

Specifications



Photo is representative



Eaton 239478

Eaton Moeller® series DILM Contactor, 3 pole, 380 V 400 V 45 kW, 190 V 50 Hz, 220 V 60 Hz, AC operation, Screw terminals

General specifications

PRODUCT NAME	Eaton Moeller® series DILM contactor
CATALOG NUMBER	239478
MODEL CODE	DILM95(190V50HZ,220V60HZ)
EAN	4015082394783
PRODUCT LENGTH/DEPTH	160 mm
PRODUCT HEIGHT	170 mm
PRODUCT WIDTH	90 mm
PRODUCT WEIGHT	2.18 kg
CERTIFICATIONS	CSA File No.: 012528 IEC/EN 60947-4-1 UL File No.: E29096 CSA-C22.2 No. 60947-4-1-14 IEC/EN 60947 UL Category Control No.: NLDX CSA Class No.: 2411-03, 3211-04 UL CE UL 60947-4-1 CSA VDE 0660
CATALOG NOTES	Contacts according to EN 50012
PRODUCT TYPE	Contactor

Features Functions

NUMBER OF POLES	Three-pole
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General

APPLICATION	Contactors for Motors
FRAME SIZE	FS4
LIFESPAN, MECHANICAL	10,000,000 Operations (AC operated)
CONNECTION	Screw terminals
OPERATING FREQUENCY	3600 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
RESIDUAL CURRENT	1 mA (with actuation of A1 - A2 by the electronics with "0" signal)
RESISTANCE PER POLE	0.6 mΩ
SUITABLE FOR	Also motors with efficiency class IE3
TYPE	Full voltage non-reversing medium contactor
UTILIZATION CATEGORY	AC-3: Normal AC induction motors: starting, switch off during running AC-4: Normal AC induction motors: starting, plugging, reversing, inching AC-1: Non-inductive or slightly inductive loads, resistance furnaces
VOLTAGE TYPE	AC

Ambient conditions, mechanical

SHOCK RESISTANCE

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
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 when tabletop-mounted, Half-sinusoidal shock 10 ms
5 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 - 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, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78

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 16 x 0.8) mm (Number of segments x width x thickness), Main cables
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	1 x (10 - 70) mm ² , Main cables 2 x (10 - 50) mm ² , Main cables 1 x (0.75 - 2.5) mm ² , Control circuit cables 2 x (0.75 - 2.5) mm ² , Control circuit cables
TERMINAL CAPACITY (SOLID)	2 x (0.75 - 2.5) mm ² , Control circuit cables 1 x (0.75 - 4) mm ² , Control circuit cables
TERMINAL CAPACITY (SOLID/STRANDED AWG)	Single 8...3/0, double 8...2/0, Main cables 18 - 14, Control circuit cables
TERMINAL CAPACITY (STRANDED)	2 x (16 - 50) mm ² , Main cables 1 x (16 - 70) mm ² , Main

	cables
STRIPPING LENGTH (MAIN CABLE)	24 mm
STRIPPING LENGTH (CONTROL CIRCUIT CABLE)	10 mm
SCREW SIZE	5 mm AF, Hexagon socket- head spanner, Terminal screw, Main cables M10, Terminal screw, Main cables M3.5, Terminal screw, Control circuit cables
SCREWDRIVER SIZE	2, Terminal screw, Control circuit cables, Pozidriv screwdriver 0.8 x 5.5/1 x 6 mm, Terminal screw, Control circuit cables, Standard screwdriver
TIGHTENING TORQUE	1.2 Nm, Screw terminals, Control circuit cables 14 Nm, Screw terminals, Main cables

