

# Eaton 277828

Catalog Number: 277828

Eaton Moeller® series DILM Contactor, 3 pole, 380 V 400 V 22 kW, 190 V 50 Hz, 220 V 60 Hz, AC operation, Screw terminals



## General specifications

<b>Product Name</b>	<b>Catalog Number</b>
Eaton Moeller® series DILM contactor	277828
<b>Model Code</b>	<b>EAN</b>
DILM50(190V50HZ,220V60HZ)	4015082778286
<b>Product Length/Depth</b>	<b>Product Height</b>
132.1 mm	115 mm
<b>Product Width</b>	<b>Product Weight</b>
55 mm	0.872 kg
<b>Certifications</b>	<b>Catalog Notes</b>
CSA Certified	Contacts according to EN 50012
UL Listed	
IEC 60947-4-1	
EN 60947-4-1	
IEC/EN 60947	
UL File No.: E29096	
CSA-C22.2 No. 60947-4-1-14	
CSA	
CSA File No.: 012528	
UL Category Control No.: NLDX	
VDE 0660	
CE	
IEC/EN 60947-4-1	
UL 60947-4-1	
CSA Class No.: 2411-03, 3211-04	
UL	

### Amperage Rating

170A

### HP rating - max

3, 10/ 15, 20, 40, 50 hp (1/3PH @ 120, 240/208, 240, 480, 600 V)

### Number Of Poles

Three-pole

### Type

Full voltage non-reversing medium contactor

### Voltage rating

400 V

### 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.

### Catalogs

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

[SmartWire-DT Catalog](#)

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

### Certification reports

[DA-DC-00004229.pdf](#)

[DA-DC-00004070.pdf](#)

### Characteristic curve

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

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

[eaton-contactors-switch-dilm-characteristic-curve-002.eps](#)

### Declarations of conformity

[DA-DC-00004817.pdf](#)

[DA-DC-00004782.pdf](#)

### Drawings

[eaton-contactors-mounting-dilm-dimensions.eps](#)

[eaton-contactors-mounting-dilm-dimensions-002.eps](#)

[eaton-contactors-dilm-dimensions-002.eps](#)

[eaton-contactors-dilm-dimensions-012.eps](#)

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

[eaton-contactors-dilm-3d-drawing-011.eps](#)

[eaton-contactors-mounting-dilm-3d-drawing.eps](#)

### eCAD model

[ETN.277828.edz](#)

### Installation instructions

[IL03407033Z](#)

### Installation videos

[WIN-WIN with push-in technology](#)

### mCAD model

[DA-CS-dil\\_m40](#)

[DA-CS-dil\\_m40\\_72](#)

[DA-CD-dil\\_m40\\_72](#)

[dil\\_m40\\_65\\_22.dwg](#)

[dil\\_m40\\_65\\_22.stp](#)

### Specifications and datasheets

#### 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.

#### Frequency rating

50-60 Hz

#### Operating frequency

5000 mechanical Operations/h (AC operated)

#### Pollution degree

3

#### Used with

Can be combined with auxiliary contacts: DILM150-XHI(V), DILM1000-XHI(V)

#### Climatic proofing

Damp heat, constant, to IEC 60068-2-78

Damp heat, cyclic, to IEC 60068-2-30

#### System overview

[eaton-contactors-dilm-contactor-system-overview.eps](#)

#### Wiring diagrams

[eaton-contactors-contact-dilm-wiring-diagram-003.eps](#)

Connection to SmartWire-DT

No

Rated impulse withstand voltage (Uimp)

