

# Specifications



## Eaton 109688

Eaton Moeller series NZM - Molded Case Circuit Breaker. Circuit-breaker, 4p, 320A, C3-4-A320

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller series NZM molded case circuit breaker thermo-magnetic
<b>CATALOG NUMBER</b>	109688
<b>MODEL CODE</b>	NZMC3-4-A320
<b>EAN</b>	4015081092741
<b>PRODUCT LENGTH/DEPTH</b>	166 mm
<b>PRODUCT HEIGHT</b>	275 mm
<b>PRODUCT WIDTH</b>	185 mm
<b>PRODUCT WEIGHT</b>	7.3 kg
<b>COMPLIANCES</b>	RoHS conform
<b>CERTIFICATIONS</b>	IEC/EN 60947 IEC

## Product specifications

<b>AMPERAGE RATING</b>	320 A
<b>VOLTAGE RATING</b>	690 V - 690 V
<b>CIRCUIT BREAKER FRAME TYPE</b>	NZM3
<b>FEATURES</b>	Motor drive optional Protection unit
<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

## 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-tripping-characteristic-nzm-mccb-characteristic-curve.eps](#)

### CHARACTERISTIC CURVE

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-035.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-032.eps](#)

### DECLARATIONS OF CONFORMITY

[eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250292en.pdf](#)

### DRAWINGS

[eaton-circuit-breaker-switch-nzm-mccb-dimensions-016.eps](#)

[eaton-circuit-breaker-nzm-mccb-dimensions-021.eps](#)

### INSTALLATION INSTRUCTIONS

[eaton-circuit-breaker-basic-device-nzmn-bl01208009z.pdf](#)

### INSTALLATION VIDEOS

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

[The new digital NZM Range](#)

### MCAD MODEL

[DA-CD-nzm3\\_4p](#)

[DA-CS-nzm3\\_4p](#)

### PEP ECO-PASSPORT

[eaton-molded-case-switches-pep-eato-00184-v0101-en.pdf](#)

### TECHNICAL DATA SHEETS

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

	be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product 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>POLLUTION DEGREE</b>	3
<b>MOUNTING METHOD</b>	Built-in device fixed built-in technique Fixed
<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>	94 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</b>	70 °C

<b>TEMPERATURE - MAX</b>	
<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	-40 °C
<b>NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)</b>	0
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b>	0
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b>	0
<b>PROTECTION AGAINST DIRECT CONTACT</b>	Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110
<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>CURRENT RATING OF NEUTRAL CONDUCTOR</b>	200% of phase conductor
<b>LIFESPAN, MECHANICAL</b>	15000 operations
<b>OVERVOLTAGE CATEGORY</b>	III
<b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>	IP40 (with insulating surround) IP66 (with door coupling rotary handle)
<b>DEGREE OF PROTECTION (TERMINATIONS)</b>	IP10 (tunnel terminal) IP00 (terminations, phase isolator and strip terminal)
<b>NUMBER OF POLES</b>	Four-pole
<b>TERMINAL CAPACITY (COPPER STRIP)</b>	Max. 8 segments of 24 mm x 1 mm (2x) at box terminal Min. 6 segments of 16 mm x 0.8 mm at rear-side connection (punched) 10 segments of 50 mm x 1 mm (2x) at rear-side width extension Max. 10 segments of 24 mm x 1 mm + 5 segments of 24 mm x 1 mm Max. 10 segments of 32

