

Specifications



Eaton 051650

Eaton Moeller® series DILEEM Contactor, 24 V DC, 3 pole, 380 V 400 V, 3 kW, Contacts N/C = Normally closed= 1 NC, Screw terminals, DC operation DILEEM-01-G(24VDC)

General specifications

PRODUCT NAME	Eaton Moeller® series DILEEM Mini contactor
CATALOG NUMBER	051650
MODEL CODE	DILEEM-01-G(24VDC)
EAN	4015080516507
PRODUCT LENGTH/DEPTH	54 mm
PRODUCT HEIGHT	58 mm
PRODUCT WIDTH	45 mm
PRODUCT WEIGHT	0.206 kg
CERTIFICATIONS	UL VDE 0660 UL 508 CSA File No.: 012528 CSA-C22.2 No. 14-05 UL Category Control No.: NLDX CSA Class No.: 3211-04 IEC/EN 60947 CE IEC/EN 60947-4-1 UL File No.: E29096 CSA
CATALOG NOTES	Also tested according to AC-3e.

Climatic environmental conditions

AMBIENT OPERATING TEMPERATURE - MAX	50 °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

Conventional thermal current Ith

CONVENTIONAL THERMAL CURRENT ITH (1-POLE, ENCLOSED)	40 A
CONVENTIONAL THERMAL CURRENT ITH (3-POLE, ENCLOSED)	16 A
CONVENTIONAL THERMAL CURRENT ITH AT 55°C (3-POLE, OPEN)	19 A
CONVENTIONAL THERMAL CURRENT ITH OF AUXILIARY CONTACTS (1-POLE, OPEN)	10 A
CONVENTIONAL THERMAL CURRENT ITH OF MAIN CONTACTS (1-POLE, OPEN)	50 A

Contacts

CONTROL CIRCUIT RELIABILITY	< 2 λ, < 1 failure at 100,000,000 Operations (at U _e = 24 V DC, U _{min} = 17 V, I _{min} = 5.4 mA)
NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	1
NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	0

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 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	0.6 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0.2 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	6.6 A
STATIC HEAT	2.3 W

Electrical rating

**RATED BREAKING
CAPACITY AT 220/230 V** 90 A

**RATED BREAKING
CAPACITY AT 380/400 V** 90 A

**RATED BREAKING
CAPACITY AT 500 V** 64 A

**RATED BREAKING
CAPACITY AT 660/690 V** 42 A

**RATED INSULATION
VOLTAGE (UI)** 690 V

**RATED MAKING
CAPACITY UP TO 440 V
(COS PHI TO IEC/EN
60947)** 110 A

**RATED OPERATIONAL
CURRENT (IE)** 2.5 A at 60 V, DC L/R $\leq$ 15 ms (with 2 contacts in series)
0.5 A at 220 V, DC L/R $\leq$ 15 ms (with 3 contacts in series)
2.5 A at 24 V, DC L/R $\leq$ 15 ms (with 1 contact in series)
1.5 A at 100 V, DC L/R $\leq$ 15 ms (with 3 contacts in series)

**RATED OPERATIONAL
CURRENT (IE) AT AC-1,
380 V, 400 V, 415 V** 22 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-15,
220 V, 230 V, 240 V** 6 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-15,
380 V, 400 V, 415 V** 3 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-15,
500 V** 1.5 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
220 V, 230 V, 240 V** 6.6 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
380 V, 400 V, 415 V** 6.6 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
440 V** 6.6 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,
500 V** 5 A

**RATED OPERATIONAL
CURRENT (IE) AT AC-3,** 3.5 A

Features & functions

FEATURES

Positive operating contacts to EN 60947-5-1 appendix L, including auxiliary contact module

FITTED WITH:

Auxiliary contact

NUMBER OF POLES

Three-pole

660 V, 690 V	
RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V	5 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V	5 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V	3.7 A
RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V	2.9 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 110 V	20 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 12 V	20 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 220 V	20 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 24 V	20 A
RATED OPERATIONAL CURRENT (IE) AT DC-1, 60 V	20 A
RATED OPERATIONAL POWER AT AC-3, 240 V, 50 HZ	1.8 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	3 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	3.1 kW
RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ	1.1 kW
RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ	1.3 kW
RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ	2.3 kW
RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ	2.4 kW
RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ	2.2 kW

RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ	2.2 kW
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	690 V
SAFE ISOLATION	300 V AC, Between the contacts, According to EN 61140 300 V AC, Between coil and auxiliary contacts, According to EN 61140 300 V AC, Between auxiliary contacts, According to EN 61140 300 V AC, Between coil and contacts, According to EN 61140

General information

APPLICATION	Mini Contactors for Motors and Resistive Loads
DEGREE OF PROTECTION	IP20
LIFESPAN, MECHANICAL	20,000,000 Operations 150,000 Operations (at 240 V, DC, L/R = 50 ms: 2 contacts in series 0.5 A) 200,000 Operations (at 240 V, AC-15)
MOUNTING POSITION	As required (except vertical with terminals A1/A2 at the bottom)
OPERATING FREQUENCY	9000 mechanical Operations/h
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)	6000 V AC
SHOCK RESISTANCE	10 g, N/C auxiliary contact, Basic unit without auxiliary contact module, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 20 g, N/C auxiliary contact, Basic unit with auxiliary contact module, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 10 g, N/O main contact, Basic unit without auxiliary contact module, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 10 g, N/O main contact, Basic unit with auxiliary contact module, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 20 g, N/O auxiliary contact, Basic unit with auxiliary contact module,

