

Specifications



Photo is representative



Eaton 208209

Eaton Moeller® series DILM Contactor, 380 V 400 V 212 kW, 2 N/O, 2 NC, RA 250: 110 - 250 V 40 - 60 Hz/110 - 350 V DC, AC and DC operation, Screw connection

General specifications

PRODUCT NAME	Eaton Moeller® series DILM Contactor
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CATALOG NUMBER	208209
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MODEL CODE	DILM400/22(RA250)
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EAN	4015082082093
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PRODUCT LENGTH/DEPTH	216 mm
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PRODUCT HEIGHT	209 mm
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PRODUCT WIDTH	160 mm
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PRODUCT WEIGHT	8.505 kg
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UL File No.: E29096

UL 60947-4-1

UL Category Control No.: NLDX

CSA Class No.: 3211-04

IEC/EN 60947-4-1

VDE 0660

UL/CSA

CSA file No. 012528

North America (UL listed, CSA certified)

EN 45545: Fire protection on railway vehicles

IEC 61373: Vibration and shock, tested for category 1 class B

CE marking

CERTIFICATIONS

CATALOG NOTES

- Contacts according to EN 50012
- Also tested according to AC-3e up to 500 V.
- Also suitable for motors with efficiency class IE3.
- EN 45545 - Fire protection on railway vehicles:

AC-1/Conventional thermal current Ith

**CONVENTIONAL
THERMAL CURRENT ITH
(1-POLE, ENCLOSED)** 1125 A

**CONVENTIONAL
THERMAL CURRENT ITH
(3-POLE, ENCLOSED)** 450 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 40°C (3-POLE, OPEN)** 612 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 50°C (3-POLE, OPEN)** 548 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 55°C (3-POLE, OPEN)** 522 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 60°C (3-POLE, OPEN)** 500 A

**CONVENTIONAL
THERMAL CURRENT ITH
OF MAIN CONTACTS (1-
POLE, OPEN)** 1250 A

Contacts

**NUMBER OF AUXILIARY
CONTACTS (NORMALLY
CLOSED CONTACTS)** 2

**NUMBER OF AUXILIARY
CONTACTS (NORMALLY
OPEN CONTACTS)** 2

**NUMBER OF CONTACTS
(NORMALLY CLOSED
CONTACTS)** 2

**NUMBER OF CONTACTS
(NORMALLY OPEN
CONTACTS)** 2

Fire protection
class of all plastics
according to UL94:
V-0 / plastic weight
in total: 2.576 kg

- Conventional
thermal current Ith
of main contacts (1-
pole, open) at 60°

Climatic environmental conditions

ALTITUDE Max. 2000 m

**AMBIENT OPERATING
TEMPERATURE - MAX** 60 °C

**AMBIENT STORAGE
TEMPERATURE - MAX** 80 °C

**AMBIENT OPERATING
TEMPERATURE - MIN** -40 °C

**AMBIENT OPERATING
TEMPERATURE
(ENCLOSED) - MAX** 40 °C

**AMBIENT OPERATING
TEMPERATURE
(ENCLOSED) - MIN** -40 °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

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 The device meets the

FUNCTION	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 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.
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 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT- DEPENDENT PVID	12.33 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	400 A
STATIC HEAT DISSIPATION, NON- CURRENT-DEPENDENT PVS	7.9 W

Electrical rating

INRUSH CURRENT	Max. 30 x I _e (peak)
RATED BREAKING CAPACITY AT 1000 V	950 A
RATED BREAKING CAPACITY AT 220/230 V	5000 A
RATED BREAKING CAPACITY AT 380/400 V	5000 A
RATED BREAKING CAPACITY AT 500 V	5000 A
RATED BREAKING CAPACITY AT 660/690 V	5000 A
RATED INSULATION VOLTAGE (UI)	1000 V
RATED MAKING CAPACITY (COS PHI TO IEC/EN 60947)	5500 A
RATED OPERATIONAL CURRENT (IE)	307 A at up to 525 V (Individual compensation, three-phase capacitors, open) 177 A at 690 V (Individual compensation, three-phase capacitors, open)
RATED OPERATIONAL CURRENT (IE) AT AC-3, 1000 V	95 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	400 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	400 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V	400 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	400 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	325 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 1000 V	95 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	296 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	296 A

