

# Specifications



Photo is representative



## Eaton 191681

Eaton Moeller series NZM - Molded Case Circuit Breaker. NZM2 PXR20 circuit breaker, 90A, 3p, screw terminal, H, 2

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller series NZM molded case circuit breaker electronic
<b>CATALOG NUMBER</b>	191681
<b>MODEL CODE</b>	NZMH2-MX90
<b>EAN</b>	4015081921935
<b>PRODUCT LENGTH/DEPTH</b>	190 mm
<b>PRODUCT HEIGHT</b>	160 mm
<b>PRODUCT WIDTH</b>	115 mm
<b>PRODUCT WEIGHT</b>	2.3 kg
<b>COMPLIANCES</b>	RoHS conform
<b>CERTIFICATIONS</b>	IEC/EN 60947 IEC

## Product specifications

<b>AMPERAGE RATING</b>	90 A
<b>VOLTAGE RATING</b>	690 V - 690 V
<b>CIRCUIT BREAKER FRAME TYPE</b>	NZM2
<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.
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>	Meets the product standard's requirements.
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product

## Resources

### BROCHURES

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

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

### CATALOGUES

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

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-059.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-010.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-060.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-014.eps](#)

### CHARACTERISTIC CURVE

### DECLARATIONS OF CONFORMITY

[eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250291en.pdf](#)

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

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

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

### DRAWINGS

### INSTALLATION INSTRUCTIONS

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

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

[The new digital NZM Range](#)

### INSTALLATION VIDEOS

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

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

### MCAD MODEL

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

### TECHNICAL DATA SHEETS

	standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	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>FITTED WITH:</b>	Thermal protection
<b>POLLUTION DEGREE</b>	3
<b>MOUNTING METHOD</b>	Fixed Built-in device fixed built-in technique
<b>CLIMATIC PROOFING</b>	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
<b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>	6.68 W
<b>UTILIZATION CATEGORY</b>	A (IEC/EN 60947-2)
<b>ISOLATION</b>	300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main contacts)
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	70 °C
<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-25 °C
<b>AMBIENT STORAGE TEMPERATURE - MAX</b>	70 °C

<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	40 °C
<b>PROTECTION AGAINST DIRECT CONTACT</b>	Finger and back-of-hand proof to VDE 0106 part 100
<b>RATED INSULATION VOLTAGE (UI)</b>	690 V
<b>RATED OPERATING POWER AT AC-3, 230 V</b>	22 kW
<b>RATED OPERATING POWER AT AC-3, 400 V</b>	45 kW
<b>SWITCH OFF TECHNIQUE</b>	Electronic
<b>DEGREE OF PROTECTION</b>	IP20 IP20 (basic degree of protection, in the operating controls area)
<b>DIRECTION OF INCOMING SUPPLY</b>	As required
<b>ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT</b>	Screw connection
<b>LIFESPAN, MECHANICAL</b>	20000 operations
<b>OVERVOLTAGE CATEGORY</b>	III
<b>RATED OPERATIONAL CURRENT</b>	81 A (400 V AC-3)
<b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>	IP66 (with door coupling rotary handle) IP40 (with insulating surround)
<b>DEGREE OF PROTECTION (TERMINATIONS)</b>	IP00 (terminations, phase isolator and strip terminal) IP10 (tunnel terminal)
<b>NUMBER OF POLES</b>	Three-pole
<b>TERMINAL CAPACITY (COPPER STRIP)</b>	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 Max. 8 segments of 24 mm x 1 mm (2x) at box terminal
<b>LIFESPAN, ELECTRICAL</b>	10000 operations at 415 V

