

Specifications



Photo is representative

Eaton 102684

Eaton Moeller series NZM - Molded Case Circuit Breaker. Molded Case Switch, 3p, 160A

General specifications

PRODUCT NAME	Eaton Moeller series NZM molded case switch
CATALOG NUMBER	102684
MODEL CODE	NS2-160-NA
EAN	4015081025442
PRODUCT LENGTH/DEPTH	142 mm
PRODUCT HEIGHT	185 mm
PRODUCT WIDTH	105 mm
PRODUCT WEIGHT	2.404 kg
COMPLIANCES	RoHS conform
CERTIFICATIONS	IEC 60947-2 CSA (File No. 22086) CSA certified UL 489 Specially designed for North America CSA-C22.2 No. 5-09 UL/CSA CSA (Class No. 4652-06) UL (Category Control Number WJAZ) UL (File No. E148671) CE marking IEC UL listed



Powering Business Worldwide

Additional information

FUNCTIONS

Disconnectors/main
switches

Delivery programme

AMPERAGE RATING

160 A

APPLICATION

Branch circuits, feeder
circuits

CIRCUIT BREAKER FRAME TYPE

N2

FEATURES

Protection unit
Motor drive optional

NUMBER OF POLES

Three-pole

SPECIAL FEATURES

- IEC/EN 60947-2:
circuit breakers
without
overcurrent (CBI-X)
with main switch
characteristics and
isolating
characteristics to
IEC/EN 60204.
- Rated current =
rated
uninterrupted
current: 160 A

TYPE

Switch-disconnector

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	24.35 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
CURRENT RATING (IU) (UL 489 CSA 22.2 NO. 5.1)	250 A
DIRECTION OF INCOMING SUPPLY	As required
ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT	Screw connection
HANDLE TYPE	Rocker lever
INSTANTANEOUS CURRENT SETTING (II) - MAX	2500 A
INSTANTANEOUS CURRENT SETTING (II) - MIN	2500 A
LIFESPAN, ELECTRICAL	10000 operations at 415 V AC-1 7500 operations at 690 V AC-1 10000 operations at 400 V AC-1 6500 operations at 400 V AC-3 5000 operations at 690 V AC-3 6500 operations at 415 V AC-3
NUMBER OF OPERATIONS PER HOUR - MAX	120
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
RATED CURRENT (IU)	250 A
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
RATED OPERATING VOLTAGE UE (UL) - MAX	600 Y / 347 V
RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ	150 kA
RATED SHORT-CIRCUIT	150 kA

Technical data - mechanical

DEGREE OF PROTECTION	In the area of the HMI devices: IP20 (basic protection type) IP20
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 band terminal) IP10 (tunnel terminal)
LIFESPAN, MECHANICAL	20000 operations
MOUNTING METHOD	Fixed DIN rail (top hat rail) mounting optional Built-in device fixed built- in technique
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
SPECIAL FEATURES	- IEC/EN 60947-2: circuit breakers without overcurrent (CBI-X) with main switch characteristics and isolating characteristics to IEC/EN 60204. - Rated current = rated uninterrupted current: 160 A
SWITCH POSITIONS	I, +, 0

BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ	
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
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ	330 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ	330 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ	286 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 525 V, 50/60 HZ	105 kA
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ	53 kA
SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX	2500 A
SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN	2500 A
SHORT-CIRCUIT TOTAL BREAKTIME	< 10 ms
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)	10 mm ² - 16 mm ² (2x) direct at switch rear-side connection 10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal
TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)	25 mm ² - 185 mm ² (1x) at 1-hole tunnel terminal 25 mm ² - 35 mm ² (2x) direct at switch rear-side connection 25 mm ² - 35 mm ² (1x) direct at switch rear-side connection
TERMINAL CAPACITY (COPPER BUSBAR)	NA: 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 Min. 16 mm x 5 mm direct at switch rear-side connection NA: M8 at rear-side screw connection NA: max. 20 mm x 5 mm direct at switch rear-side connection
TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)	6 mm ² - 16 mm ² (2x) at box terminal NA: 6 AWG (1x) at tunnel terminal 10 mm ² - 16 mm ² (1x) at box terminal 4 mm ² - 16 mm ² (2x) direct at switch rear-side connection 10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal NA: 12 - 6 AWG (1x) at box terminal NA: 12 - 6 AWG (1x) direct at switch rear-side connection
TERMINAL CAPACITY	6 mm ² - 25 mm ² (2x) at

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-characteristic-power-defense-mccb-characteristic-curve-037.eps eaton-circuit-breaker-let-through-current-nzm-mccb-characteristic-curve-005.eps
DECLARATIONS OF CONFORMITY	eaton-molded-case-switch-declaration-of-conformity-eu250133en.pdf
DRAWINGS	eaton-circuit-breaker-switch-nzm-mccb-dimensions-017.eps eaton-circuit-breaker-nzm-mccb-dimensions-019.eps eaton-circuit-breaker-switch-nzm-mccb-3d-drawing.eps
ECAD MODEL	DA-CE-ETN.NS2-160-NA
INSTALLATION INSTRUCTIONS	eaton-circuit-breakers-basic-device-nzm2-il01206006z.pdf
INSTALLATION VIDEOS	The new digital NZM Range Introduction of the new digital circuit breaker NZM
MCAD MODEL	eaton-molded-case-switches-mcad-3d-models-nzm2-3p.stp DA-CS-nzm2_3p eaton-molded-case-switches-mcad-drawings-nzm2-3p.dwg DA-CD-nzm2_3p

(COPPER STRANDED CONDUCTOR/CABLE)	box terminal 25 mm ² - 185 mm ² (1x) direct at switch rear-side connection 10 mm ² - 70 mm ² (1x) at box terminal 25 mm ² - 185 mm ² (1x) at 1-hole tunnel terminal NA: 4 - 350 AWG/kcmil (1x) at box terminal NA: 4 - 350 AWG/kcmil (1x) at 1-hole tunnel terminal 25 mm ² - 70 mm ² (2x) direct at switch rear-side connection	PEP ECO-PASSPORT eaton-molded-case-switches-pep-eato-00235-v0101-en.pdf
TERMINAL CAPACITY (COPPER STRIP)	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) Max. 8 segments of 15.5 mm x 0.8 mm (2x) at terminal box Min. 2 segments of 9 mm x 0.8 mm at box terminal NA: max. 10 segments of 16 mm x 0.8 mm at rear-side connection (punched) NA: min. 2 segments of 16 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)	TECHNICAL DATA SHEETS eaton-nzm-technical-information-sheet

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
DATE:



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