

Specifications



Eaton 199233

Eaton Moeller® series DILM Contactor, 3 pole, 380 V 400 V 4 kW, 1 N/O, 24 V DC, DC operation, Push in terminals

General specifications

PRODUCT NAME	Eaton Moeller® series DILM contactor
CATALOG NUMBER	199233
MODEL CODE	DILM9-10(24VDC)-PI
EAN	4015081973170
PRODUCT LENGTH/DEPTH	75 mm
PRODUCT HEIGHT	68 mm
PRODUCT WIDTH	45 mm
PRODUCT WEIGHT	0.285 kg
CERTIFICATIONS	IEC/EN 60947 VDE 0660 UL Listed CSA certified UL Category Control No.: NLDX CE marking UL File No.: E29096 CSA Class No.: 2411-03, 3211-04 CSA File No.: 012528
CATALOG NOTES	Also tested according to AC-3e.



Powering Business Worldwide

Ambient conditions, mechanical

SHOCK RESISTANCE

5.7 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, 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
7 g, N/O auxiliary 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
3.4 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

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

Communication

CONNECTION TO SMARTWIRE-DT

In conjunction with DIL-SWD SmartWire DT contactor module
Yes

Contacts

NUMBER OF MAIN CONTACTS (NORMALLY OPEN CONTACT) 3

NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS) 0

NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS) 1

NUMBER OF CONTACTS (NORMALLY OPEN CONTACTS) 1

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}
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

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	1.2 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0.4 W
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	4.5 W

Electrical rating

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

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

Features & functions

FITTED WITH:	Built-in suppressor circuit
NUMBER OF POLES	Three-pole

General information

APPLICATION	Contactors for Motors
CONNECTION	Push in terminals
DEGREE OF PROTECTION	IP20
LIFESPAN, MECHANICAL	10,000,000 Operations (DC operated)
OPERATING FREQUENCY	9000 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

Magnet system	
ARCING TIME	10 ms
DUTY FACTOR	100 %
PICK-UP VOLTAGE	0.7 - 1.3 V DC x Uc (without auxiliary contact module and at ambient air temperature + 40 °C) 0.85 - 1.1 V AC x Uc 0.85 - 1.1 V DC x Uc (only with auxiliary contact module with 3 or more N/C contacts) 0.8 - 1.1 V DC x Uc
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

	actuated from front (EN 50274)
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	6000 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
FRAME SIZE	FS1

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

Safety

SAFE ISOLATION

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

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

Special purpose ratings

SPECIAL PURPOSE RATING OF DEFINITE PURPOSE RATING

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

SPECIAL PURPOSE RATING OF ELEVATOR CONTROL

2 HP, 200 V 60 Hz 3-ph, (UL/CSA)
2 HP, 240 V 60 Hz 3-ph, (UL/CSA)
4.8 A, 480 V 60 Hz 3-ph, (UL/CSA)
7.8 A, 200 V 60 Hz 3-ph, (UL/CSA)
6.8 A, 240 V 60 Hz 3-ph, (UL/CSA)
3 HP, 480 V 60 Hz 3-ph, (UL/CSA)
5 HP, 600 V 60 Hz 3-ph, (UL/CSA)
6.1 A, 600 V 60 Hz 3-ph, (UL/CSA)

SPECIAL PURPOSE RATING OF REFRIGERATION CONTROL (CSA ONLY)

10 A, FLA 480 V 60 Hz 3phase; (CSA)
10 A, FLA 600 V 60 Hz 3phase; (CSA)
60 A, LRA 480 V 60 Hz 3phase; (CSA)
60 A, LRA 600 V 60 Hz 3phase; (CSA)

SPECIAL PURPOSE RATING OF RESISTANCE AIR HEATING

18 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (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 (480V 60Hz 3phase, 277V 60Hz 1phase)
18 A (600V 60Hz 3phase, 347V 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)

A600, AC operated (UL/CSA)
P300, DC operated (UL/CSA)

SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)

20 A, Maximum motor rating (UL/CSA)

Terminal capacities

SCREWDRIVER SIZE	3.0 x 0.5 mm, Terminal screw
	3 x 0.5 mm, Terminal screw
STRIPPING LENGTH (MAIN CABLE)	10 mm
TERMINAL CAPACITY (FLEXIBLE WITH UNISOLATED FERRULE)	1 x (0.5 - 2.5) mm ²
	2 x (0.5 - 2.5) mm ²
TERMINAL CAPACITY (FLEXIBLE)	2 x (0.5 - 2.5) mm ²
	1 x (0.5 - 2.5) mm ²
TERMINAL CAPACITY (FLEXIBLE WITH ULTRASONIC WELDED CABLE END)	1 x (0.5 - 2.5) mm ²
	2 x (0.5 - 2.5) mm ²
TERMINAL CAPACITY (SOLID)	1 x (0.5 - 2.5) mm ²
	2 x (0.5 - 2.5) mm ²
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	1 x (0.5 - 2.5) mm ²
	2 x (0.5 - 1.5) mm ²
TERMINAL CAPACITY (SOLID/STRANDED AWG)	20 - 14

Resources

CATALOGUES	eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-uk251209en.pdf
	eaton-contactor-declaration-of-conformity-eu250726en.pdf
DRAWINGS	eaton-contactors-dimensions-007.eps
ECAD MODEL	ETN.199233.edz
INSTALLATION VIDEOS	WIN-WIN with push-in technology
MCAD MODEL	eaton-iec-contactors-mcad-3d-models-dil-m7-15-pi.stp
	eaton-iec-contactors-mcad-drawings-dil-m7-15-pi.dwg
PEP ECO-PASSPORT	eaton-iec-contactors-pep-eato-00137-v0101-en.pdf

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

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