

# Specifications

Photo is representative

## Eaton 231676

Eaton Moeller® series DILEM Contactor, 240 V 50 Hz, 3 pole, 380 V 400 V, 4 kW, Contacts N/C = Normally closed= 1 NC, Spring-loaded terminals, AC operation

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller® series DILEM Mini contactor
<b>CATALOG NUMBER</b>	231676
<b>MODEL CODE</b>	DILEM-01-C(240V50HZ)
<b>EAN</b>	4015082316761
<b>PRODUCT LENGTH/DEPTH</b>	52 mm
<b>PRODUCT HEIGHT</b>	58 mm
<b>PRODUCT WIDTH</b>	45 mm
<b>PRODUCT WEIGHT</b>	0.17 kg
<b>CERTIFICATIONS</b>	CSA CSA Class No.: 3211-04 CSA-C22.2 No. 14-05 UL 508 IEC/EN 60947 UL CE CSA File No.: 012528 VDE 0660 IEC/EN 60947-4-1 UL Category Control No.: NLDX UL File No.: E29096
<b>CATALOG NOTES</b>	Also tested according to AC-3e.

## Features & Functions

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

## General

<b>APPLICATION</b>	Mini Contactors for Motors and Resistive Loads
<b>LIFESPAN, MECHANICAL</b>	200,000 Operations (at 240 V, AC-15) 7,000,000 Operations (Coil 50/60 Hz) 10,000,000 Operations 150,000 Operations (at 240 V, DC, L/R = 50 ms: 2 contacts in series 0.5 A)
<b>MOUNTING POSITION</b>	As required (except vertical with terminals A1/A2 at the bottom)
<b>OPERATING FREQUENCY</b>	9000 mechanical Operations/h
<b>OVERVOLTAGE CATEGORY</b>	III
<b>POLLUTION DEGREE</b>	3
<b>PRODUCT CATEGORY</b>	Contactors
<b>PROTECTION</b>	Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274)
<b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>	6000 V AC
<b>SHOCK RESISTANCE</b>	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 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 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 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
<b>SUITABLE FOR</b>	Also motors with efficiency class IE3
<b>UTILIZATION CATEGORY</b>	AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3: Normal AC induction motors: starting, switch off during running AC-4: Normal AC induction motors: starting, plugging, reversing, inching
<b>VOLTAGE TYPE</b>	AC

## Climatic environmental conditions

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

## Terminal capacities

<b>TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)</b>	1 x (1 - 2.5) mm <sup>2</sup> 2 x (1 - 2.5) mm <sup>2</sup>
<b>TERMINAL CAPACITY (SOLID/STRANDED AWG)</b>	16 - 14
<b>STRIPPING LENGTH (MAIN CABLE)</b>	10 mm
<b>SCREWDRIVER SIZE</b>	0.6 x 3.5 mm, Spring- loaded terminals

## 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 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 24 V, DC L/R ≤ 15  
ms (with 1 contact in  
series)  
2.5 A at 60 V, DC L/R ≤ 15

## 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

	ms (with 2 contacts in series) 0.5 A at 220 V, DC L/R ≤ 15 ms (with 3 contacts in series) 1.5 A at 100 V, DC L/R ≤ 15 ms (with 3 contacts in series)
<b>RATED OPERATIONAL CURRENT (IE) AT AC-1, 380 V, 400 V, 415 V</b>	22 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-15, 220 V, 230 V, 240 V</b>	6 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-15, 380 V, 400 V, 415 V</b>	3 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-15, 500 V</b>	1.5 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V</b>	9 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V</b>	9 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-3, 440 V</b>	9 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V</b>	6.4 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V</b>	4.8 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V</b>	6.6 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-4, 440 V</b>	6.6 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-4, 500 V</b>	5 A
<b>RATED OPERATIONAL CURRENT (IE) AT AC-4, 660 V, 690 V</b>	3.4 A
<b>RATED OPERATIONAL CURRENT (IE) AT DC-1, 110 V</b>	20 A

<b>RATED OPERATIONAL CURRENT (IE) AT DC-1, 12 V</b>	20 A
<b>RATED OPERATIONAL CURRENT (IE) AT DC-1, 220 V</b>	20 A
<b>RATED OPERATIONAL CURRENT (IE) AT DC-1, 24 V</b>	20 A
<b>RATED OPERATIONAL CURRENT (IE) AT DC-1, 60 V</b>	20 A
<b>SAFE ISOLATION</b>	300 V AC, Between the contacts, According to EN 61140 300 V AC, Between coil and 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

