

# Eaton 191652

Catalog Number: 191652

Eaton Moeller series NZM - Molded Case Circuit Breaker. NZM2 PXR20 circuit breaker, 220A, 3p, screw terminal, S, 2

## General specifications



Product Name	Catalog Number
Eaton Moeller series NZM molded case circuit breaker electronic	191652
	EAN
	4015081921645
Product Length/Depth	Product Height
190 mm	160 mm
Product Width	Product Weight
115 mm	2.3 kg
Compliances	Certifications
RoHS conform	IEC
	IEC/EN 60947

## Product specifications

### Type

Circuit breaker

### Special features

IEC/EN 60947-2 with characteristic conforming to IEC/EN 60947-4-1 with phase failure sensitivity

The circuit-breaker fulfills all requirements for AC-3 switching category.

R.m.s. value measurement and “thermal memory”

Adjustable time delay setting to overcome current peaks  $I_{tr}$  at  $6 \times I_r$  also infinity (without overload releases)

All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current applies to the circuit-breaker,  $I_n = I_u$ .

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: 220 A

### Application

Use in unearthed supply systems at 690 V

### Amperage Rating

220 A

### Voltage rating

690 V - 690 V

### Circuit breaker frame type

## Resources

### 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](#)

### Characteristic curve

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-024.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-020.eps](#)

### Drawings

[eaton-circuit-breaker-nzm-mccb-dimensions-019.eps](#)

[eaton-circuit-breaker-switch-nzm-mccb-dimensions-017.eps](#)

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

### Installation instructions

[eaton-circuit-breakers-nzmb-nzmn-basic-unit-bg2-instruction-leaflet-il012099zu.pdf](#)

### Installation videos

[The new digital NZM Range](#)

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

### mCAD model

[DA-CD-nzm2\\_3p](#)

[DA-CS-nzm2\\_3p](#)

### Technical data sheets

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

NZM2

#### 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.

#### 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.

#### Fitted with:

Thermal protection

#### Pollution degree

3

#### Mounting Method

Fixed

Built-in device fixed built-in technique

#### Climatic proofing

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

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

#### Equipment heat dissipation, current-dependent

39.93 W

#### Utilization category

A (IEC/EN 60947-2)

#### 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

Protection against direct contact

Finger and back-of-hand proof to VDE 0106 part 100

Rated insulation voltage (Ui)

690 V

Rated operating power at AC-3, 230 V

55 kW

Rated operating power at AC-3, 400 V

110 kW

Switch off technique

Electronic

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

Screw connection

Lifespan, mechanical

20000 operations

Overvoltage category

III

Rated operational current

196 A (400 V AC-3)

Degree of protection (IP), front side

IP40 (with insulating surround)

IP66 (with door coupling rotary handle)

Degree of protection (terminations)

IP00 (terminations, phase isolator and strip terminal)

IP10 (tunnel terminal)

Number of poles

Three-pole

Terminal capacity (copper strip)

Max. 8 segments of 24 mm x 1 mm (2x) at box terminal

Min. 2 segments of 16 mm x 0.8 mm at rear-side connection  
(punched)

Max. 10 segments of 16 mm x 0.8 mm at box terminal

Max. 10 segments of 24 mm x 0.8 mm at rear-side connection

(punched)

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

#### Lifespan, electrical

6500 operations at 400 V AC-3

10000 operations at 415 V AC-1

10000 operations at 400 V AC-1

5000 operations at 690 V AC-3

6500 operations at 415 V AC-3

7500 operations at 690 V AC-1

#### Functions

Motor protection

Phase failure sensitive

#### Shock resistance

20 g (half-sinusoidal shock 20 ms)

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

220 A

#### Rated short-time withstand current (t = 0.3 s)

1.9 kA

#### Rated short-time withstand current (t = 1 s)

1.9 kA

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

3080 A

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

440 A

#### Handle type

Rocker lever

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

14 A

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

2 A

#### Number of operations per hour - max

120

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

220 A

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

88 A

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

100 kA

Rated short-circuit breaking capacity  $I_{cs}$  (IEC/EN 60947) at 400/415 V, 50/60 Hz

65 kA

Rated short-circuit breaking capacity  $I_{cs}$  (IEC/EN 60947) at 440 V, 50/60 Hz

65 kA

Rated short-circuit breaking capacity  $I_{cs}$  (IEC/EN 60947) at 525 V, 50/60 Hz

36 kA

Rated short-circuit breaking capacity  $I_{cs}$  (IEC/EN 60947) at 690 V, 50/60 Hz

6 kA

#### Standard terminals

Screw terminal

#### Optional terminals

Box terminal. Connection on rear. Tunnel terminal

#### Release system

Electronic release

#### Short-circuit total breaktime

< 10 ms

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

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

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

25 mm<sup>2</sup> - 185 mm<sup>2</sup> (1x) at tunnel terminal

#### 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)

Max. 24 mm x 8 mm direct at switch rear-side connection

M8 at rear-side screw connection

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

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

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

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

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

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

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

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

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

25 mm<sup>2</sup> - 185 mm<sup>2</sup> (1x) direct at switch rear-side connection

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

25 mm² - 185 mm² (1x) at 1-hole tunnel terminal  
25 mm² - 185 mm² (1x) at box terminal

Rated short-circuit breaking capacity Icu (IEC/EN 60947) at  
400/415 V, 50/60 Hz  
65 kA

Rated short-circuit making capacity Icm at 400/415 V, 50/60 Hz  
154 kA

Rated short-circuit making capacity Icm at 440 V, 50/60 Hz  
143 kA

Rated short-circuit making capacity Icm at 525 V, 50/60 Hz  
80 kA

Rated short-circuit making capacity Icm at 690 V, 50/60 Hz  
40 kA

Rated short-circuit making capacity Icm at 240 V, 50/60 Hz  
220 kA

Rated impulse withstand voltage (Uimp) at auxiliary contacts  
6000 V

Rated impulse withstand voltage (Uimp) at main contacts  
8000 V



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