8000 V AC

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

Connection

Screw terminals

Frame size

FS3

Ambient operating temperature - max

60 °C

Ambient operating temperature - min

-25 °C

Ambient operating temperature (enclosed) - max

40 °C

Ambient operating temperature (enclosed) - min

25 °C

Ambient storage temperature - max

80 °C

Ambient storage temperature - min

40 °C

Assigned motor power at 115/120 V, 60 Hz, 1-phase

3 HP

Assigned motor power at 200/208 V, 60 Hz, 3-phase

15 HP

Assigned motor power at 230/240 V, 60 Hz, 1-phase

10 HP

Assigned motor power at 230/240 V, 60 Hz, 3-phase

20 HP

Assigned motor power at 460/480 V, 60 Hz, 3-phase

40 HP

Assigned motor power at 575/600 V, 60 Hz, 3-phase

50 HP

Conventional thermal current  $i_{th}$  (1-pole, enclosed)

145 A

Conventional thermal current  $i_{th}$  (3-pole, enclosed)

58 A

Conventional thermal current  $i_{th}$  at 55°C (3-pole, open)

68 A

Conventional thermal current  $i_{th}$  of main contacts (1-pole, open)

162 A

Equipment heat dissipation, current-dependent  $P_{vid}$

9.9 W

Heat dissipation capacity  $P_{diss}$

0 W

Heat dissipation per pole, current-dependent  $P_{vid}$

3.3 W

Application

Contactors for Motors

Product category

Contactors

Protection

Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274)

Terminals

Screw terminals

Arcing time

10 ms

Electrical connection type of main circuit

Screw connection

Screwdriver size

2, Terminal screw, Pozidriv screwdriver

0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver

Voltage type

AC

Degree of protection

IP00

Number of auxiliary contacts (normally closed contacts)

0

Number of auxiliary contacts (normally open contacts)

0

Number of contacts (normally closed) as main contact

0

Number of main contacts (normally open contact)

3

Operating temperature - max

60 °C

Operating temperature - min

-25 °C

Rated breaking capacity at 220/230 V

500 A

Rated breaking capacity at 380/400 V

500 A

Rated breaking capacity at 500 V

500 A

Rated breaking capacity at 660/690 V

320 A

Rated control supply voltage (Us) at AC, 50 Hz - max

190 V

Rated control supply voltage (Us) at AC, 50 Hz - min

190 V

Rated control supply voltage (Us) at AC, 60 Hz - max

220 V

Rated control supply voltage (Us) at AC, 60 Hz - min

220 V

Coil voltage

190-220 Vac, 50/60 Hz

Continuous ampere rating

50 A

Drop-out voltage

AC operated: 0.6 - 0.3 x UC, AC operated

Overvoltage category

III

Duty factor

100 %

Emitted interference

According to EN 60947-1

#### Operation

Non-reversing

#### Interference immunity

According to EN 60947-1

#### Lifespan, mechanical

10,000,000 Operations (AC operated)

