction motors: starting, switch off during running AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-4: Normal AC induction motors: starting, plugging, reversing, inching
VOLTAGE TYPE	DC
FRAME SIZE	FS3

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	0.7 - 1.2 V DC x Uc 24 - 27 V DC (RDC 24)
POWER CONSUMPTION (PICK-UP) AT DC	24 W
POWER CONSUMPTION (SEALING) AT DC	1 W
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	27 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	24 V
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	54 ms
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	24 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	10 HP
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 1-PHASE	7.5 HP
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 3-PHASE	15 HP
ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 3-PHASE	30 HP
ASSIGNED MOTOR POWER AT 575/600 V, 60 HZ, 3-PHASE	40 HP

Safety

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

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	125 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 690 V	80 A gG/gL
SHORT-CIRCUIT PROTECTION RATING	63 A gG/gL

(TYPE 2 COORDINATION) AT 400 V	
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 690 V	50 A gG/gL

Special purpose ratings

SPECIAL PURPOSE RATING OF ELEVATOR CONTROL	7.5 HP, 200 V 60 Hz 3-ph, (UL/CSA) 32 A, 600 V 60 Hz 3-ph, (UL/CSA) 25 HP, 480 V 60 Hz 3-ph, (UL/CSA) 28 A, 240 V 60 Hz 3-ph, (UL/CSA) 30 HP, 600 V 60 Hz 3-ph, (UL/CSA) 10 HP, 240 V 60 Hz 3-ph, (UL/CSA) 34 A, 480 V 60 Hz 3-ph, (UL/CSA) 25.3 A, 200 V 60 Hz 3-ph, (UL/CSA)
SPECIAL PURPOSE RATING OF RESISTANCE AIR HEATING	79 A, 600 V 60 Hz 3phase, 347 V 60 Hz 1phase, (UL/CSA) 79 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (UL/CSA)
SPECIAL PURPOSE RATING OF TUNGSTEN INCANDESCENT LAMPS	74 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (UL/CSA) 74 A, 600 V 60 Hz 3phase, 347 V 60 Hz 1phase, (UL/CSA)
SPECIAL PURPOSE RATING OF BALLAST ELECTRICAL DISCHARGE LAMPS	79 A (600V 60Hz 3phase, 347V 60Hz 1phase) 79 A (480V 60Hz 3phase, 277V 60Hz 1phase)

Switching capacity

SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	63 A, Maximum motor rating (UL/CSA)

Terminal capacities

SCREW SIZE	M6, Terminal screw, Main cables M3.5, Terminal screw, Control circuit cables
SCREWDRIVER SIZE	2, Terminal screw, Pozidriv screwdriver 0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver
STRIPPING LENGTH (CONTROL CIRCUIT CABLE)	10 mm
STRIPPING LENGTH (MAIN CABLE)	14 mm
TERMINAL CAPACITY (COPPER BAND)	2 x (6 x 9 x 0.8) mm (Number of segments x width x thickness), Main cables
TERMINAL CAPACITY (SOLID)	1 x (0.75 - 16) mm², Main cables 2 x (0.75 - 2.5) mm², Control circuit cables 1 x (0.75 - 4) mm², Control circuit cables 2 x (0.75 - 16) mm², Main cables
TERMINAL CAPACITY (STRANDED)	1 x (16 - 50) mm², Main cables 2 x (16 - 35) mm², Main cables
TIGHTENING TORQUE	3.3 Nm, Screw terminals, Main cables 1.2 Nm, Screw terminals, Control circuit cables
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	2 x (0.75 - 25) mm², Main cables 1 x (0.75 - 35) mm², Main cables 1 x (0.75 - 2.5) mm², Control circuit cables 2 x (0.75 - 2.5) mm², Control circuit cables
TERMINAL CAPACITY (SOLID/STRANDED AWG)	Single 14 - 1, double 14 - 2, Main cables 18 - 14, Control circuit cables

Resources

CATALOGUES	eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf
CHARACTERISTIC CURVE	eaton-contactors-short-time-loading-dilm-characteristic-curve.eps eaton-contactors-switch-dilm-characteristic-curve.eps eaton-contactors-component-dilm-characteristic-curve-003.eps eaton-contactors-switch-dilm-characteristic-curve-002.eps
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-eu250744en.pdf eaton-contactor-declaration-of-conformity-uk251227en.pdf
DRAWINGS	eaton-contactors-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions.eps eaton-contactors-dilm-dimensions-012.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.277780.edz
INSTALLATION INSTRUCTIONS	IL03407033Z
INSTALLATION VIDEOS	WIN-WIN with push-in technology
MCAD MODEL	DA-CS-dil_m40_72

PEP ECO-PASSPORT	eaton-iec-contactors-pep-eato-00028-v0101-en.pdf
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:	

Eaton Corporation plc Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

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