

Specifications



Photo is representative



Eaton 281235

Eaton Moeller series NZM - Molded Case Circuit Breaker. Switch-disconnector 3p, 160A, 1

General specifications

PRODUCT NAME	Eaton Moeller series NZM switch-disconnector
CATALOG NUMBER	281235
MODEL CODE	PN1-160
EAN	4015082812355
PRODUCT LENGTH/DEPTH	88 mm
PRODUCT HEIGHT	145 mm
PRODUCT WIDTH	90 mm
PRODUCT WEIGHT	0.886 kg
COMPLIANCES	RoHS conform
CERTIFICATIONS	IEC/EN 60947 IEC



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Additional information

FUNCTIONS	Interlockable Disconnectors/main switches
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Delivery programme

AMPERAGE RATING	160 A
APPLICATION	Use in unearthed supply systems at 690 V
CIRCUIT BREAKER FRAME TYPE	PN1
FEATURES	Version as emergency stop installation Version as maintenance- /service switch Version as main switch
NUMBER OF POLES	Three-pole
SPECIAL FEATURES	• Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. • Isolating characteristics to IEC/EN 60947-3 and VDE 0660. • Busbar tag shroud to VDE 0160 Part 100. • Rated current = rated uninterrupted current: 160 A
TYPE	Switch-disconnector
USED WITH	Enclosure 100 x 800 x 800 mm

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	29.18 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
ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT	Frame clamp
HANDLE TYPE	Rocker lever
ISOLATION	300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main contacts)
LIFESPAN, ELECTRICAL	5000 operations at 690 V AC-1 7500 operations at 415 V AC-1 1000 operations at 400 V AC-23A 1000 operations at 415 V AC-23A 1000 operations at 690 V AC-23A 7500 operations at 400 V AC-1
NUMBER OF OPERATIONS PER HOUR - MAX	120
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
RATED CONDITIONAL SHORT-CIRCUIT CURRENT WITH BACK-UP FUSE	100 kA at 400/415 V 160 gR 80 kA at 690 V
RATED CONDITIONAL SHORT-CIRCUIT CURRENT WITH DOWNSTREAM FUSE	10 kA at 690 V 160 gR 100 kA at 400/415 V
RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT AUXILIARY CONTACTS	6000 V
RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT MAIN CONTACTS	6000 V
RATED INSULATION VOLTAGE (UI)	690 V
RATED OPERATING FREQUENCY	50 Hz
RATED OPERATING POWER AT AC-23, 400 V	90 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 (basic protection type, in the area of the HMI devices) Other
DEGREE OF PROTECTION (IP), FRONT SIDE	IP20 IP66 (with door coupling rotary handle) IP40 (with insulating surround)
DEGREE OF PROTECTION (TERMINATIONS)	IP10 (tunnel terminal) IP00 (terminations, phase isolator and band terminal)
HANDLE COLOR	Black
LIFESPAN, MECHANICAL	20000 operations
MOUNTING METHOD	Fixed Built-in device fixed built-in technique Distribution board installation Ground mounting Intermediate mounting
NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)	0
NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	0
NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	0
NUMBER OF SWITCHES	1
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	- Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. - Isolating characteristics to IEC/EN 60947-3 and

RATED OPERATING VOLTAGE (UE) AT AC - MAX	690 V
RATED OPERATIONAL CURRENT	160 A (415 V AC-22/23A, making and breaking capacity) 160 A (690 V AC-22/23A, making and breaking capacity)
RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ	2.8 kA
RATED SHORT-TIME WITHSTAND CURRENT (ICW)	2 kA
RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)	2 kA
RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)	2 kA
SHORT-CIRCUIT PROTECTIVE DEVICE FUSES - MAX	160 A gL
VOLTAGE RATING	690 V - 690 V

	VDE 0660. • Busbar tag shroud to VDE 0160 Part 100. • Rated current = rated uninterrupted current: 160 A
SWITCH POSITIONS	I, 0

Technical data - mechanical - terminals

OPTIONAL TERMINALS	Connection on rear. Screw terminal. Tunnel terminal
STANDARD TERMINALS	Box terminal
TERMINAL CAPACITY (ALUMINUM SOLID CONDUCTOR/CABLE)	10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 10 mm ² - 16 mm ² (2x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal
TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)	25 mm ² - 95 mm ² (1x) at 1-hole tunnel terminal
TERMINAL CAPACITY (COPPER BUSBAR)	M6 at rear-side screw connection Max. 16 mm x 5 mm direct at switch rear-side connection Min. 12 mm x 5 mm direct at switch rear-side connection
TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)	10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 10 mm ² - 16 mm ² (1x) at box terminal 6 mm ² - 16 mm ² (2x) at box terminal 6 mm ² - 16 mm ² (2x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal
TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)	25 mm ² - 70 mm ² (1x) direct at switch rear-side connection 6 mm ² - 25 mm ² (2x) at box terminal 25 mm ² - 95 mm ² (1x) at 1-hole tunnel terminal 10 mm ² - 70 mm ² (1x) at box terminal 25 mm ² (2x) direct at switch rear-side connection Terminal capacity hint: Up to 95 mm ² can be connected depending on the cable manufacturer
TERMINAL CAPACITY (COPPER STRIP)	Max. 9 segments of 9 mm x 0.8 mm at box terminal Min. 2 segments of 9 mm x 0.8 mm at box terminal

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
DECLARATIONS OF CONFORMITY	eaton-switch-disconnector-declaration-of-conformity-eu250121en.pdf
DRAWINGS	eaton-circuit-breaker-nzm-mccb-dimensions-017.eps eaton-circuit-breaker-switch-nzm-mccb-dimensions-014.eps
ECAD MODEL	ETN.PN1-160
INSTALLATION INSTRUCTIONS	eaton-circuit-breaker-switch-disconnector-nzmb-il01203004z.pdf
INSTALLATION VIDEOS	Introduction of the new digital circuit breaker NZM The new digital NZM Range
MCAD MODEL	DA-CS-nzm1_3p eaton-molded-case-switches-mcad-drawings-nzm1-3p.dwg DA-CD-nzm1_3p eaton-molded-case-switches-mcad-3d-models-nzm1-3p.stp
PEP ECO-PASSPORT	eaton-switch-disconnectors-pep-eato-00224-v0101-en.pdf
TECHNICAL DATA SHEETS	eaton-nzm-technical-information-sheet

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
DATE:



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