# Specifications

Photo is representative

## Eaton 051797

Eaton Moeller® series DILEM Contactor, 400 V 50 Hz, 440 V 60 Hz, 3 pole, 380 V 400 V, 4 kW, Contacts N/C = Normally closed= 1 NC, Screw terminals, AC operation

### General specifications

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| **PRODUCT NAME** | Eaton Moeller® series DILEM Mini contactor |
| **CATALOG NUMBER** | 051797 |
| **MODEL CODE** | DILEM-01(400V50HZ,440V60HZ) |
| **EAN** | 4015080517979 |
| **PRODUCT LENGTH/DEPTH** | 52 mm |
| **PRODUCT HEIGHT** | 58 mm |
| **PRODUCT WIDTH** | 45 mm |
| **PRODUCT WEIGHT** | 0.17 kg |
| **CERTIFICATIONS** | CSA-C22.2 No. 14-05<br>UL<br>CSA File No.: 012528<br>CSA Class No.: 3211-04<br>UL 508<br>IEC/EN 60947<br>CE<br>CSA<br>UL Category Control No.: NLDX<br>VDE 0660<br>IEC/EN 60947-4-1<br>UL File No.: E29096 |
| **CATALOG NOTES** | Also tested according to AC-3e. |

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## Features & Functions

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|---|---|
| **FEATURES** | Positive operating contacts to EN 60947-5-1 appendix L, including auxiliary contact module |
| **FITTED WITH:** | Auxiliary contact |
| **NUMBER OF POLES** | Three-pole |

## General

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| **APPLICATION** | Mini Contactors for Motors and Resistive Loads |
| **LIFESPAN, MECHANICAL** | 150,000 Operations (at 240 V, DC, L/R = 50 ms: 2 contacts in series 0.5 A)<br>7,000,000 Operations (Coil 50/60 Hz)<br>10,000,000 Operations<br>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/O main contact, Basic unit without auxiliary contact module, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms<br>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<br>20 g, N/O auxiliary contact, Basic unit with auxiliary contact module, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms<br>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<br>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 |
| **SUITABLE FOR** | Also motors with efficiency class IE3 |
| **UTILIZATION CATEGORY** | AC-1: Non-inductive or slightly inductive loads, resistance furnaces<br>AC-3: Normal AC induction motors: starting, switch off during running<br>AC-4: Normal AC induction motors: starting, plugging, reversing, inching |
| **VOLTAGE TYPE** | AC |

## Climatic environmental conditions

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| **AMBIENT OPERATING TEMPERATURE - MIN** | -25 °C |
| **AMBIENT OPERATING TEMPERATURE - MAX** | 50 °C |
| **AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN** | -25 °C |
| **AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX** | 40 °C |
| **AMBIENT STORAGE TEMPERATURE - MIN** | -40 °C |
| **AMBIENT STORAGE TEMPERATURE - MAX** | 80 °C |
| **CLIMATIC PROOFING** | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |

## Terminal capacities

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|---|---|
| **TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)** | 2 x (0.75 - 1.5) $mm^2$<br>1 x (0.75 - 1.5) $mm^2$ |
| **TERMINAL CAPACITY (SOLID)** | 1 x (0.75 - 2.5) $mm^2$<br>2 x (0.75 - 2.5) $mm^2$ |
| **TERMINAL CAPACITY (SOLID/STRANDED AWG)** | 18 - 14 |
| **STRIPPING LENGTH (MAIN CABLE)** | 8 mm |
| **SCREWDRIVER SIZE** | 0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver<br>2, Terminal screw, Pozidriv screwdriver |
| **TIGHTENING TORQUE** | 1.2 Nm, Screw terminals |

## Electrical rating

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|---|---|
| **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 OPERATIONAL POWER AT AC-3, 240 V, 50 HZ** | 2.5 kW |
| **RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ** | 4 kW |
| **RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ** | 4.3 kW |
| **RATED BREAKING CAPACITY AT 660/690 V** | 42 A |
| **RATED MAKING CAPACITY UP TO 440 V (COS PHI TO IEC/EN 60947)** | 110 A |
| **RATED OPERATIONAL POWER AT AC-4, 220/230 V, 50 HZ** | 1.5 kW |
| **RATED OPERATIONAL POWER AT AC-4, 240 V, 50 HZ** | 1.8 kW |
| **RATED OPERATIONAL POWER AT AC-4, 415 V, 50 HZ** | 3.1 kW |
| **RATED OPERATIONAL POWER AT AC-4, 440 V, 50 HZ** | 3.3 kW |
| **RATED OPERATIONAL POWER AT AC-4, 500 V, 50 HZ** | 3 kW |
| **RATED OPERATIONAL POWER AT AC-4, 660/690 V, 50 HZ** | 3 kW |
| **RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX** | 690 V |
| **RATED INSULATION VOLTAGE (UI)** | 690 V |
| **RATED OPERATIONAL CURRENT (IE)** | 2.5 A at 60 V, DC L/R ≤ 15 ms (with 2 contacts in series)<br>1.5 A at 100 V, DC L/R ≤ 15 |