#### Pick-up voltage

0.8 - 1.1 V AC x U<sub>c</sub>

#### Power consumption, pick-up, 50 Hz

149 VA, Dual-frequency coil in a cold state and 1.0 x U<sub>s</sub>, at 50 Hz

#### Safe isolation

440 V AC, Between the contacts, According to EN 61140

440 V AC, Between coil and contacts, According to EN 61140

#### Power consumption, pick-up, 60 Hz

178 VA, Dual-frequency coil in a cold state and 1.0 x U<sub>s</sub>, at 60 Hz

#### Screw size

M3.5, Terminal screw, Control circuit cables

M6, Terminal screw, Main cables

#### Power consumption, sealing, 50 Hz

4.1 W, Dual-frequency coil in a cold state and 1.0 x U<sub>s</sub>, at 50 Hz

16 VA, Dual-frequency coil in a cold state and 1.0 x U<sub>s</sub>, at 50 Hz

#### Power consumption, sealing, 60 Hz

19 VA, Dual-frequency coil in a cold state and 1.0 x U<sub>s</sub>, at 60 Hz

4.1 W, Dual-frequency coil in a cold state and 1.0 x U<sub>s</sub>, at 60 Hz

#### Terminal capacity (stranded)

1 x (16 - 50) mm<sup>2</sup>, Main cables

2 x (16 - 35) mm<sup>2</sup>, Main cables

#### Terminal capacity (copper band)

2 x (6 x 9 x 0.8) mm (Number of segments x width x thickness),  
Main cables

#### Terminal capacity (flexible with ferrule)

2 x (0.75 - 25) mm<sup>2</sup>, Main cables

2 x (0.75 - 2.5) mm<sup>2</sup>, Control circuit cables

1 x (0.75 - 2.5) mm<sup>2</sup>, Control circuit cables

1 x (0.75 - 35) mm<sup>2</sup>, Main cables

#### Shock resistance

5 g, N/C auxiliary contact, Mechanical, according to IEC/EN

60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms

7 g, N/O auxiliary contact, Mechanical, according to IEC/EN

60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms

10 g, N/O main contact, Mechanical, according to IEC/EN

60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms

7 g, N/O auxiliary contact, Mechanical, according to IEC/EN

60068-2-27, Half-sinusoidal shock 10 ms

10 g, N/O main contact, Mechanical, according to IEC/EN

60068-2-27, Half-sinusoidal shock 10 ms

5 g, N/C auxiliary contact, Mechanical, according to IEC/EN

60068-2-27, Half-sinusoidal shock 10 ms

#### Terminal capacity (solid)

2 x (0.75 - 16) mm<sup>2</sup>, Main cables

2 x (0.75 - 2.5) mm<sup>2</sup>, Control circuit cables

1 x (0.75 - 16) mm<sup>2</sup>, Main cables

1 x (0.75 - 4) mm<sup>2</sup>, Control circuit cables

#### Terminal capacity (solid/stranded AWG)

18 - 14, Control circuit cables

Single 14 - 1, double 14 - 2, Main cables

#### Switching capacity (main contacts, general use)

80 A, Maximum motor rating (UL/CSA)

#### Power consumption

22 kW

#### Tightening torque

3.3 Nm, Screw terminals, Main cables

1.2 Nm, Screw terminals, Control circuit cables

#### Rated control supply voltage (Us) at DC - max

0 V

#### Rated control supply voltage (Us) at DC - min

0 V

#### Rated insulation voltage (Ui)

690 V

#### Rated making capacity up to 690 V (cos phi to IEC/EN 60947)

700 A

#### Rated operational current (Ie) at AC-1, 380 V, 400 V, 415 V

80 A

#### Rated operational current (Ie) at AC-3, 220 V, 230 V, 240 V

50 A



Rated operational current (Ie) at AC-3, 380 V, 400 V, 415 V

50 A

Rated operational current (Ie) at AC-3, 440 V

50 A

Rated operational current (Ie) at AC-3, 500 V

50 A

Rated operational current (Ie) at AC-3, 660 V, 690 V

32 A

Rated operational current (Ie) at AC-4, 220 V, 230 V, 240 V

21 A

Rated operational current (Ie) at AC-4, 400 V

21 A

Rated operational current (Ie) at AC-4, 440 V

21 A

Rated operational current (Ie) at AC-4, 500 V

21 A

Rated operational current (Ie) at AC-4, 660 V, 690 V

17 A

Rated operational current (Ie) at DC-1, 110 V

50 A

Rated operational current (Ie) at DC-1, 220 V

45 A

Rated operational current (Ie) at DC-1, 60 V

60 A

Rated operational current for specified heat dissipation (In)

50 A

Rated operational power at AC-3, 240 V, 50 Hz

17 kW

Rated operational power at AC-3, 380/400 V, 50 Hz

22 kW

Rated operational power at AC-3, 415 V, 50 Hz

30 kW

Rated operational power at AC-4, 220/230 V, 50 Hz

6 kW

Rated operational power at AC-4, 240 V, 50 Hz

6.5 kW

Rated operational power at AC-4, 380/400 V, 50 Hz

10 kW

Rated operational power at AC-4, 415 V, 50 Hz

11 kW

Rated operational power at AC-4, 440 V, 50 Hz

12 kW

Rated operational power at AC-4, 500 V, 50 Hz

13 kW

Rated operational power at AC-4, 660/690 V, 50 Hz

14 kW

Rated operational power (NEMA)

