

Specifications



Eaton 208221

Eaton Moeller® series DILM Contactor, 380 V 400 V 400 kW, 2 N/O, 2 NC, RA 110: 48 - 110 V 40 - 60 Hz/48 - 110 V DC, AC and DC operation, Screw connection

General specifications

PRODUCT NAME	Eaton Moeller® series DILM Contactor
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CATALOG NUMBER	208221
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MODEL CODE	DILM750/22(RA110)
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EAN	4015082082215
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PRODUCT LENGTH/DEPTH	232 mm
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PRODUCT HEIGHT	296 mm
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PRODUCT WIDTH	250 mm
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PRODUCT WEIGHT	16.52 kg
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CERTIFICATIONS

UL File No.: E29096
UL
CSA-C22.2 No. 60947-4-1-14
IEC/EN 60947
UL 60947-4-1
CE
VDE 0660
CSA Class No.: 3211-04
CSA File No.: 012528
IEC/EN 60947-4-1
UL Category Control No.: NLDX
CSA

CATALOG NOTES

- Contacts according to EN 50012
- Also tested according to AC-3e up to 690 V.
- Also suitable for motors with efficiency class IE3.
- Conventional thermal current Ith of main contacts (1-pole, open) at 60°

AC-1/Conventional thermal current Ith

CONVENTIONAL THERMAL CURRENT ITH AT 40°C (3-POLE, OPEN)	1102 A
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CONVENTIONAL THERMAL CURRENT ITH AT 50°C (3-POLE, OPEN)	986 A
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CONVENTIONAL THERMAL CURRENT ITH AT 55°C (3-POLE, OPEN)	940 A
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CONVENTIONAL THERMAL CURRENT ITH AT 60°C (3-POLE, OPEN)	900 A
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CONVENTIONAL THERMAL CURRENT ITH OF MAIN CONTACTS (1- POLE, OPEN)	2250 A
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Contacts

NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	2
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NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	2
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NUMBER OF CONTACTS (NORMALLY CLOSED CONTACTS)	2
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NUMBER OF CONTACTS (NORMALLY OPEN CONTACTS)	2
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Climatic environmental conditions

ALTITUDE	Max. 2000 m
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AMBIENT OPERATING TEMPERATURE - MAX	60 °C
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AMBIENT STORAGE TEMPERATURE - MAX	80 °C
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AMBIENT OPERATING TEMPERATURE - MIN	-40 °C
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AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX	40 °C
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AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN	-40 °C
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AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
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CLIMATIC PROOFING	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
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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.
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10.11 SHORT-CIRCUIT RATING	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
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10.12 ELECTROMAGNETIC COMPATIBILITY	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
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10.13 MECHANICAL FUNCTION	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.
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10.2.2 CORROSION RESISTANCE	Meets the product standard's requirements.
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10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES	Meets the product standard's requirements.
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10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS	Meets the product standard's requirements.
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TO NORMAL HEAT	
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	18 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	750 A

STATIC HEAT DISSIPATION, NON- CURRENT-DEPENDENT PVS	6.5 W
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Electrical rating

INRUSH CURRENT	Max. 30 x I _e (peak)
RATED BREAKING CAPACITY AT 1000 V	5800 A
RATED BREAKING CAPACITY AT 220/230 V	8200 A
RATED BREAKING CAPACITY AT 380/400 V	8200 A
RATED BREAKING CAPACITY AT 500 V	8200 A
RATED BREAKING CAPACITY AT 660/690 V	8200 A
RATED INSULATION VOLTAGE (UI)	1000 V
RATED MAKING CAPACITY (COS PHI TO IEC/EN 60947)	9840 A
RATED OPERATIONAL CURRENT (IE)	265 A at 690 V (Individual compensation, three-phase capacitors, open) 463 A at up to 525 V (Individual compensation, three-phase capacitors, open)
RATED OPERATIONAL CURRENT (IE) AT AC-3, 1000 V	580 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	750 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	750 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V	750 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	750 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	750 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 1000 V	464 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	576 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	576 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	5,000,000 Operations (DC operated) 5,000,000 Operations (AC operated)
OPERATING FREQUENCY	200 Operations/h 1000 mechanical Operations/h (AC operated) 1000 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	10 g, N/O main contact, Mechanical, according to

RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	576 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	576 A
RATED OPERATIONAL POWER AT AC-3, 1000 V, 50 HZ	800 kW
RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	260 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	400 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	455 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	480 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	550 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	720 kW
RATED OPERATIONAL POWER AT AC-4, 1000 V, 50 HZ	678 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	181 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	200 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	346 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	367 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	417 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	556 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 8 g, N/C auxiliary 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-4: Normal AC induction motors: starting, plugging, reversing, inching AC-3: Normal AC induction motors: starting, switch off during running AC-1: Non-inductive or slightly inductive loads, resistance furnaces
VOLTAGE TYPE	AC/DC