Electrical rating

**RATED BREAKING
CAPACITY AT 220/230 V** 950 A

**RATED BREAKING
CAPACITY AT 380/400 V** 950 A

**RATED BREAKING
CAPACITY AT 500 V** 950 A

**RATED BREAKING
CAPACITY AT 660/690 V** 800 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-1,
380 V, 400 V, 415 V** 130 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
220 V, 230 V, 240 V** 95 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
380 V, 400 V, 415 V** 95 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
440 V** 95 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
500 V** 95 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
660 V, 690 V** 80 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-4,
220 V, 230 V, 240 V** 50 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-4,
440 V** 50 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-4,
500 V** 50 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-4,
660 V, 690 V** 37 A

**RATED OPERATIONAL
CURRENT (IE) AT DC-1, 60
V** 110 A

**RATED OPERATIONAL
CURRENT (IE) AT DC-1,
110 V** 110 A

**RATED OPERATIONAL
CURRENT (IE) AT DC-1,
220 V** 70 A

**RATED MAKING
CAPACITY UP TO 690 V
(COS PHI TO IEC/EN
60947)** 1330 A

Short-circuit rating

**SHORT-CIRCUIT CURRENT
RATING (BASIC RATING)** 10 kA, 600 A max. fuse,
SCCR (UL/CSA)
10 kA, 600 A max. CB,
SCCR (UL/CSA)

**SHORT-CIRCUIT CURRENT
RATING (HIGH FAULT AT
480 V)** 100 kA, 300 A CLASS J max.
fuse, SCCR (UL/CSA)
30 kA, 600 A max. fuse,
SCCR (UL/CSA)
65 kA, 250 A max. CB,
SCCR (UL/CSA)

**SHORT-CIRCUIT CURRENT
RATING (HIGH FAULT AT
600 V)** 100 kA, 300 A CLASS J max.
fuse, SCCR (UL/CSA)
30 kA, 600 A max. fuse,
SCCR (UL/CSA)

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 1 COORDINATION)
AT 400 V** 250 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 1 COORDINATION)
AT 690 V** 200 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 2 COORDINATION)
AT 400 V** 160 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 2 COORDINATION)
AT 690 V** 160 A gG/gL

RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	32 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	45 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	57 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	60 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	70 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	75 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	16 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	17 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	30 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	32 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	36 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	35 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)	250 A
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CONVENTIONAL THERMAL CURRENT I_{TH} (3-POLE, ENCLOSED)	100 A
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CONVENTIONAL THERMAL CURRENT I_{TH} AT 55°C (3-POLE, OPEN)	115 A
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CONVENTIONAL THERMAL CURRENT I_{TH} OF MAIN CONTACTS (1- POLE, OPEN)	275 A
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Switching capacity

SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	125 A, Maximum motor rating (UL/CSA)
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Magnet system

ARCING TIME	15 ms
DROP-OUT VOLTAGE	AC operated: 0.6 - 0.3 x U _C , AC operated
DUTY FACTOR	100 %
PICK-UP VOLTAGE	0.8 - 1.1 V AC x U _C
POWER CONSUMPTION	45 kW
POWER CONSUMPTION, PICK-UP, 50 HZ	310 VA, Dual-frequency coil in a cold state and 1.0 x U _S , at 50 Hz
POWER CONSUMPTION, PICK-UP, 60 HZ	345 VA, Dual-frequency coil in a cold state and 1.0 x U _S , at 60 Hz
POWER CONSUMPTION, SEALING, 50 HZ	26 VA, Dual-frequency coil in a cold state and 1.0 x U _S , at 50 Hz 5.8 W, Dual-frequency coil in a cold state and 1.0 x U _S , at 50 Hz
POWER CONSUMPTION, SEALING, 60 HZ	5.8 W, Dual-frequency coil in a cold state and 1.0 x U _S , at 60 Hz 30 VA, Dual-frequency coil in a cold state and 1.0 x U _S , 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	14 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	20 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MIN	9 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	14 ms