29.8 kW

Rated operational voltage (Ue) at AC - max

690 V

Resistance per pole

1.9 m $\Omega$

Static heat dissipation, non-current-dependent Pvs

4.1 W

Stripping length (control circuit cable)

10 mm

Stripping length (main cable)

14 mm

Switching time (AC operated, make contacts, closing delay) - max

18 ms

Switching time (AC operated, make contacts, closing delay) - min

12 ms

Switching time (AC operated, make contacts, opening delay) - max

13 ms

Switching time (AC operated, make contacts, opening delay) - min

8 ms

Short-circuit current rating (basic rating)

10 kA, SCCR (UL/CSA)

250 A, max. Fuse, SCCR (UL/CSA)

250 A, max. CB, SCCR (UL/CSA)

Short-circuit current rating (high fault at 480 V)

30/100 kA, Fuse, SCCR (UL/CSA)

250/150 A, Class J, max. Fuse, SCCR (UL/CSA)

65 kA, CB, SCCR (UL/CSA)

100 A, max. CB, SCCR (UL/CSA)

**Short-circuit current rating (high fault at 600 V)**

30/100 kA, Fuse, SCCR (UL/CSA)

30 kA, CB, SCCR (UL/CSA)

250 A, max. CB, SCCR (UL/CSA)

250/150 A, Class J, max. Fuse, SCCR (UL/CSA)

**Short-circuit protection rating (type 1 coordination) at 400 V**

160 A gG/gL

**Suitable for**

Also motors with efficiency class IE3

**Short-circuit protection rating (type 1 coordination) at 690 V**

80 A gG/gL

**Short-circuit protection rating (type 2 coordination) at 400 V**

80 A gG/gL

**Short-circuit protection rating (type 2 coordination) at 690 V**

63 A gG/gL

**Special purpose rating of ballast electrical discharge lamps**

79 A (600V 60Hz 3phase, 347V 60Hz 1phase)

79 A (480V 60Hz 3phase, 277V 60Hz 1phase)

**Special purpose rating of elevator control**

10 HP, 200 V 60 Hz 3-ph, (UL/CSA)

30 HP, 480 V 60 Hz 3-ph, (UL/CSA)

32.2 A, 200 V 60 Hz 3-ph, (UL/CSA)

42 A, 240 V 60 Hz 3-ph, (UL/CSA)

15 HP, 240 V 60 Hz 3-ph, (UL/CSA)

40 A, 480 V 60 Hz 3-ph, (UL/CSA)

41 A, 600 V 60 Hz 3-ph, (UL/CSA)

40 HP, 600 V 60 Hz 3-ph, (UL/CSA)

**Special purpose rating of resistance air heating**

79 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (UL/CSA)

79 A, 600 V 60 Hz 3phase, 347 V 60 Hz 1phase, (UL/CSA)

**Special purpose rating of tungsten incandescent lamps**

74 A, 600 V 60 Hz 3phase, 347 V 60 Hz 1phase, (UL/CSA)

74 A, 480 V 60 Hz 3phase, 277 V 60 Hz 1phase, (UL/CSA)

**Operating temperature**

-25° to 60°C

**Conventional thermal current  $I_{th}$  at 40°C (3-pole, open)**

80 A

**Conventional thermal current  $I_{th}$  at 50°C (3-pole, open)**

71 A

Conventional thermal current  $I_{th}$  at 60°C (3-pole, open)

65 A

Rated operational power at AC-3, 440 V, 50 Hz

32 kW

Rated operational power at AC-3, 500 V, 50 Hz

36 kW

Rated operational power at AC-3, 690 V, 50 Hz

30 kW

Actuating voltage

190 V 50 Hz, 220 V 60 Hz

Altitude

Max. 2000 m

Operating voltage at AC, 50 Hz - min

230 V

Operating voltage at AC, 50 Hz - max

690 V

Operating voltage at AC, 60 Hz - min

230 V

Operating voltage at AC, 60 Hz - max

690 V



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