	<p>AC-1 10000 operations at 400 V AC-1 5000 operations at 690 V AC-3 6500 operations at 415 V AC-3 6500 operations at 400 V AC-3 7500 operations at 690 V AC-1</p>
<b>FUNCTIONS</b>	Phase failure sensitive Motor protection
<b>TYPE</b>	Circuit breaker
<b>SPECIAL FEATURES</b>	<ul style="list-style-type: none"> <li>• IEC/EN 60947-2 with characteristic conforming to IEC/EN 60947-4-1 with phase failure sensitivity</li> <li>• The circuit-breaker fulfills all requirements for AC-3 switching category.</li> <li>• R.m.s. value measurement and "thermal memory"</li> <li>• Adjustable time delay setting to overcome current peaks <math>t_r</math> at <math>6 \times I_r</math> also infinity (without overload releases)</li> <li>• 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, <math>I_n = I_u</math>.</li> <li>• Maximum back-up</li> </ul>

	<p>fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit breaker (Rated short-circuit breaking capacity <math>I_{cn}</math>)</p> <ul style="list-style-type: none"> <li>• Rated current = rated uninterrupted current: 90 A</li> </ul>
<b>APPLICATION</b>	Use in unearthing supply systems at 690 V
<b>SHOCK RESISTANCE</b>	20 g (half-sinusoidal shock 20 ms)
<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	90 A
<b>RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)</b>	1.9 kA
<b>RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)</b>	1.9 kA
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>	1620 A
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>	180 A
<b>HANDLE TYPE</b>	Rocker lever
<b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>	18 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>	2 A
<b>NUMBER OF OPERATIONS PER HOUR - MAX</b>	120
<b>OVERLOAD CURRENT SETTING (IR) - MAX</b>	90 A
<b>OVERLOAD CURRENT SETTING (IR) - MIN</b>	36 A
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS</b>	150 kA

**(IEC/EN 60947) AT 230 V,  
50/60 Hz**

**RATED SHORT-CIRCUIT  
BREAKING CAPACITY ICS**  
**(IEC/EN 60947) AT  
400/415 V, 50/60 Hz**

130 kA

**RATED SHORT-CIRCUIT  
BREAKING CAPACITY ICS**  
**(IEC/EN 60947) AT 440 V,  
50/60 Hz**

130 kA

**RATED SHORT-CIRCUIT  
BREAKING CAPACITY ICS**  
**(IEC/EN 60947) AT 525 V,  
50/60 Hz**

37.5 kA

**RATED SHORT-CIRCUIT  
BREAKING CAPACITY ICS**  
**(IEC/EN 60947) AT 690 V,  
50/60 Hz**

5 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)** Min. 16 mm x 5 mm direct  
at switch rear-side  
connection  
Max. 24 mm x 8 mm direct  
at switch rear-side  
connection  
M8 at rear-side screw  
connection

**TERMINAL CAPACITY  
(COPPER SOLID  
CONDUCTOR/CABLE)** 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  
10 mm<sup>2</sup> - 16 mm<sup>2</sup> (1x)  
direct at switch rear-side  
connection  
6 mm<sup>2</sup> - 16 mm<sup>2</sup> (2x) at  
box terminal  
16 mm<sup>2</sup> (1x) at tunnel

	terminal
<b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>	<p>25 mm<sup>2</sup> - 185 mm<sup>2</sup> (1x) at box terminal</p> <p>25 mm<sup>2</sup> - 185 mm<sup>2</sup> (1x) direct at switch rear-side connection</p> <p>25 mm<sup>2</sup> - 70 mm<sup>2</sup> (2x) at box terminal</p> <p>25 mm<sup>2</sup> - 185 mm<sup>2</sup> (1x) at 1-hole tunnel terminal</p> <p>25 mm<sup>2</sup> - 70 mm<sup>2</sup> (2x) direct at switch rear-side connection</p>
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICU (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b>	130 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b>	330 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>	286 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 525 V, 50/60 HZ</b>	105 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ</b>	40 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ</b>	330 kA
<b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT AUXILIARY CONTACTS</b>	6000 V
<b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT MAIN CONTACTS</b>	8000 V

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**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**

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