	mm x 1 mm + 5 segments of 32 mm x 1 mm at rear-side connection (punched)
	Min. 6 segments of 16 mm x 0.8 mm at box terminal
<b>LIFESPAN, ELECTRICAL</b>	3000 operations at 690 V AC-1 2000 operations at 415 V AC-3 2000 operations at 400 V AC-3 5000 operations at 415 V AC-1 5000 operations at 400 V AC-1 2000 operations at 690 V AC-3
<b>FUNCTIONS</b>	System and cable protection
<b>TYPE</b>	Circuit breaker
<b>SPECIAL FEATURES</b>	<ul style="list-style-type: none"> <li>• 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 <math>I_{cn}</math>)</li> <li>• Rated current = rated uninterrupted current: 320 A</li> <li>• Set value in neutral conductor is synchronous with set value <math>I_r</math> of main pole.</li> <li>• Terminal capacity hint: Up to 240 <math>mm^2</math> can be connected depending on the cable manufacturer.</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>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>	Front side
<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	320 A
<b>RELEASE SYSTEM</b>	Thermomagnetic release
<b>SHORT-CIRCUIT TOTAL BREAKTIME</b>	< 10 ms
<b>RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)</b>	3.3 kA
<b>RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)</b>	3.3 kA
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>	3200 A
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>	1920 A
<b>TERMINAL CAPACITY (CONTROL CABLE)</b>	0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x) 0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x)
<b>TERMINAL CAPACITY (COPPER BUSBAR)</b>	Max. 30 mm x 10 mm + 30 mm x 5 mm direct at switch rear-side connection M10 at rear-side screw connection Min. 20 mm x 5 mm direct at switch rear-side connection Max. 10 mm x 50 mm (2x) at rear-side width extension
<b>TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)</b>	300 mm <sup>2</sup> (2x) at rear-side width extension 16 mm <sup>2</sup> (2x) at box terminal 16 mm <sup>2</sup> (2x) direct at switch rear-side connection 16 mm <sup>2</sup> (1x) at tunnel terminal 16 mm <sup>2</sup> (1x) direct at switch rear-side connection
<b>TERMINAL CAPACITY (ALUMINUM SOLID CONDUCTOR/CABLE)</b>	16 mm <sup>2</sup> (1x) at tunnel terminal
<b>TERMINAL CAPACITY (COPPER STRANDED)</b>	25 mm <sup>2</sup> - 120 mm <sup>2</sup> (2x) at box terminal

<b>CONDUCTOR/CABLE)</b>	16 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at 1-hole tunnel terminal 25 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) direct at switch rear-side connection 35 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at box terminal 25 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x) direct at switch rear-side connection
<b>TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)</b>	50 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at 2-hole tunnel terminal 50 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x) at 2-hole tunnel terminal 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at tunnel terminal
<b>HANDLE TYPE</b>	Rocker lever
<b>SHORT DELAY CURRENT SETTING (ISD) - MAX</b>	0 A
<b>SHORT DELAY CURRENT SETTING (ISD) - MIN</b>	0 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>	3200 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>	1920 A
<b>NUMBER OF OPERATIONS PER HOUR - MAX</b>	60
<b>OVERLOAD CURRENT SETTING (IR) - MAX</b>	320 A
<b>OVERLOAD CURRENT SETTING (IR) - MIN</b>	250 A
<b>OVERLOAD CURRENT SETTING (IR)</b>	250 A - 320 A
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>	55 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b>	36 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ</b>	22.5 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V,</b>	9 kA

**50/60 HZ**

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

4 kA

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 400/415 V, 50/60 HZ**

76 kA

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 440 V, 50/60 HZ**

63 kA

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 525 V, 50/60 HZ**

24 kA

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 690 V, 50/60 HZ**

14 kA

**STANDARD TERMINALS** Screw terminal

**OPTIONAL TERMINALS** Box terminal. Connection on rear. Tunnel terminal

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 240 V, 50/60 HZ**

121 kA

**RATED IMPULSE  
WITHSTAND VOLTAGE  
(UIMP) AT AUXILIARY  
CONTACTS**

6000 V

**RATED IMPULSE  
WITHSTAND VOLTAGE  
(UIMP) AT MAIN  
CONTACTS**

8000 V

**RATED INSULATION  
VOLTAGE (UI)**

1000 V AC

**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**



**Eaton Corporation plc**

Eaton House  
30 Pembroke Road  
Dublin 4, Ireland  
Eaton.com

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