

# Eaton 281251

Catalog Number: 281251

Eaton Moeller series NZM - Molded Case Circuit Breaker. Circuit-breaker, 4p, 160A, busbar terminal for CU N, frame 1, 4-A160



Photo is representative

## General specifications

### Product Name

Eaton Moeller series NZM molded case circuit breaker thermo-magnetic

### Catalog Number

281251

### Model Code

NZMN1-4-A160

### EAN

4015082812515

### Product Length/Depth

84.5 mm

### Product Height

145 mm

### Product Width

120 mm

### Product Weight

1.399 kg

### Warranty

Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

### Compliances

RoHS conform

### Certifications

IEC/EN 60947

IEC

## Type

Circuit breaker

## Special features

Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit breaker (Rated short-circuit breaking capacity  $I_{cn}$ )

Rated current = rated uninterrupted current: 160 A

Set value in neutral conductor is synchronous with set value  $I_r$  of main pole.

Terminal capacity hint: Up to 95 mm<sup>2</sup> can be connected depending on the cable manufacturer.

## Application

Use in unearthed supply systems at 690 V

## Amperage Rating

160 A

## Voltage rating

690 V - 690 V

## Circuit breaker frame type

NZM1

## Features

Protection unit

### 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

## Brochures

[eaton-digital-nzm-brochure-br013003en-en-us.pdf](#)

[eaton-feerum-the-whole-grain-solution-success-story-en-us.pdf](#)

## Catalogs

[eaton-digital-nzm-catalog-ca013003en-en-us.pdf](#)

## Certification reports

[DA-DC-03\\_N1](#)

## Characteristic curve

[eaton-circuit-breaker-let-through-current-nzm-mccb-characteristic-curve-002.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-051.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve.eps](#)

## Drawings

[eaton-circuit-breaker-switch-nzm-mccb-dimensions-014.eps](#)

[eaton-circuit-breaker-nzm-mccb-dimensions-018.eps](#)

## eCAD model

[ETN.281251.edz](#)

[ETN.NZMN1-4-A160](#)

## Installation instructions

[eaton-circuit-breaker-switch-disconnector-nzmb-il01203004z.pdf](#)

## Installation videos

[Introduction of the new digital circuit breaker NZM](#)

[The new digital NZM Range](#)

## mCAD model

[DA-CD-nzm1\\_4p](#)

[DA-CS-nzm1\\_4p](#)

## Specifications and datasheets

[Product Data Sheet - NZMN4-ME875](#)

## Technical data sheets

[eaton-nzm-technical-information-sheet](#)

## Warranty guides

[Selling Policy 25-000 - Distribution and Control Products and Services](#)

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.

#### 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.

#### Frame

NZM4

#### Pollution degree

3

#### Class

Motor protection

#### Mounting Method

Built-in device fixed built-in technique

Fixed

DIN rail (top hat rail) mounting optional

#### Climatic proofing

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

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

#### Equipment heat dissipation, current-dependent

36.1 W

#### Utilization category

A (IEC/EN 60947-2)

#### Interrupt rating

50 kAIC at 400 Vac

#### Isolation

300 V AC (between the auxiliary contacts)

500 V AC (between auxiliary contacts and main contacts)

#### Ambient operating temperature - max

70 °C

#### Ambient operating temperature - min

-25 °C

#### Ambient storage temperature - max

70 °C

#### Ambient storage temperature - min

40 °C

#### Number of auxiliary contacts (change-over contacts)

0

Number of auxiliary contacts (normally closed contacts)

0

Number of auxiliary contacts (normally open contacts)

0

Protection against direct contact

Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part  
110

Connection

Front screw

Degree of protection

IP20 (basic degree of protection, in the operating controls area)  
IP20

Direction of incoming supply

As required

Electrical connection type of main circuit

Frame clamp

Current rating of neutral conductor

200% of phase conductor

Lifespan, mechanical

20000 operations

Overvoltage category

III

Degree of protection (IP), front side

IP66 (with door coupling rotary handle)

IP40 (with insulating surround)

Degree of protection (terminations)

IP10 (tunnel terminal)

IP00 (terminations, phase isolator and strip terminal)

Number of poles

Four-pole

Terminal capacity (copper strip)

Min. 2 segments of 9 mm x 0.8 mm at box terminal

Max. 9 segments of 9 mm x 0.8 mm at box terminal

Lifespan, electrical

5000 operations at 690 V AC-1

7500 operations at 400 V AC-1

7500 operations at 415 V AC-1

Functions

System and cable protection

#### Shock resistance

20 g (half-sinusoidal shock 20 ms)