General information

ACCESSORIES	Fitting options auxiliary contacts: on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA
APPLICATION	Contactors for Motors
CONNECTION	Screw terminals
DEGREE OF PROTECTION	IP00
ELECTROMAGNETIC COMPATIBILITY	Designed for operation in industrial environments. Its use in residential environments may cause radio-frequency interference, requiring additional noise suppression.
FITTED WITH:	Suppressor circuit in actuating electronics
LIFESPAN, ELECTRICAL	100,000 Operations (at Condensor operation)
LIFESPAN, MECHANICAL	7,000,000 Operations (DC operated) 7,000,000 Operations (AC operated)
OPERATING FREQUENCY	200 Operations/h 2000 mechanical Operations/h (AC operated) 2000 mechanical Operations/h (DC operated)
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
PRODUCT CATEGORY	Contactors
PROTECTION	Finger and back-of-hand proof with terminal shroud or terminal block, Protection against direct contact when actuated from front (EN 50274)
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	8000 V AC
RESISTANCE	500 mΩ (Admissible transitional contact resistance - of the external control circuit device when actuating A11)
SHOCK RESISTANCE	8 g, N/C auxiliary contact, Mechanical, according to

RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	296 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	260 A
RATED OPERATIONAL POWER AT AC-3, 1000 V, 50 HZ	132 kW
RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	132 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	200 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	232 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	250 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	280 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	300 kW
RATED OPERATIONAL POWER AT AC-4, 1000 V, 50 HZ	132 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	92 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	100 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	176 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	186 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	210 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	240 kW
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	1000 V
SAFE ISOLATION	1000 V AC, Between coil and contacts, 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 10 g, N/O auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms
SIGNAL LEVEL	5 V - 15 V, PLC signal level (A3 - A4) to IEC/EN 61131-2 (type 2), Magnet systems
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/DC

	EN 61140
SPECIAL PURPOSE RATING OF DEFINITE PURPOSE RATING	550 A, FLA 480 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 3120 A, LRA 600 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 3300 A, LRA 480 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 420 A, FLA 600 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA)

Magnet system

BEHAVIOR IN MARGINAL AND TRANSITIONAL CONDITIONS

Sealing - Voltage interruptions $0 - 0.2 \times U_c$ min) > 10 ms: Drop-out of the contactor
 Sealing - Pick-up phase ($0.7 \times U_c$ min - $1.15 \times U_c$ max): Contactor switches on with certainty
 Sealing - Voltage drops ($0.6 - 0.7 \times U_c$ min: Contactor remains switched on
 Sealing - Pick-up phase ($0 - 0.7 \times U_c$ min: Contactor does not switch on
 Sealing - Voltage drops ($0.2 - 0.6 \times U_c$ min) > 12 ms: Drop-out of the contactor
 Sealing - Excess voltage ($1.15 - 1.3 \times U_c$ max): Contactor remains switched on
 Sealing - Voltage drops ($0.2 - 0.6 \times U_c$ min ≤ 12 ms: Time is bridged successfully
 Sealing - Voltage interruptions ($0 - 0.2 \times U_c$ min ≤ 10 ms: Time is bridged successfully

DROP-OUT VOLTAGE

AC operated: $0.2 \times U_S$ max - $0.6 \times U_S$ min, AC operated
 $0.2 \times U_S$ max - $0.6 \times U_S$ min, DC operated

DUTY FACTOR

100 %

PICK-UP VOLTAGE

$0.7 - 1.15 \times U_S$ AC x U_S
 $0.7 - 1.15 \times U_S$ DC x U_S

POWER CONSUMPTION

Control transformer with $u_k \leq 6\%$

POWER CONSUMPTION, PICK-UP, 50 HZ

495 VA, Pull-in power, Coil in a cold state and $1.0 \times U_S$

POWER CONSUMPTION, PICK-UP, 60 HZ

495 VA, Pull-in power, Coil in a cold state and $1.0 \times U_S$

POWER CONSUMPTION, SEALING, 50 HZ

7.9 W, Coil in a cold state and $1.0 \times U_S$
 14.2 VA, Coil in a cold state and $1.0 \times U_S$

POWER CONSUMPTION, SEALING, 60 HZ

14.2 VA, Coil in a cold state and $1.0 \times U_S$
 7.9 W, Coil in a cold state and $1.0 \times U_S$

RATED CONTROL SUPPLY

250 V

Motor rating

ASSIGNED MOTOR

POWER AT 200/208 V, 60 HZ, 3-PHASE 125 HP

ASSIGNED MOTOR

POWER AT 230/240 V, 60 HZ, 3-PHASE 150 HP

ASSIGNED MOTOR

POWER AT 460/480 V, 60 HZ, 3-PHASE 300 HP

ASSIGNED MOTOR

POWER AT 575/600 V, 60 HZ, 3-PHASE 400 HP

VOLTAGE (US) AT AC, 50 HZ - MAX	
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN	
	110 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	
	250 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN	
	110 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	
	250 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	
	110 V
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	
	80 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	
	110 ms

Short-circuit rating

SHORT-CIRCUIT CURRENT RATING (BASIC RATING)	600 A, max. CB, SCCR (UL/CSA) 30 kA, SCCR (UL/CSA) 800 A, max. Fuse, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 480 V)	30/100 kA, Fuse, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA) 800/600 A, Class J, max. Fuse, SCCR (UL/CSA) 100 kA, CB, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)	30 kA, CB, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA) 800/600 A, Class J, max. Fuse, SCCR (UL/CSA) 30/100 kA, Fuse, SCCR (UL/CSA)
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 1000 V	250 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 400 V	630 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 690 V	630 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 1000 V	200 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 400 V	500 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 690 V	500 A gG/gL

Switching capacity

SWITCHING CAPACITY (AUXILIARY CONTACTS, GENERAL USE)	15 A, 600 V AC, (UL/CSA) 1 A, 250 V DC, (UL/CSA)
SWITCHING CAPACITY (AUXILIARY CONTACTS, PILOT DUTY)	A600, AC operated (UL/CSA) P300, DC operated (UL/CSA)
SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	450 A, Maximum motor rating (UL/CSA)

Terminal capacities

SCREW SIZE	M10, Terminal screw, Main connections M3.5, Terminal screw, Control circuit cables
SCREWDRIVER SIZE	2, Terminal screw, Control circuit cables, Pozidriv screwdriver
TERMINAL CAPACITY (BUSBAR)	25 mm width, Main connection
TERMINAL CAPACITY (COPPER BAND)	Fixing with flat cable terminal or cable terminal blocks; See terminal capacity for cable terminal blocks
TERMINAL CAPACITY (FLEXIBLE WITH CABLE LUG)	50 - 240 mm ²
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	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)	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/STRANDED AWG)	2/0 - 500 MCM, Main cables 18 - 14, Control circuit cables
TERMINAL CAPACITY (STRANDED WITH CABLE LUG)	70 - 240 mm ²
TIGHTENING TORQUE	24 Nm, Main cable connection screw/bolt 1.2 Nm, Screw terminals, Control circuit cables
WIDTH ACROSS FLATS	16 mm

Resources

BROCHURES	eaton-product-brochure-dilmilh-power-contactors-brochure-br034010en-en-us.pdf
CATALOGUES	Product Range Catalog Switching and protecting motors
CHARACTERISTIC CURVE	eaton-contactors-short-time-loading-dilm-characteristic-curve-002.eps eaton-contactors-component-dilm-characteristic-curve-002.eps eaton-contactors-component-dilm-characteristic-curve-003.eps eaton-contactors-component-dilm-characteristic-curve.eeps
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-eu250620en.pdf eaton-contactor-declaration-of-conformity-uk251103en.pdf
DRAWINGS	eaton-contactors-mounting-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions.eeps eaton-contactors-dilm-dimensions-008.eps eaton-contactors-mounting-dilm-3d-drawing-002.eps eaton-contactors-dilm-3d-drawing-005.eps
ECAD MODEL	DA-CE-ETN.DILM400_22(RA250)
INSTALLATION INSTRUCTIONS	eaton-contactors-dilm250-to-dilm500-il03406002z.pdf
MCAD MODEL	eaton-iec-contactors-mcad-3d-models-dilm300-400-s22.stp

	eaton-iec-contactors-mcad-drawings-dilm300-400-s22.dwg
SYSTEM OVERVIEW	eaton-contactors-system55-dilm-explosion-drawing.eps
WIRING DIAGRAMS	eaton-contactors-contact-dilm-wiring-diagram-004.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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