Magnet system

ARCING TIME	12 ms at 690 V AC
CHANGEOVER TIME	40 - 50 ms
DUTY FACTOR	100 %
PICK-UP VOLTAGE	0.8 - 1.1 V DC x U _c
POWER CONSUMPTION	2.3 VA/W at DC (Pick-up/Sealing power) Smoothed DC voltage or three-phase bridge rectifier
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	24 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	24 V
SWITCHING TIME (AC OPERATED, N/O, WITH AUXILIARY CONTACT MODULE, CLOSING DELAY)	70 ms
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX	35 ms
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MIN	26 ms
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX	25 ms
SWITCHING TIME (DC OPERATED, MAKE CONTACTS, OPENING DELAY) - MIN	15 ms

	Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms
SUITABLE FOR	Also motors with efficiency class IE3
UTILIZATION CATEGORY	AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-4: Normal AC induction motors: starting, plugging, reversing, inching AC-3: Normal AC induction motors: starting, switch off during running
VOLTAGE TYPE	DC

Motor rating

**ASSIGNED MOTOR
POWER AT 115/120 V, 60
HZ, 1-PHASE** 0.25 HP

**ASSIGNED MOTOR
POWER AT 200/208 V, 60
HZ, 3-PHASE** 1.5 HP

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

**ASSIGNED MOTOR
POWER AT 230/240 V, 60
HZ, 3-PHASE** 2 HP

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

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

Short-circuit rating

**SHORT-CIRCUIT CURRENT
RATING (BASIC RATING)** 5 kA, SCCR (UL/CSA)
45 A, max. Fuse, SCCR
(UL/CSA)

SHORT-CIRCUIT PROTECTION

6 A gG/gL, Max. Fuse 500V,
Auxiliary contacts, Short-
circuit rating without
welding
10 A fast, Max. Fuse 500V,
Auxiliary contacts, Short-
circuit rating without
welding
PKZM0-4, Maximum
overcurrent protective
device, Short-circuit
protection only, Auxiliary
contacts, Short-circuit
rating without welding

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 1 COORDINATION)
AT 500 V** 20 A gG/gL

**SHORT-CIRCUIT
PROTECTION RATING
(TYPE 2 COORDINATION)
AT 500 V** 10 A gG/gL

Switching capacity

SWITCHING CAPACITY (AUXILIARY CONTACTS, GENERAL USE)	10 A, 600 V AC, (UL/CSA) 0.5 A, 250 V DC, (UL/CSA)
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SWITCHING CAPACITY (AUXILIARY CONTACTS, PILOT DUTY)	A600, AC operated (UL/CSA) P300, DC operated (UL/CSA)
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SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)	15 A, Maximum motor rating (UL/CSA)
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Terminal capacities

SCREW SIZE	M3.5, Terminal screw
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SCREWDRIVER SIZE	0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver 2, Terminal screw, Pozidriv screwdriver
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STRIPPING LENGTH (MAIN CABLE)	8 mm
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TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	1 x (0.75 - 1.5) mm ² 2 x (0.75 - 1.5) mm ²
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TERMINAL CAPACITY (SOLID)	2 x (0.75 - 2.5) mm ² 1 x (0.75 - 2.5) mm ²
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TERMINAL CAPACITY (SOLID/STRANDED AWG)	18 - 14
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TIGHTENING TORQUE	1.2 Nm, Screw terminals
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Resources

CATALOGUES	eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf
CHARACTERISTIC CURVE	eaton-contactors-short-time-loading-dilm-characteristic-curve.eps eaton-contactors-component-dilm-characteristic-curve-003.eps
DECLARATIONS OF CONFORMITY	eaton-mini-contactor-declaration-of-conformity-uk251242en.pdf eaton-mini-contactor-declaration-of-conformity-eu250759en.pdf
DRAWINGS	eaton-contactors-diler-dimensions-004.eps eaton-contactors-diler-dimensions-005.eps eaton-contactors-dilem-dimensions.eps eaton-tripping-devices-mounting-diler-contactor-relay-symbol.eps eaton-general-ie-ready-dilm-contactor-standards.eps
ECAD MODEL	ETN.051650.edz
INSTALLATION INSTRUCTIONS	IL03407009Z
MCAD MODEL	DA-CS-dil_em eaton-contactor-relays-mcad-drawings-dil-em.dwg
PEP ECO-PASSPORT	eaton-iec-contactors-pep-eato-00136-v0101-en.pdf
SYSTEM OVERVIEW	eaton-contactors-accessory-dilem-system-overview.eps
WIRING DIAGRAMS	eaton-contactors-contact-dilm-wiring-diagram-002.eps

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
DATE:



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