Conventional thermal current Ith	
<b>CONVENTIONAL THERMAL CURRENT ITH (1-POLE, ENCLOSED)</b>	40 A
<b>CONVENTIONAL THERMAL CURRENT ITH (3-POLE, ENCLOSED)</b>	16 A
<b>CONVENTIONAL THERMAL CURRENT ITH AT 55°C (3-POLE, OPEN)</b>	19 A
<b>CONVENTIONAL THERMAL CURRENT ITH OF AUXILIARY CONTACTS (1-POLE, OPEN)</b>	10 A
<b>CONVENTIONAL THERMAL CURRENT ITH OF MAIN CONTACTS (1- POLE, OPEN)</b>	50 A

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

## Magnet system

**ARCING TIME** 12 ms at 690 V AC

**CHANGEOVER TIME** 16 - 21 ms

**DUTY FACTOR** 100 %

**PICK-UP VOLTAGE** 1.1 V AC x U<sub>c</sub> (voltage tolerance - dual frequency coil 50/60 Hz)  
0.8 - 1.1 V AC x U<sub>c</sub> (voltage tolerance - single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz)

**POWER CONSUMPTION, PICK-UP, 50 HZ** 25 VA, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz  
22 W, 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  
22 W, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz

**POWER CONSUMPTION, SEALING, 50 HZ** 1.8 W, AC, Single-frequency coil 50 Hz and Dual-frequency coil 50/60 Hz  
4.6 VA, 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** 240 V

**RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX** 240 V

**RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN** 0 V

**RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX** 0 V

**RATED CONTROL SUPPLY VOLTAGE (US) AT DC -** 0 V

## Motor rating

**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

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

Contacts	
<b>CONTROL CIRCUIT RELIABILITY</b>	< 2 λ, < 1 failure at 100,000,000 Operations (at U <sub>e</sub> = 24 V DC, U <sub>min</sub> = 17 V, I <sub>min</sub> = 5.4 mA)
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b>	1
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b>	0

Design verification	
<b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID</b>	1.2 W
<b>HEAT DISSIPATION CAPACITY PDISS</b>	0 W
<b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID</b>	0.4 W
<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	9 A
<b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>	1.8 W
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF</b>	Meets the product standard's requirements.



<b>INSULATING MATERIALS TO NORMAL HEAT</b>	
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>	Is the panel builder's responsibility.
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>	Is the panel builder's responsibility.
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>10.10 TEMPERATURE RISE</b>	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
<b>10.11 SHORT-CIRCUIT RATING</b>	Is the panel builder's responsibility. The

	specifications for the switchgear must be observed.
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

## Resources

### CATALOGUES

[Product Range Catalog](#)  
[Switching and protecting  
motors](#)

[eaton-product-overview-  
for-machinery-catalogue-  
ca08103003zen-en-us.pdf](#)

### CHARACTERISTIC CURVE

[eaton-contactors-  
component-dilm-  
characteristic-curve-  
003.eps](#)

[eaton-contactors-short-  
time-loading-dilm-  
characteristic-curve.eps](#)

[eaton-contactors-switch-  
dilm-characteristic-  
curve.eps](#)

### DECLARATIONS OF CONFORMITY

[DA-DC-00004788.pdf](#)

[DA-DC-00004812.pdf](#)

### DRAWINGS

[eaton-contactors-  
dimensions-004.eps](#)

[eaton-general-ie-ready-  
dilm-contactor-  
standards.eps](#)

[eaton-tripping-devices-  
mounting-diler-contactor-  
relay-symbol.eps](#)

### ECAD MODEL

[ETN.231676.edz](#)

### INSTALLATION INSTRUCTIONS

[IL03407009Z](#)

### MCAD MODEL

[DA-CD-dil\\_em\\_c](#)

[DA-CS-dil\\_em\\_c](#)

### SYSTEM OVERVIEW

[eaton-contactors-  
accessory-diler-relay-  
explosion-drawing.eps](#)

### WIRING DIAGRAMS

[eaton-contactors-contact-  
dilm-wiring-diagram-  
002.eps](#)

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
DATE:



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