

# Eaton 109920

Catalog Number: 109920

Eaton Moeller® series DILMP Contactor, 4 pole, 160 A, RDC 24:  
24 - 27 V DC, DC operation



### General specifications

#### Product Name

Eaton Moeller® series DILMP 4-pole  
contactor

#### Catalog Number

109920

#### Model Code

DILMP160(RDC24)

#### EAN

4015081094868

#### Product Length/Depth

177 mm

#### Product Height

183 mm

#### Product Width

134 mm

#### Product Weight

2.826 kg

#### Certifications

CSA

VDE 0660

CE

IEC/EN 60947

UL

IEC/EN 60947-4-1

CSA-C22.2 No. 60947-4-1-14

UL File No.: E29096

CSA Class No.: 2411-03, 3211-04

CSA File No.: 012528

UL 60947-4-1

UL Category Control No.: NLDX

#### Catalog Notes

Also tested according to AC-3e.

## Features & Functions

### Fitted with:

Suppressor circuit in actuating electronics

### Number Of Poles

Four-pole

## General

### Application

Contactors for 4 pole electric consumers

### Lifespan, mechanical

10,000,000 Operations (DC operated)

10,000,000 Operations (AC operated)

### Operating frequency

3600 mechanical Operations/h (DC operated)

3600 mechanical Operations/h (AC operated)

### 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)

8000 V AC

### Residual current

1 mA (with actuation of A1 - A2 by the electronics with "0" signal)

### Resistance per pole

0.6 m $\Omega$

### Utilization category

AC-3: Normal AC induction motors: starting, switch off during running

AC-1: Non-inductive or slightly inductive loads, resistance furnaces

### Voltage type

DC

## Ambient conditions, mechanical

### Shock resistance

7 g, N/O auxiliary 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

## Climatic environmental conditions

### Ambient operating temperature - min

-25 °C

### Ambient operating temperature - max

60 °C

10 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms

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 60068-2-3

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

## Terminal capacities

### Terminal capacity (copper band)

2 x (6 x 16 x 0.8) mm (Number of segments x width x thickness),  
Main cables

### Terminal capacity (flexible with ferrule)

1 x (0.75 - 1.5) mm<sup>2</sup>  
2 x (0.75 - 1.5) mm<sup>2</sup>

### Terminal capacity (flexible)

1 x (0.75 - 2.5) mm<sup>2</sup>  
2 x (0.75 - 2.5) mm<sup>2</sup>

### Terminal capacity (solid)

1 x (0.75 - 4) mm<sup>2</sup>, Control circuit cables  
2 x (0.75 - 4) mm<sup>2</sup>, Control circuit cables  
1 x (0.75 - 2.5) mm<sup>2</sup>

### Terminal capacity (solid/stranded AWG)

8 - 3/0, Main cables  
18 - 14, Control circuit cables

### Terminal capacity (stranded)

1 x (16 - 120) mm<sup>2</sup>, Main cables  
2 x (16 - 95) mm<sup>2</sup>, Main cables

### Stripping length (main cable)

15 mm

### Stripping length (control circuit cable)

10 mm

### Screw size

M10, Terminal screw, Main cables  
M3.5, Terminal screw, Control circuit cables

## Electrical Rating

### Rated breaking capacity at 220/230 V

950 A

### Rated breaking capacity at 380/400 V

950 A

### Rated breaking capacity at 500 V

950 A

### Rated breaking capacity at 660/690 V

750 A

### Rated operational current (I<sub>e</sub>) at AC-1, 380 V, 400 V, 415 V

160 A

### Rated operational current (I<sub>e</sub>) at AC-3, 220 V, 230 V, 240 V

95 A

### Rated operational current (I<sub>e</sub>) at AC-3, 380 V, 400 V, 415 V

95 A

### Rated operational current (I<sub>e</sub>) at AC-3, 440 V

95 A

### Rated operational current (I<sub>e</sub>) at AC-3, 500 V

95 A

### Rated operational current (I<sub>e</sub>) at AC-3, 660 V, 690 V

80 A

### Rated operational current (I<sub>e</sub>) at AC-4, 400 V

65 A

### Rated operational current (I<sub>e</sub>) at DC-1, 60 V

160 A

5 mm AF, Hexagon socket-head spanner, Terminal screw, Main cables

#### Screwdriver size

2, Terminal screw, Control circuit cables, Pozidriv screwdriver  
0.8 x 5.5/1 x 6 mm, Terminal screw, Control circuit cables,  
Standard screwdriver

#### Tightening torque

14 Nm, Screw terminals, Main cables  
1.2 Nm, Screw terminals, Control circuit cables

Rated operational current (I<sub>e</sub>) at DC-1, 110 V  
160 A

Rated operational current (I<sub>e</sub>) at DC-1, 220 V  
160 A

Rated insulation voltage (U<sub>i</sub>)  
690 V

Rated operational current (I<sub>e</sub>) at AC-1, 380 V, 400 V, 415 V  
160 A

Rated operational power at AC-1, 240 V, 50 Hz  
63 kW

Rated operational power at AC-1, 380/400 V, 50 Hz  
100 kW

Rated operational power at AC-1, 415 V, 50 Hz  
109 kW

Rated operational power at AC-1, 440 V, 50 Hz  
116 kW

Rated operational power at AC-1, 500 V, 50 Hz  
132 kW

Rated operational power at AC-1, 690 V, 50 Hz  
174 kW

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

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

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

Rated operational voltage (U<sub>e</sub>) at AC - max  
690 V

### Short-circuit rating

Short-circuit current rating (basic rating)

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

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

10 kA, SCCR (UL/CSA)

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

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

65 kA, CB, SCCR (UL/CSA)

### Conventional thermal current

Conventional thermal current I<sub>th</sub> (1-pole, enclosed)

373 A

Conventional thermal current I<sub>th</sub> (3-pole, enclosed)

128 A

Conventional thermal current I<sub>th</sub> at 55°C (3-pole, open)

143 A

30/100 kA, Fuse, SCCR (UL/CSA)  
300/300 A, Class J, max. Fuse, SCCR (UL/CSA)

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

30 kA, CB, SCCR (UL/CSA)  
300/300 A, Class J, max. Fuse, SCCR (UL/CSA)  
350 A, max. CB, SCCR (UL/CSA)  
30/100 kA, Fuse, SCCR (UL/CSA)

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

250 A gG/gL

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

200 A gG/gL

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

160 A gG/gL

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

160 A gG/gL

## Magnet system

#### Drop-out voltage

0.2 - 0.6 x UC, DC operated

#### Duty factor

100 %

#### Pick-up voltage

0.7 - 1.2 V DC x U<sub>c</sub>  
0.8 - 1.1 V AC/DC x U<sub>s</sub>

#### Power consumption (pick-up) at DC

149 W

#### Power consumption (sealing) at DC

1.9 W

#### Rated control supply voltage (U<sub>s</sub>) at AC, 50 Hz - min

0 V

#### Rated control supply voltage (U<sub>s</sub>) at AC, 50 Hz - max

0 V

#### Rated control supply voltage (U<sub>s</sub>) at AC, 60 Hz - min

0 V

#### Rated control supply voltage (U<sub>s</sub>) at AC, 60 Hz - max

#### Conventional thermal current I<sub>th</sub> of main contacts (1-pole, open)

415 A

## Switching capacity

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

125 A, Maximum motor rating (UL/CSA)

## Switching time

#### Arcing time

15 ms

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

35 ms

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

30 ms

## Motor Rating

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

7.5 HP

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

25 HP

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

15 HP

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

40 HP

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

75 HP

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

100 HP

## Communication

#### Connection to SmartWire-DT

No

0 V

Rated control supply voltage (Us) at DC - min

24 V

Rated control supply voltage (Us) at DC - max

27 V

## Safety

Safe isolation

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

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

## Design verification

Equipment heat dissipation, current-dependent P<sub>vid</sub>

36.3 W

Heat dissipation capacity P<sub>diss</sub>

0 W

Rated operational current for specified heat dissipation (I<sub>n</sub>)

160 A

## Contacts

Number of auxiliary contacts (normally closed contacts)

0

Number of auxiliary contacts (normally open contacts)

0

## Special purpose ratings

Special purpose rating of ballast electrical discharge lamps

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

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

Special purpose rating of elevator control

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

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

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

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

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

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

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

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

Special purpose rating of refrigeration control (CSA only)

70 A, FLA 600 V 60 Hz 3phase; (CSA)

420 A, LRA 600 V 60 Hz 3phase; (CSA)

540 A, LRA 480 V 60 Hz 3phase; (CSA)

90 A, FLA 480 V 60 Hz 3phase; (CSA)

Special purpose rating of resistance air heating

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

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

Special purpose rating of tungsten incandescent lamps

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

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

## Resources

Catalogues

[SmartWire-DT Catalog](#)

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

[Switching and protecting motors - catalog](#)

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

## 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.

## Characteristic curve

2110DIA-3

[eaton-contactors-switching-dilmp-characteristic-curve.eps](#)

## Declarations of conformity

[DA-DC-00004818.pdf](#)

[DA-DC-00004781.pdf](#)

## Drawings

[eaton-contactors-dimensions-2110dim-15.eps](#)

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

[eaton-contactors-dilmp-dimensions-003.eps](#)

210N017

2110DIM-14

[eaton-contactors-dimensions-2110dim-14.eps](#)

210N018

[eaton-contactors-characteristic-curve-2110dia-3.eps](#)

2110DIM-15

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

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

## eCAD model

[DA-CE-ETN.DILMP160\(RDC24\)](#)

[ETN.109920.edz](#)

## Installation instructions

[IL03407049Z](#)

## Installation videos

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

## mCAD model

[eaton-cadenas-path-01-geo-dil\\_mp125\\_200.3db](#)

[eaton-cadenas-side\\_view-dil\\_mp125\\_200\\_side.pra](#)

[DA-CD-dil\\_mp125\\_200](#)

[DA-CS-dil\\_mp125\\_200](#)

[eaton-cadenas-front\\_view-dil\\_mp125\\_200\\_front.pra](#)

[eaton-cadenas-drill\\_view-dil\\_mp125\\_200\\_drill.pra](#)

## Wiring diagrams

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

210S028

#### 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 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.



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