Motor rating

ASSIGNED MOTOR
POWER AT 115/120 V, 60 HZ, 1-PHASE 7.5 HP

ASSIGNED MOTOR
POWER AT 200/208 V, 60 HZ, 3-PHASE 30 HP

ASSIGNED MOTOR
POWER AT 230/240 V, 60 HZ, 1-PHASE 15 HP

ASSIGNED MOTOR
POWER AT 230/240 V, 60 HZ, 3-PHASE 40 HP

ASSIGNED MOTOR
POWER AT 460/480 V, 60 HZ, 3-PHASE 75 HP

ASSIGNED MOTOR
POWER AT 575/600 V, 60 HZ, 3-PHASE 100 HP

DELAY) - MAX

COIL VOLTAGE 190-220 Vac, 50/60 Hz

Communication

**CONNECTION TO
SMARTWIRE-DT** No

Safety

SAFE ISOLATION

690 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** 100 A (600V 60Hz 3phase,
347V 60Hz 1phase)
100 A (480V 60Hz 3phase,
277V 60Hz 1phase)

**SPECIAL PURPOSE
RATING OF DEFINITE
PURPOSE RATING** 95 A, FLA 480 V 60 Hz 3-ph,
100,000 cycles acc. to UL
1995, (UL/CSA)
570 A, LRA 480 V 60 Hz 3-
ph, 100,000 cycles acc. to
UL 1995, (UL/CSA)

75 HP, 600 V 60 Hz 3-ph,
(UL/CSA)
62.1 A, 200 V 60 Hz 3-ph,
(UL/CSA)
80 A, 240 V 60 Hz 3-ph,
(UL/CSA)
77 A, 480 V 60 Hz 3-ph,
(UL/CSA)
20 HP, 200 V 60 Hz 3-ph,
(UL/CSA)
30 HP, 240 V 60 Hz 3-ph,
(UL/CSA)
60 HP, 480 V 60 Hz 3-ph,
(UL/CSA)
77 A, 600 V 60 Hz 3-ph,
(UL/CSA)

**SPECIAL PURPOSE
RATING OF
REFRIGERATION
CONTROL (CSA ONLY)** 70 A, FLA 600 V 60 Hz
3phase; (CSA)
90 A, FLA 480 V 60 Hz
3phase; (CSA)
420 A, LRA 600 V 60 Hz
3phase; (CSA)
540 A, LRA 480 V 60 Hz
3phase; (CSA)

100 A, 480 V 60 Hz 3phase,
277 V 60 Hz 1phase,
(UL/CSA)
100 A, 600 V 60 Hz 3phase,
347 V 60 Hz 1phase,
(UL/CSA)

SPECIAL PURPOSE 100 A, 600 V 60 Hz 3phase,

RATING OF TUNGSTEN INCANDESCENT LAMPS	347 V 60 Hz 1phase, (UL/CSA) 100 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (UL/CSA)
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Design verification

EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	12.6 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	4.2 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	95 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	5.8 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-component-dilm-characteristic-curve-003.eps eaton-contactors-short-time-loading-dilm-characteristic-curve-002.eps eaton-contactors-switch-dilm-characteristic-curve-002.eps eaton-contactors-switch-dilm-characteristic-curve.eps
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-eu250752en.pdf eaton-contactor-declaration-of-conformity-uk251235en.pdf
DRAWINGS	eaton-contactors-dilm-dimensions-003.eps eaton-contactors-dilm-dimensions-011.eps eaton-contactors-mounting-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions.eps eaton-contactors-dilm-3d-drawing.eps eaton-contactors-dilm-3d-drawing-013.eps eaton-general-ie-ready-dilm-contactor-standards.eps
ECAD MODEL	ETN.239478.edz
INSTALLATION INSTRUCTIONS	eaton-dil-contactors-instruction-leaflet-il03407039z.pdf
INSTALLATION VIDEOS	WIN-WIN with push-in technology
MCAD MODEL	DA-CS-dil_m80_170

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-m80-170.dwg
SPECIFICATIONS AND DATASHEETS	Eaton Specification Sheet - 239478
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: