

Circuit-breaker, 3p, 160A, plug-in module

Part no. **NZMN2-M160-SVE**
113251

General specifications		
Product name		Eaton Moeller series NZM molded case circuit breaker thermo-magnetic
Part no.		NZMN2-M160-SVE
EAN		4015081127863
Product Length/Depth		180 millimetre
Product height		245 millimetre
Product width		105 millimetre
Product weight		2.765 kilogram
Compliances		RoHS conform
Certifications		IEC IEC/EN 60947
Product Tradename		NZM
Product Type		Molded case circuit breaker
Product Sub Type		Thermo-magnetic
Delivery program		
Application		Use in unearthed supply systems at 690 V
Type		Circuit breaker
Circuit breaker frame type		NZM2
Accessories required		NZM2-XSVS
Number of poles		Three-pole
Amperage Rating		160 A
Release system		Thermomagnetic release
Special features		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 Tripping class 10 A IEC/EN 60947-4-1, IEC/EN 60947-2 The circuit-breaker fulfills all requirements for AC-3 switching category.
Fitted with:		Thermal protection
Technical Data - Electrical		
Voltage rating		690 V - 690 V
Rated insulation voltage (U _i)		1000 V
Rated impulse withstand voltage (U _{imp}) at auxiliary contacts		6000 V
Rated impulse withstand voltage (U _{imp}) at main contacts		8000 V
Rated operational current		134 A (400 V AC-3)
Rated short-time withstand current (t = 0.3 s)		1.9 kA
Rated short-time withstand current (t = 1 s)		1.9 kA
Instantaneous current setting (I _i) - min		1280 A
Instantaneous current setting (I _i) - max		2240 A
Overload current setting (I _r) - min		125 A
Overload current setting (I _r) - max		160 A
Short-circuit release non-delayed setting - min		1280 A
Short-circuit release non-delayed setting - max		2240 A
Rated short-circuit breaking capacity I _{cs} (IEC/EN 60947) at 230 V, 50/60 Hz		85 kA
Rated short-circuit breaking capacity I _{cs} (IEC/EN 60947) at 400/415 V, 50/60 Hz		35 kA
Rated short-circuit breaking capacity I _{cs} (IEC/EN 60947) at 440 V, 50/60 Hz		35 kA
Rated short-circuit breaking capacity I _{cs} (IEC/EN 60947) at 525 V, 50/60 Hz		25 kA
Rated short-circuit breaking capacity I _{cs} (IEC/EN 60947) at 690 V, 50/60 Hz		5 kA
Rated short-circuit making capacity I _{cm} at 240 V, 50/60 Hz		187 kA
Rated short-circuit making capacity I _{cm} at 400/415 V, 50/60 Hz		105 kA

Rated short-circuit making capacity I _{cm} at 440 V, 50/60 Hz		74 kA
Rated short-circuit making capacity I _{cm} at 525 V, 50/60 Hz		53 kA
Rated short-circuit making capacity I _{cm} at 690 V, 50/60 Hz		40 kA
Rated operating power at AC-3, 230 V		45 kW
Rated operating power at AC-3, 400 V		90 kW
Short-circuit total breaktime		< 10 ms
Electrical connection type of main circuit		Screw connection
Isolation		300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main contacts)
Number of operations per hour - max		120
Handle type		Rocker lever
Utilization category		A (IEC/EN 60947-2)
Overvoltage category		III
Pollution degree		3
Lifespan, electrical		7500 operations at 690 V AC-1 10000 operations at 415 V AC-1 5000 operations at 690 V AC-3 6500 operations at 400 V AC-3 6500 operations at 415 V AC-3 10000 operations at 400 V AC-1
Direction of incoming supply		As required
Technical Data - Mechanical		
Mounting Method		Built-in device plug-in technique Plug-in unit
Degree of protection		IP20 (basic degree of protection, in the operating controls area) IP20
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)
Protection against direct contact		Finger and back-of-hand proof to VDE 0106 part 100
Shock resistance		20 g (half-sinusoidal shock 20 ms)
Switch off technique		Thermomagnetic
Climatic proofing		Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
Special features		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 Tripping class 10 A IEC/EN 60947-4-1, IEC/EN 60947-2 The circuit-breaker fulfills all requirements for AC-3 switching category.
Lifespan, mechanical		20000 operations
Technical Data - Mechanical - Terminals		
Standard terminals		Screw terminal
Optional terminals		Box terminal. Connection on rear. 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 (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 (copper busbar)		M8 at rear-side screw connection Min. 16 mm x 5 mm direct at switch rear-side connection Max. 24 mm x 8 mm direct at switch rear-side connection
Terminal capacity (copper solid conductor/cable)		10 mm ² - 16 mm ² (1x) at box terminal 6 mm ² - 16 mm ² (2x) 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 16 mm ² (1x) at tunnel terminal
Terminal capacity (copper stranded conductor/cable)		25 mm ² - 185 mm ² (1x) at 1-hole tunnel terminal 25 mm ² - 70 mm ² (2x) at box terminal 25 mm ² - 185 mm ² (1x) at box terminal 25 mm ² - 70 mm ² (2x) direct at switch rear-side connection 25 mm ² - 185 mm ² (1x) direct at switch rear-side connection
Terminal capacity (copper strip)		Max. 10 segments of 24 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) Min. 2 segments of 9 mm x 0.8 mm at box terminal Max. 8 segments of 24 mm x 1 mm (2x) at box terminal Max. 10 segments of 16 mm x 0.8 mm at box terminal

Design verification as per IEC/EN 61439 - technical data		
Rated operational current for specified heat dissipation (In)		160 A
Equipment heat dissipation, current-dependent		38.4 W
Ambient operating temperature - min		-25 °C
Ambient operating temperature - max		70 °C
Ambient storage temperature - min		40 °C
Ambient storage temperature - max		70 °C
Design verification as per IEC/EN 61439		
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 against electric shock		Does not apply, since the 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.
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.
Additional information		
Functions		Motor protection

Technical data ETIM 9.0

Low-voltage industrial components (EG000017) / Motor protection circuit-breaker (EC000074)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecI@ss13-27-37-04-01 [AGZ529021])		
Overload release current setting	A	125 - 160
Adjustment range undelayed short-circuit release	A	1280 - 2240
With thermal overload protection		Yes
Phase failure sensitive		No
Switch off technique		Thermomagnetic
Rated operating voltage	V	690 - 690
Rated permanent current Iu	A	160
Rated operation power at AC-3, 230 V	kW	45
Rated operation power at AC-3, 400 V	kW	90
Power loss	W	38.4
Type of electrical connection of main circuit		Screw connection
Type of control element		Rocker lever
Device construction		Built-in device plug-in technique
With integrated auxiliary switch		No
With integrated under voltage release		No
Number of poles		3
Rated short-circuit breaking capacity Icu at 400 V, AC	kA	35

Degree of protection (IP)			IP20
Height		mm	245
Width		mm	105
Depth		mm	180