#### Position of connection for main current circuit

Front side

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

160 A

#### Power loss

36.1 W

#### Release system

Thermomagnetic release

#### Short-circuit total breaktime

< 10 ms

#### Short-circuit release non-delayed setting - max

1280 A

#### Short-circuit release non-delayed setting - min

1280 A

#### Terminal capacity (control cable)

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

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

#### Terminal capacity (copper busbar)

Min. 12 mm x 5 mm direct at switch rear-side connection

Max. 16 mm x 5 mm direct at switch rear-side connection

M6 at rear-side screw connection

#### Terminal capacity (copper solid conductor/cable)

6 mm<sup>2</sup> - 16 mm<sup>2</sup> (2x) at box terminal

10 mm<sup>2</sup> - 16 mm<sup>2</sup> (1x) at box terminal

6 mm<sup>2</sup> - 16 mm<sup>2</sup> (2x) direct at switch rear-side connection

16 mm<sup>2</sup> (1x) at tunnel terminal

10 mm<sup>2</sup> - 16 mm<sup>2</sup> (1x) direct at switch rear-side connection

#### Terminal capacity (aluminum solid conductor/cable)

16 mm<sup>2</sup> (1x) at tunnel terminal

10 mm<sup>2</sup> - 16 mm<sup>2</sup> (1x) direct at switch rear-side connection

10 mm<sup>2</sup> - 16 mm<sup>2</sup> (2x) direct at switch rear-side connection

#### Terminal capacity (copper stranded conductor/cable)

10 mm<sup>2</sup> - 70 mm<sup>2</sup> (1x) at box terminal

6 mm<sup>2</sup> - 25 mm<sup>2</sup> (2x) at box terminal

10 mm<sup>2</sup> - 70 mm<sup>2</sup> (1x) direct at switch rear-side connection

25 mm<sup>2</sup> (2x) direct at switch rear-side connection

25 mm<sup>2</sup> - 95 mm<sup>2</sup> (1x) at 1-hole tunnel terminal

#### Terminal capacity (aluminum stranded conductor/cable)

25 mm<sup>2</sup> - 35 mm<sup>2</sup> (1x) direct at switch rear-side connection

25 mm<sup>2</sup> - 95 mm<sup>2</sup> (1x) at tunnel terminal

25 mm<sup>2</sup> - 35 mm<sup>2</sup> (2x) direct at switch rear-side connection

#### Handle type

Rocker lever

#### Short delay current setting (I<sub>sd</sub>) - max

0 A

#### Short delay current setting (I<sub>sd</sub>) - min

0 A

#### Instantaneous current setting (I<sub>i</sub>) - max

1280 A

#### Instantaneous current setting (I<sub>i</sub>) - min

1280 A

#### Number of operations per hour - max

120

#### Overload current setting (I<sub>r</sub>) - max

160 A

#### Overload current setting (I<sub>r</sub>) - min

125 A

#### Overload current setting (I<sub>r</sub>)

125 A - 160 A

#### Rated short-circuit breaking capacity I<sub>cs</sub> (IEC/EN 60947) at 230 V, 50/60 Hz

85 kA

#### Rated short-circuit breaking capacity I<sub>cs</sub> (IEC/EN 60947) at 400/415 V, 50/60 Hz

50 kA

#### Rated short-circuit breaking capacity I<sub>cs</sub> (IEC/EN 60947) at 440 V, 50/60 Hz

35 kA

#### Rated short-circuit breaking capacity I<sub>cs</sub> (IEC/EN 60947) at 525 V, 50/60 Hz

10 kA

#### Rated short-circuit breaking capacity I<sub>cs</sub> (IEC/EN 60947) at 690 V, 50/60 Hz

7.5 kA

#### Rated short-circuit making capacity I<sub>cm</sub> at 400/415 V, 50/60 Hz

105 kA

#### Rated short-circuit making capacity I<sub>cm</sub> at 440 V, 50/60 Hz

74 kA

Rated short-circuit making capacity I<sub>cm</sub> at 525 V, 50/60 Hz

40 kA

Rated short-circuit making capacity I<sub>cm</sub> at 690 V, 50/60 Hz

17 kA

Standard terminals

Box terminal

Optional terminals

Connection on rear. Screw terminal. Tunnel terminal

Rated short-circuit making capacity I<sub>cm</sub> at 240 V, 50/60 Hz

187 kA

Rated impulse withstand voltage (U<sub>imp</sub>) at auxiliary contacts

6000 V

Rated impulse withstand voltage (U<sub>imp</sub>) at main contacts

6000 V

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

690 V AC



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