

Specifications



Eaton 193290

Eaton Moeller series NZM - Molded Case Circuit Breaker. NZM2 PXR20 circuit breaker, 160A, 3p, Screw terminal, earth-fault protection, N, 2

General specifications

PRODUCT NAME	Eaton Moeller series NZM molded case circuit breaker electronic
CATALOG NUMBER	193290
MODEL CODE	NZMN2-VX160-T
EAN	9010238016354
PRODUCT LENGTH/DEPTH	190 mm
PRODUCT HEIGHT	160 mm
PRODUCT WIDTH	115 mm
PRODUCT WEIGHT	2.3 kg
COMPLIANCES	RoHS conform
CERTIFICATIONS	IEC IEC/EN 60947

Additional information

FUNCTIONS

Systems, cable, selectivity
and generator protection
Earth-fault protection
Integrated earth fault
protection

Delivery programme

AMPERAGE RATING 160 A

APPLICATION Use in unearthed supply
systems at 690 V

**CIRCUIT BREAKER FRAME
TYPE** NZM2

FEATURES Motor drive optional
Protection unit

NUMBER OF POLES Three-pole

RELEASE SYSTEM Electronic release

SPECIAL FEATURES

- LSI overload protection and delayed and non-delayed short-circuit protective device
- R.m.s. value measurement and "thermal memory"
- USB interface for configuration and test function with Power Xpert Protection Manager software
- Optionally communication-capable with interface module and internal Modbus RTU module or CAM
- 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

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	21.12 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	160 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	160 A
DIRECTION OF INCOMING SUPPLY	As required
EARTH-FAULT CURRENT SETTING (IG) - MAX	160 x I _n
EARTH-FAULT CURRENT SETTING (IG) - MIN	32 x I _n
ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT	Screw connection
HANDLE TYPE	Rocker lever
INSTANTANEOUS CURRENT SETTING (II) - MAX	18 A
INSTANTANEOUS CURRENT SETTING (II) - MIN	2 A
ISOLATION	500 V AC (between auxiliary contacts and main contacts) 300 V AC (between the auxiliary contacts)
LIFESPAN, ELECTRICAL	10000 operations at 400 V AC-1 6500 operations at 415 V AC-3 6500 operations at 400 V AC-3 7500 operations at 690 V AC-1 10000 operations at 415 V AC-1 5000 operations at 690 V AC-3
NUMBER OF OPERATIONS PER HOUR - MAX	120
OVERLOAD CURRENT SETTING (IR) - MAX	160 A
OVERLOAD CURRENT SETTING (IR) - MIN	64 A
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT AUXILIARY CONTACTS	6000 V
RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT MAIN	8000 V

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	IP40 (with insulating surround) IP66 (with door coupling rotary handle)
DEGREE OF PROTECTION (TERMINATIONS)	IP00 (terminations, phase isolator and strip terminal) IP10 (tunnel terminal)
LIFESPAN, MECHANICAL	20000 operations
MOUNTING METHOD	Fixed Built-in device fixed built-in technique DIN rail (top hat rail) mounting optional
NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)	0
NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	0
NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	0
POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT	Front side
PROTECTION AGAINST DIRECT CONTACT	Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110
SHOCK RESISTANCE	20 g (half-sinusoidal shock 20 ms)
SPECIAL FEATURES	• LSI overload protection and delayed and non-delayed short-circuit protective device • R.m.s. value measurement and "thermal memory" • USB interface for configuration and test function with

CONTACTS	
RATED INSULATION VOLTAGE (UI)	690 V AC
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	50 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	25 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)	1.9 kA
RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)	1.9 kA
SHORT DELAY CURRENT SETTING (ISD) - MAX	10 A
SHORT DELAY CURRENT SETTING (ISD) - MIN	2 A
SHORT-CIRCUIT RELEASE DELAYED SETTING - MAX	1600 A
SHORT-CIRCUIT RELEASE DELAYED SETTING - MIN	320 A

Power Xpert Protection Manager software

- Optionally communication-capable with interface module and internal Modbus RTU module or CAM
- 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 Icn)
- Rated current = rated uninterrupted current: 160 A

SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX	
	2880 A
SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN	
	320 A
SHORT-CIRCUIT TOTAL BREAKTIME	
	< 10 ms
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
TERMINAL CAPACITY (CONTROL CABLE)	0.75 mm ² - 2.5 mm ² (1x) 0.75 mm ² - 1.5 mm ² (2x)
TERMINAL CAPACITY (COPPER BUSBAR)	Max. 24 mm x 8 mm direct at switch rear-side connection Min. 16 mm x 5 mm direct at switch rear-side connection M8 at rear-side screw connection
TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)	16 mm ² (1x) at tunnel terminal 10 mm ² - 16 mm ² (1x) at box terminal 10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 6 mm ² - 16 mm ² (2x) direct at switch rear-side connection 6 mm ² - 16 mm ² (2x) at box terminal
TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)	25 mm ² - 185 mm ² (1x) direct at switch rear-side connection 25 mm ² - 185 mm ² (1x) at 1-hole tunnel terminal 25 mm ² - 70 mm ² (2x) direct at switch rear-side connection 25 mm ² - 185 mm ² (1x) at box terminal 25 mm ² - 70 mm ² (2x) at box terminal
TERMINAL CAPACITY (COPPER STRIP)	Max. 10 segments of 16 mm x 0.8 mm at box terminal Max. 8 segments of 24 mm x 1 mm (2x) at box terminal Min. 2 segments of 9 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 16

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
CHARACTERISTIC CURVE	eaton-circuit-breaker-nzm-mccb-characteristic-curve-060.eps eaton-circuit-breaker-nzm-mccb-characteristic-curve-059.eps
DECLARATIONS OF CONFORMITY	eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250291en.pdf
DRAWINGS	eaton-circuit-breaker-nzm-mccb-dimensions-019.eps eaton-circuit-breaker-switch-nzm-mccb-dimensions-017.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	eaton-molded-case-switches-mcad-drawings-nzm2-3p.dwg eaton-molded-case-switches-mcad-3d-models-nzm2-3p.stp
TECHNICAL DATA SHEETS	eaton-nzm-technical-information-sheet

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

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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