	EN 61140
SPECIAL PURPOSE RATING OF DEFINITE PURPOSE RATING	4800 A, LRA 480 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA)
	800 A, FLA 480 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA)
	4800 A, LRA 600 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA)
	800 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 drops (0.2 - 0.6 x U_c min $\leq$ 12 ms: Time is bridged successfully
 Sealing - Pick-up phase (0 - 0.7 x U_c min: Contactor does not switch on
 Sealing - Voltage drops (0.2 - 0.6 x U_c min) > 12 ms: Drop-out of the contactor
 Sealing - Voltage interruptions (0 - 0.2 x U_c min $\leq$ 10 ms: Time is bridged successfully
 Sealing - Voltage interruptions 0 - 0.2 x U_c min) > 10 ms: Drop-out of the contactor
 Sealing - Excess voltage (1.15 - 1.3 x U_c max): Contactor remains switched on
 Sealing - Voltage drops (0.6 - 0.7 x U_c min: Contactor remains switched on
 Sealing - Pick-up phase (0.7 x U_c min - 1.15 x U_c max): Contactor switches on with certainty

DROP-OUT VOLTAGE

0.2 x U_S max - 0.6 x U_S min, DC operated
 AC operated: 0.2 x U_S max - 0.6 x U_S min, AC operated

DUTY FACTOR

100 %

PICK-UP VOLTAGE

0.7 - 1.15 V AC x U_S
 0.7 - 1.15 V DC x U_S

POWER CONSUMPTION

Control transformer with $u_k \leq 7\%$

POWER CONSUMPTION, PICK-UP, 50 HZ

1100 VA, Pull-in power, Coil in a cold state and 1.0 x U_S

POWER CONSUMPTION, PICK-UP, 60 HZ

1100 VA, Pull-in power, Coil in a cold state and 1.0 x U_S

POWER CONSUMPTION, SEALING, 50 HZ

26.4 VA, Coil in a cold state and 1.0 x U_S
 10.3 W, Coil in a cold state and 1.0 x U_S

POWER CONSUMPTION, SEALING, 60 HZ

26.4 VA, Coil in a cold state and 1.0 x U_S
 10.3 W, Coil in a cold state and 1.0 x U_S

Motor rating

ASSIGNED MOTOR

POWER AT 200/208 V, 60 HZ, 3-PHASE 250 HP

ASSIGNED MOTOR

POWER AT 230/240 V, 60 HZ, 3-PHASE 300 HP

ASSIGNED MOTOR

POWER AT 460/480 V, 60 HZ, 3-PHASE 600 HP

ASSIGNED MOTOR

POWER AT 575/600 V, 60 HZ, 3-PHASE 700 HP

RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX	110 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN	48 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	110 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN	48 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	110 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	48 V
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	70 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	110 ms

Short-circuit rating

SHORT-CIRCUIT CURRENT RATING (BASIC RATING)	42 kA, SCCR (UL/CSA) 2000 A, max. Fuse, SCCR (UL/CSA) 1200 A, max. CB, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 480 V)	85 kA, CB, SCCR (UL/CSA) 2000 A, max. Fuse, SCCR (UL/CSA) 1200 A, max. CB, SCCR (UL/CSA) 85 kA, Fuse, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)	85 kA, Fuse, SCCR (UL/CSA) 2000 A, max. Fuse, SCCR (UL/CSA) 1200 A, max. CB, SCCR (UL/CSA) 85 kA, CB, SCCR (UL/CSA)
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 1000 V	800 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 400 V	1200 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 690 V	1200 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 1000 V	630 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 400 V	630 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 690 V	630 A gG/gL

Switching capacity

SWITCHING CAPACITY (AUXILIARY CONTACTS, GENERAL USE)	1 A, 250 V DC, (UL/CSA) 15 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)	1102 A, Maximum motor rating (UL/CSA)

Terminal capacities

SCREW SIZE	M12, Terminal screw, Main connections M3.5, Terminal screw, Control circuit cables
SCREWDRIVER SIZE	2, Terminal screw, Control circuit cables, Pozidriv screwdriver
TERMINAL CAPACITY (BUSBAR)	60 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)	18 - 14, Control circuit cables 2/0 - 500 MCM, Main cables
TERMINAL CAPACITY (STRANDED WITH CABLE LUG)	70 - 240 mm ²
TIGHTENING TORQUE	1.2 Nm, Screw terminals, Control circuit cables 35 Nm, Main cable connection screw/bolt
WIDTH ACROSS FLATS	18 mm

Resources

BROCHURES	eaton-product-brochure-dilmilh-power-contactors-brochure-br034010en-en-us.pdf
CHARACTERISTIC CURVE	eaton-contactors-component-dilm-characteristic-curve-002.eps eaton-contactors-component-dilm-characteristic-curve.eps eaton-contactors-short-time-loading-dilm-characteristic-curve-002.eps eaton-contactors-component-dilm-characteristic-curve-003.eps
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-eu250667en.pdf eaton-contactor-declaration-of-conformity-uk251150en.pdf
DRAWINGS	eaton-contactors-mounting-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions.eps eaton-contactors-dilm-dimensions-005.eps eaton-contactors-mounting-dilm-3d-drawing-002.eps eaton-contactors-dilm-3d-drawing-006.eps
ECAD MODEL	DA-CE-ETN.DILM750_22(RA110)
INSTALLATION INSTRUCTIONS	eaton-contactors-dilm580-to-dilm1000-il03407023z.pdf
MCAD MODEL	eaton-dil m580 820-3d-model.stp eaton-iec-contactors-mcad-drawings-dil-m580-820.dwg

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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

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