

Specifications

Eaton 274190

Eaton Moeller® series DILM Contactor, 380 V 400 V 132 kW, 2 N/O, 2 NC, 220 - 240 V 50/60 Hz, AC operation, Screw connection

General specifications

PRODUCT NAME	Eaton Moeller® series DILM Contactor
CATALOG NUMBER	274190
MODEL CODE	DILM250-S/22(220- 240V50/60HZ)
EAN	4015082741907
PRODUCT LENGTH/DEPTH	208 mm
PRODUCT HEIGHT	189 mm
PRODUCT WIDTH	140 mm
PRODUCT WEIGHT	6.71 kg
CERTIFICATIONS	IEC/EN 60947-4-1 UL File No.: E29096 UL Category Control No.: NLDX VDE 0660 UL 60947-4-1 CSA Class No.: 3211-04 UL/CSA CSA File No. 1017510 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
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:



Powering Business Worldwide

AC-1/Conventional thermal current Ith

**CONVENTIONAL
THERMAL CURRENT ITH
(1-POLE, ENCLOSED)** 750 A

**CONVENTIONAL
THERMAL CURRENT ITH
(3-POLE, ENCLOSED)** 300 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 40°C (3-POLE, OPEN)** 430 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 50°C (3-POLE, OPEN)** 380 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 55°C (3-POLE, OPEN)** 365 A

**CONVENTIONAL
THERMAL CURRENT ITH
AT 60°C (3-POLE, OPEN)** 350 A

**CONVENTIONAL
THERMAL CURRENT ITH
OF MAIN CONTACTS (1-
POLE, OPEN)** 875 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: 1.872 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	9.33 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	250 A
STATIC HEAT DISSIPATION, NON- CURRENT-DEPENDENT PVS	4.8 W

Electrical rating

INRUSH CURRENT	Max. 30 x I _e (peak)
RATED BREAKING CAPACITY AT 1000 V	760 A
RATED BREAKING CAPACITY AT 220/230 V	2500 A
RATED BREAKING CAPACITY AT 380/400 V	2500 A
RATED BREAKING CAPACITY AT 500 V	2500 A
RATED BREAKING CAPACITY AT 660/690 V	2500 A
RATED INSULATION VOLTAGE (UI)	1000 V
RATED MAKING CAPACITY (COS PHI TO IEC/EN 60947)	3000 A
RATED OPERATIONAL CURRENT (IE)	220 A at up to 525 V (Individual compensation, three-phase capacitors, open) 133 A at 690 V (Individual compensation, three-phase capacitors, open)
RATED OPERATIONAL CURRENT (IE) AT AC-3, 1000 V	76 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	250 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	250 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V	250 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	250 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	185 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 1000 V	76 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	200 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	200 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	10,000,000 Operations (AC operated)
OPERATING FREQUENCY	3000 mechanical Operations/h (AC operated) 200 Operations/h
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 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-

RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	200 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	150 A
RATED OPERATIONAL POWER AT AC-3, 1000 V, 50 HZ	108 kW
RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	85 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	132 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	143 kW
RATED OPERATIONAL POWER AT AC-3, 440 V, 50 HZ	152 kW
RATED OPERATIONAL POWER AT AC-3, 500 V, 50 HZ	173 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	170 kW
RATED OPERATIONAL POWER AT AC-4, 1000 V, 50 HZ	108 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	62 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	68 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	117 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	125 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	138 kW
RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	137 kW
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	1000 V
SAFE ISOLATION	500 V AC, Between coil and contacts, According to

	sinusoidal shock 10 ms 10 g, N/O auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms
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	AC

	EN 61140 500 V AC, Between the contacts, According to EN 61140
SPECIAL PURPOSE RATING OF DEFINITE PURPOSE RATING	2050 A, LRA 480 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 300 A, FLA 480 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 1800 A, LRA 600 V 60 Hz 3- ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 250 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 - Pick-up phase (0 - 0.7 x U_c min: Contactor does not switch on
 Sealing - Pick-up phase (0.7 x U_c min - 1.15 x U_c max): Contactor switches on with certainty
 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 - Voltage drops (0.2 - 0.6 x U_c min $\leq$ 12 ms: Time is bridged successfully
 Sealing - Voltage drops (0.2 - 0.6 x U_c min) > 12 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

