

Specifications



Photo is representative



Eaton 191598

Eaton Moeller series Molded case circuit breaker, PXR20, Electronic, NZMN3, 450 A, Three-pole, 690 V, plug-in technology

General specifications

PRODUCT NAME	Eaton Moeller series NZM molded case circuit breaker electronic
CATALOG NUMBER	191598
MODEL CODE	NZMN3-MX450-SVE
EAN	4015081921102
PRODUCT LENGTH/DEPTH	335 mm
PRODUCT HEIGHT	215.2 mm
PRODUCT WIDTH	140 mm
PRODUCT WEIGHT	7.72 kg
COMPLIANCES	RoHS conform
CERTIFICATIONS	IEC/EN 60947 IEC

Additional information

FUNCTIONS

Phase failure sensitive
Motor protection

Delivery programme

ACCESSORIES REQUIRED NZM3-XSVS

AMPERAGE RATING 450 A

APPLICATION Use in unearthed supply systems at 690 V

CIRCUIT BREAKER FRAME TYPE NZM3

FITTED WITH: Thermal protection

NUMBER OF POLES Three-pole

RELEASE SYSTEM Electronic release

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_r 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: 450 A • Terminal capacity hint: Up to 240 mm² can be connected depending on the cable manufacturer.
TYPE	Circuit breaker

Design verification to IEC/EN 61439

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	Does not apply, since the

Design verification to IEC/EN 61439 - technical data

AMBIENT OPERATING TEMPERATURE - MAX	70 °C
AMBIENT STORAGE TEMPERATURE - MAX	70 °C
AMBIENT OPERATING TEMPERATURE - MIN	-25 °C
AMBIENT STORAGE TEMPERATURE - MIN	40 °C
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT	60.75 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	450 A

AGAINST ELECTRIC SHOCK	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.

Technical data - electrical

AMPERAGE RATING	450 A
DIRECTION OF INCOMING SUPPLY	As required
ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT	Other
HANDLE TYPE	Rocker lever
INSTANTANEOUS CURRENT SETTING (II) - MAX	12 A
INSTANTANEOUS CURRENT SETTING (II) - MIN	2 A
ISOLATION	300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main contacts)
LIFESPAN, ELECTRICAL	3000 operations at 690 V AC-1 2000 operations at 400 V AC-3 5000 operations at 400 V AC-1 5000 operations at 415 V AC-1 2000 operations at 415 V AC-3 2000 operations at 690 V AC-3
NUMBER OF OPERATIONS PER HOUR - MAX	60
OVERLOAD CURRENT SETTING (IR) - MAX	450 A
OVERLOAD CURRENT SETTING (IR) - MIN	180 A
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT AUXILIARY CONTACTS	6000 V
RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT MAIN CONTACTS	8000 V
RATED INSULATION VOLTAGE (UI)	690 V
RATED OPERATING	132 kW

Technical data - mechanical

CLIMATIC PROOFING	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
DEGREE OF PROTECTION	IP20 IP20 (basic degree of protection, in the operating controls area)
DEGREE OF PROTECTION (IP), FRONT SIDE	IP66 (with door coupling rotary handle) IP40 (with insulating surround)
DEGREE OF PROTECTION (TERMINATIONS)	IP00 (terminations, phase isolator and strip terminal) IP10 (tunnel terminal)
LIFESPAN, MECHANICAL	15000 operations
MOUNTING METHOD	Fixed Built-in device plug-in technique
PROTECTION AGAINST DIRECT CONTACT	Finger and back-of-hand proof to VDE 0106 part 100
SHOCK RESISTANCE	20 g (half-sinusoidal shock 20 ms)

SPECIAL FEATURES

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- R.m.s. value measurement and "thermal memory"
- Adjustable time delay setting to overcome current peaks t_r 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

POWER AT AC-3, 230 V	
RATED OPERATING POWER AT AC-3, 400 V	250 kW
RATED OPERATIONAL CURRENT	437 A (400 V AC-3)
RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ	85 kA
RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ	35 kA
RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ	35 kA
RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V, 50/60 HZ	13 kA
RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 690 V, 50/60 HZ	5 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ	187 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ	105 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ	74 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 525 V, 50/60 HZ	53 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ	40 kA
RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)	3.3 kA
RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)	3.3 kA
SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX	5400 A
SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN	900 A
SHORT-CIRCUIT TOTAL	< 10 ms

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: 450 A
- Terminal capacity hint: Up to 240 mm² can be connected depending on the cable manufacturer.

