

# Specifications



Photo is representative



## Eaton 231695

Eaton Moeller® series DILEM Contactor, 220 V DC, 3 pole, 380 V 400 V, 4 kW, Contacts N/C = Normally closed= 1 NC, Spring-loaded terminals, DC operation

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller® series DILEM Mini contactor
<b>CATALOG NUMBER</b>	231695
<b>MODEL CODE</b>	DILEM-01-G-C(220VDC)
<b>EAN</b>	4015082316952
<b>PRODUCT LENGTH/DEPTH</b>	54 mm
<b>PRODUCT HEIGHT</b>	58 mm
<b>PRODUCT WIDTH</b>	45 mm
<b>PRODUCT WEIGHT</b>	0.206 kg
<b>CERTIFICATIONS</b>	UL CSA-C22.2 No. 14-05 VDE 0660 CE UL 508 CSA CSA Class No.: 3211-04 UL Category Control No.: NLDX CSA File No.: 012528 IEC/EN 60947-4-1 UL File No.: E29096 IEC/EN 60947
<b>CATALOG NOTES</b>	Also tested according to AC-3e.



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## 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

## General

**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)  
200,000 Operations (at 240 V, AC-15)  
20,000,000 Operations

**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  
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 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/C auxiliary 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>	DC

## 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>	2 x (1 - 2.5) mm <sup>2</sup> 1 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)** 1.5 A at 100 V, DC L/R ≤ 15  
ms (with 3 contacts 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** PKZM0-4, Maximum  
overcurrent protective  
device, Short-circuit  
protection only, Auxiliary  
contacts, Short-circuit  
rating without welding  
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

**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) 2.5 A at 24 V, DC L/R ≤ 15 ms (with 1 contact in series) 0.5 A at 220 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 coil and contacts, According to EN 61140 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

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>	0.5 A, 250 V DC, (UL/CSA) 10 A, 600 V AC, (UL/CSA)
<b>SWITCHING CAPACITY (AUXILIARY CONTACTS, PILOT DUTY)</b>	A600, AC operated (UL/CSA) P300, DC operated (UL/CSA)

## Magnet system

<b>ARCING TIME</b>	12 ms at 690 V AC
<b>CHANGEOVER TIME</b>	40 - 50 ms
<b>DUTY FACTOR</b>	100 %
<b>PICK-UP VOLTAGE</b>	0.8 - 1.1 V DC x U <sub>c</sub>
<b>POWER CONSUMPTION</b>	Smoothed DC voltage or three-phase bridge rectifier 2.3 VA/W at DC (Pick-up/Sealing power)
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN</b>	0 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX</b>	0 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN</b>	0 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX</b>	0 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN</b>	220 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX</b>	220 V
<b>SWITCHING TIME (AC OPERATED, N/O, WITH AUXILIARY CONTACT MODULE, CLOSING DELAY)</b>	70 ms
<b>SWITCHING TIME (DC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MIN</b>	26 ms
<b>SWITCHING TIME (DC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX</b>	35 ms
<b>SWITCHING TIME (DC OPERATED, MAKE CONTACTS, OPENING DELAY) - MIN</b>	15 ms
<b>SWITCHING TIME (DC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX</b>	25 ms

## 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

## 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

**EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID** 0.9 W

**HEAT DISSIPATION CAPACITY PDISS** 0 W

**HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID** 0.3 W

**RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** 9 A

**STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS** 2.3 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 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.



<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

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

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

### CHARACTERISTIC CURVE

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

[eaton-contactors-component-dilm-characteristic-curve-003.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.231695.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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