



Circuit-breaker, 4p, 500A

Part no.

NZMN3-4-A500
109698

Powering Business Worldwide™

General specifications

Product name	Eaton Moeller series NZM - Molded case circuit breaker
Part no.	NZMN3-4-A500
EAN	4015081092840
Product Length/Depth	166 millimetre
Product height	275 millimetre
Product width	185 millimetre
Product weight	7.3 kilogram
Compliances	RoHS conform
Certifications	IEC/EN 60947 IEC
Product Tradename	NZM
Product Type	Molded case circuit breaker
Product Sub Type	None

Delivery program

Application	Use in unearthing supply systems at 690 V
Type	Circuit breaker
Circuit breaker frame type	NZM3
Number of poles	Four-pole
Amperage Rating	500 A
Release system	Thermomagnetic release
Features	Protection unit Motor drive optional
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: 500 A Set value in neutral conductor is synchronous with set value I_r of main pole. Terminal capacity hint: Up to 240 mm ² can be connected depending on the cable manufacturer.

Technical Data - Electrical

Voltage rating	690 V - 690 V
Rated insulation voltage (U_i)	1000 V AC
Rated impulse withstand voltage (U_{imp}) at auxiliary contacts	6000 V
Rated impulse withstand voltage (U_{imp}) at main contacts	8000 V
Current rating of neutral conductor	200% of phase conductor
Rated short-time withstand current ($t = 0.3$ s)	3.3 kA
Rated short-time withstand current ($t = 1$ s)	3.3 kA
Instantaneous current setting (I_i) - min	6 A
Instantaneous current setting (I_i) - max	10 A
Overload current setting (I_r)	400 A - 500 A
Overload current setting (I_r) - min	400 A
Overload current setting (I_r) - max	500 A
Short delay current setting (I_{sd}) - min	0 A
Short delay current setting (I_{sd}) - max	0 A
Short-circuit release non-delayed setting - min	3000 A
Short-circuit release non-delayed setting - max	5000 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	50 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	13 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
Short-circuit total breaktime	< 10 ms
Electrical connection type of main circuit	Screw connection
Isolation	500 V AC (between auxiliary contacts and main contacts) 300 V AC (between the auxiliary contacts)
Number of operations per hour - max	60
Handle type	Rocker lever
Utilization category	A (IEC/EN 60947-2)
Oversupply category	III
Pollution degree	3
Lifespan, electrical	2000 operations at 400 V AC-3 3000 operations at 690 V AC-1 5000 operations at 400 V AC-1 5000 operations at 415 V AC-1 2000 operations at 690 V AC-3 2000 operations at 415 V AC-3
Direction of incoming supply	As required

Technical Data - Mechanical

Mounting Method	Built-in device fixed built-in technique Fixed
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)
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)
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
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
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: 500 A Set value in neutral conductor is synchronous with set value I_r of main pole. Terminal capacity hint: Up to 240 mm ² can be connected depending on the cable manufacturer.
Lifespan, mechanical	15000 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)	50 mm ² - 240 mm ² (1x) at 2-hole tunnel terminal 50 mm ² - 240 mm ² (2x) at 2-hole tunnel terminal 25 mm ² - 185 mm ² (1x) at tunnel terminal
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 (1x) at tunnel terminal 16 mm ² (1x) direct at switch rear-side connection 300 mm ² (2x) at rear-side width extension 16 mm ² (2x) at box terminal 16 mm ² (2x) direct at switch rear-side connection
Terminal capacity (copper stranded conductor/cable)	35 mm ² - 240 mm ² (1x) at box terminal 25 mm ² - 240 mm ² (2x) direct at switch rear-side connection 25 mm ² - 240 mm ² (2x) direct at switch rear-side connection 16 mm ² - 185 mm ² (1x) at 1-hole tunnel terminal

Terminal capacity (copper strip)	25 mm ² - 120 mm ² (2x) at box terminal Max. 10 segments of 24 mm x 1 mm + 5 segments of 24 mm x 1 mm 10 segments of 50 mm x 1 mm (2x) at rear-side width extension Max. 8 segments of 24 mm x 1 mm (2x) at box terminal Min. 6 segments of 16 mm x 0.8 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)
Design verification as per IEC/EN 61439 - technical data	
Rated operational current for specified heat dissipation (In)	500 A
Equipment heat dissipation, current-dependent	130.5 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	System and cable protection

Technical data ETIM 9.0

Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ecl@ss13-27-37-04-09 [AJZ716018])

Rated permanent current I _u	A	500
Rated voltage	V	690 - 690
Rated short-circuit breaking capacity I _{cu} at 400 V, 50 Hz	kA	50
Overload release current setting	A	400 - 500
Adjustment range short-term delayed short-circuit release	A	0 - 0
Adjustment range undelayed short-circuit release	A	6 - 10
Power loss	W	
Device construction		Built-in device fixed built-in technique
Integrated earth fault protection		No
Type of electrical connection of main circuit		Screw connection
Suitable for DIN rail (top hat rail) mounting		No

DIN rail (top hat rail) mounting optional	No
Number of auxiliary contacts as normally closed contact	0
Number of auxiliary contacts as normally open contact	0
Number of auxiliary contacts as change-over contact	0
With switched-off indicator	No
With integrated under voltage release	No
Number of poles	4
Position of connection for main current circuit	Front side
Type of control element	Rocker lever
Complete device with protection unit	Yes
Motor drive integrated	No
Motor drive optional	Yes
Degree of protection (IP)	IP20