SWITCH OFF TECHNIQUE	Electronic
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BREAKTIME	
UTILIZATION CATEGORY	A (IEC/EN 60947-2)
VOLTAGE RATING	690 V - 690 V

Technical data - mechanical - terminals

OPTIONAL TERMINALS	Box terminal. Connection on rear. Tunnel terminal
STANDARD TERMINALS	Screw terminal
TERMINAL CAPACITY (ALUMINUM SOLID CONDUCTOR/CABLE)	16 mm ² (1x) at tunnel terminal
TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)	25 mm ² - 185 mm ² (1x) at tunnel terminal 50 mm ² - 240 mm ² (1x) at 2-hole tunnel terminal 50 mm ² - 240 mm ² (2x) at 2-hole tunnel terminal
TERMINAL CAPACITY (CONTROL CABLE)	0.75 mm ² - 1.5 mm ² (2x) 0.75 mm ² - 2.5 mm ² (1x)
TERMINAL CAPACITY (COPPER BUSBAR)	Min. 20 mm x 5 mm direct at switch rear-side connection Max. 30 mm x 10 mm + 30 mm x 5 mm direct at switch rear-side connection M10 at rear-side screw connection Max. 10 mm x 50 mm (2x) at rear-side width extension
TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)	16 mm ² (2x) at box terminal 16 mm ² (2x) direct at switch rear-side connection 300 mm ² (2x) at rear-side width extension 16 mm ² (1x) at tunnel terminal 16 mm ² (1x) direct at switch rear-side connection
TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)	35 mm ² - 240 mm ² (1x) at box terminal 16 mm ² - 185 mm ² (1x) at 1-hole tunnel terminal 25 mm ² - 240 mm ² (2x) direct at switch rear-side connection 25 mm ² - 120 mm ² (2x) at box terminal 25 mm ² - 240 mm ² (1x) direct at switch rear-side connection
TERMINAL CAPACITY (COPPER STRIP)	Max. 8 segments of 24 mm x 1 mm (2x) at box terminal Max. 10 segments of 24 mm x 1 mm + 5 segments

Resources

BROCHURES	eaton-feerum-the-whole-grain-solution-success-story-en-us.pdf eaton-digital-nzm-brochure-br013003en-en-us.pdf
CATALOGUES	eaton-digital-nzm-catalog-ca013003en-en-us.pdf eaton-circuit-breaker-nzm-mccb-characteristic-curve-015.eps eaton-circuit-breaker-nzm-mccb-characteristic-curve-029.eps eaton-circuit-breaker-nzm-mccb-characteristic-curve-011.eps
CHARACTERISTIC CURVE	eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250293en.pdf
DECLARATIONS OF CONFORMITY	eaton-circuit-breaker-nzm-mccb-dimensions-020.eps eaton-circuit-breaker-switch-nzm-mccb-dimensions-016.eps eaton-general-ie-ready-dilm-contactor-standards.eps
DRAWINGS	eaton-circuit-breaker-basic-unit-bg3-il012100zu.pdf eaton-circuit-breaker-plugin-adaptor-nzm2-il01219023z.pdf
INSTALLATION INSTRUCTIONS	Introduction of the new digital circuit breaker NZM The new digital NZM Range
INSTALLATION VIDEOS	eaton-molded-case-switches-mcad-3d-models-nzm3-3p-xsve.stp eaton-molded-case-switches-mcad-drawings-nzm3-3p-xsve.dwg
MCAD MODEL	eaton-molded-case-switches-pep-eato-00227-v0101-en.pdf
PEP ECO-PASSPORT	

of 24 mm x 1 mm at box terminal
Min. 6 segments of 16 mm x 0.8 mm at rear-side connection (punched)
Max. 10 segments of 32 mm x 1 mm + 5 segments of 32 mm x 1 mm at rear-side connection (punched)

10 segments of 50 mm x 1 mm (2x) at rear-side width extension
Min. 6 segments of 16 mm x 0.8 mm at box terminal

TECHNICAL DATA SHEETS

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

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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

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