## Short-circuit rating

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| **SHORT-CIRCUIT CURRENT RATING (BASIC RATING)** | 5 kA, SCCR (UL/CSA)<br>45 A, max. Fuse, SCCR (UL/CSA) |
| **SHORT-CIRCUIT PROTECTION** | PKZM0-4, Maximum overcurrent protective device, Short-circuit protection only, Auxiliary contacts, Short-circuit rating without welding<br>6 A gG/gL, Max. Fuse 500V, Auxiliary contacts, Short-circuit rating without welding<br>10 A fast, Max. Fuse 500V, 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 |

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| | ms (with 3 contacts in series)<br>2.5 A at 24 V, DC L/R ≤ 15 ms (with 1 contact in series)<br>0.5 A at 220 V, DC L/R ≤ 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** | 9 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V** | 9 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V** | 9 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V** | 6.4 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V** | 4.8 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V** | 6.6 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V** | 6.6 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V** | 5 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V** | 3.4 A |
| **RATED OPERATIONAL CURRENT (IE) AT DC-1, 110 V** | 20 A |

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| **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 |
| **SAFE ISOLATION** | 300 V AC, Between coil and auxiliary contacts, According to EN 61140<br>300 V AC, Between coil and contacts, According to EN 61140<br>300 V AC, Between auxiliary contacts, According to EN 61140<br>300 V AC, Between the contacts, According to EN 61140 |

## Conventional thermal current Ith

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| **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 |

## Switching capacity

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

## Magnet system

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| **ARCING TIME** | 12 ms at 690 V AC |
| **CHANGEOVER TIME** | 16 - 21 ms |
| **DUTY FACTOR** | 100 % |
| **PICK-UP VOLTAGE** | 1.1 V AC x Uc (voltage tolerance - dual frequency coil 50/60 Hz)<br>0.8 - 1.1 V AC x Uc (voltage tolerance - single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz) |
| **POWER CONSUMPTION, PICK-UP, 50 HZ** | 22 W, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz<br>25 VA, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz |
| **POWER CONSUMPTION, PICK-UP, 60 HZ** | 25 VA, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz<br>22 W, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz |
| **POWER CONSUMPTION, SEALING, 50 HZ** | 4.6 VA, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz<br>1.8 W, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz |
| **POWER CONSUMPTION, SEALING, 60 HZ** | 1.8 W, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN** | 400 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX** | 400 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN** | 440 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX** | 440 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT DC -** | 0 V |

## Motor rating

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| **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** | 2 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** | 5 HP |

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| **MIN** | |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX** | 0 V |
| **SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MIN** | 14 ms |
| **SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX** | 21 ms |
| **SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MIN** | 8 ms |
| **SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX** | 18 ms |
| **SWITCHING TIME (AC OPERATED, N/O, WITH AUXILIARY CONTACT MODULE, CLOSING DELAY)** | 45 ms |

## Contacts

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| **CONTROL CIRCUIT RELIABILITY** | < 2 λ, < 1 failure at 100,000,000 Operations (at $U_e$ = 24 V DC, Umin = 17 V, Imin = 5.4 mA) |
| **NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)** | 1 |
| **NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)** | 0 |

## Design verification

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| **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 |
| **RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** | 9 A |
| **STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS** | 1.8 W |
| **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** | Meets the product standard's requirements. |

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| **INSULATING MATERIALS 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. |
| **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 |

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| | 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. |

## Resources

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| **CATALOGUES** | eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf<br>Product Range Catalog Switching and protecting motors |
| **CHARACTERISTIC CURVE** | eaton-contactors-short-time-loading-dilm-characteristic-curve.eps<br>eaton-contactors-switch-dilm-characteristic-curve.eps<br>eaton-contactors-component-dilm-characteristic-curve-003.eps |
| **DECLARATIONS OF CONFORMITY** | DA-DC-00004788.pdf<br>DA-DC-00004812.pdf |
| **DRAWINGS** | eaton-contactors-diler-dimensions-004.eps<br>eaton-contactors-diler-dimensions-005.eps<br>eaton-contactors-dilem-dimensions.eps<br>eaton-tripping-devices-mounting-diler-contactor-relay-symbol.eps<br>eaton-general-ie-ready-dilm-contactor-standards.eps |
| **ECAD MODEL** | ETN.051797.edz |
| **INSTALLATION INSTRUCTIONS** | IL03407009Z |
| **MCAD MODEL** | DA-CS-dil_em<br>DA-CD-dil_em |
| **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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