DROP-OUT VOLTAGE

AC operated: 0.2 x U_S max - 0.4 x U_S min, AC operated
 AC operated: 0.25 x U_S max - 0.6 x U_S min, AC operated

DUTY FACTOR

100 %

PICK-UP VOLTAGE

0.85 - 1.1 V AC x U_S

POWER CONSUMPTION

Control transformer with $u_k \leq 10\%$

POWER CONSUMPTION, PICK-UP, 50 HZ

325 W, Pull-in power, Coil in a cold state and 1.0 x U_S
 360 VA, Pull-in power, Coil in a cold state and 1.0 x U_S

POWER CONSUMPTION, PICK-UP, 60 HZ

360 VA, Pull-in power, Coil in a cold state and 1.0 x U_S
 325 W, Pull-in power, Coil in a cold state and 1.0 x U_S

POWER CONSUMPTION, SEALING, 50 HZ

7.3 VA, Coil in a cold state and 1.0 x U_S
 4.8 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 75 HP

ASSIGNED MOTOR

POWER AT 230/240 V, 60 HZ, 3-PHASE 100 HP

ASSIGNED MOTOR

POWER AT 460/480 V, 60 HZ, 3-PHASE 200 HP

ASSIGNED MOTOR

POWER AT 575/600 V, 60 HZ, 3-PHASE 250 HP

POWER CONSUMPTION, SEALING, 60 HZ	7.3 VA, Coil in a cold state and 1.0 x Us 4.8 W, Coil in a cold state and 1.0 x Us
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX	240 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN	220 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	240 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN	220 V
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	55 ms
SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	40 ms

Short-circuit rating

SHORT-CIRCUIT CURRENT RATING (BASIC RATING)	700 A, max. Fuse, SCCR (UL/CSA) 18 kA, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 480 V)	250 A, max. CB, SCCR (UL/CSA) 65 kA, CB, SCCR (UL/CSA) 18 kA, Fuse, SCCR (UL/CSA) 700 A, Class L, max. Fuse, SCCR (UL/CSA) 700 A, Class L/450 A, Class J, max. Fuse, SCCR (UL/CSA) 18/100 kA, Fuse, SCCR (UL/CSA)
SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)	18 kA, CB, SCCR (UL/CSA) 18 kA, Fuse, SCCR (UL/CSA) 700 A, Class J, max. Fuse, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA) 700 A, Class L/450 A, Class J, max. Fuse, SCCR (UL/CSA) 18/100 kA, Fuse, SCCR (UL/CSA)
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 1000 V	200 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 400 V	400 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 690 V	400 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 1000 V	160 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 400 V	315 A gG/gL
SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION) AT 690 V	315 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)	P300, DC operated (UL/CSA) A600, AC operated (UL/CSA)
SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	350 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)	2 x (0.75 - 2.5) mm ² , Control circuit cables 1 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	1.2 Nm, Screw terminals, Control circuit cables 24 Nm, Main cable connection screw/bolt
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-003.eps eaton-contactors-component-dilm-characteristic-curve-eps eaton-contactors-component-dilm-characteristic-curve-002.eps
DECLARATIONS OF CONFORMITY	eaton-contactor-declaration-of-conformity-eu250619en.pdf eaton-contactor-declaration-of-conformity-uk251102en.pdf
DRAWINGS	eaton-contactors-dilm-dimensions-007.eps eaton-contactors-mounting-dilm-dimensions-002.eps eaton-contactors-mounting-dilm-dimensions.eps eaton-contactors-mounting-dilm-3d-drawing-002.eps eaton-contactors-dilm-3d-drawing-004.eps
ECAD MODEL	DA-CE-ETN.DILM250-S_22(220-240V50_60HZ)
INSTALLATION INSTRUCTIONS	eaton-contactor-dilm250s-to-dilm500s-il03406005z.pdf
MCAD MODEL	eaton-iec-contactors-mcad-3d-models-dilm250-300-s22.stp

	eaton-iec-contactors-mcad-drawings-dilm250-300-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:



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