

Circuit-breaker, 3p, 20A



Part no. **NZMN1-AF20-NA**  
**281565**

General specifications		
Product name		Eaton Moeller series NZM molded case circuit breaker thermo-magnetic
Part no.		NZMN1-AF20-NA
EAN		4015082815653
Product Length/Depth		88 millimetre
Product height		165.5 millimetre
Product width		90 millimetre
Product weight		1.046 kilogram
Compliances		RoHS conform
Certifications		CSA (File No. 22086) CE marking Specially designed for North America CSA (Class No. 1432-01) CSA certified UL (File No. E31593) UL/CSA UL (Category Control Number DIVQ) UL 489 IEC 60947-2 CSA-C22.2 No. 5-09 IEC/EN 60947 IEC UL listed
Product Tradename		NZM
Product Type		Molded case circuit breaker
Product Sub Type		Thermo-magnetic
Delivery program		
Application		Branch circuits, feeder circuits Use in unearthed supply systems at 690 V
Type		Circuit breaker
Circuit breaker frame type		NZM1
Number of poles		Three-pole
Amperage Rating		20 A
Release system		Thermomagnetic release
Features		Protection unit
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 <sub>cn</sub> ) Rated current = rated uninterrupted current: 20 A Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate. Fixed overload releases I <sub>r</sub>
Technical Data - Electrical		
Voltage rating		690 V - 690 V
Rated operating voltage U <sub>e</sub> (UL) - max		480 Y / 277 V
Rated insulation voltage (U <sub>i</sub> )		690 V AC
Rated impulse withstand voltage (U <sub>imp</sub> ) at auxiliary contacts		6000 V
Rated impulse withstand voltage (U <sub>imp</sub> ) at main contacts		6000 V
Rated operational current		160 A (380/400 V AC-1, making and breaking capacity) 20 A (690 V AC -1, making and breaking capacity) 125 A (415 V AC-1, making and breaking capacity) 20 A (660-690 V AC-3, making and breaking capacity)
Instantaneous current setting (I <sub>i</sub> ) - min		350 A
Instantaneous current setting (I <sub>i</sub> ) - max		350 A
Overload current setting (I <sub>r</sub> ) - min		20 A
Overload current setting (I <sub>r</sub> ) - max		20 A
Short delay current setting (I <sub>sd</sub> ) - min		0 A
Short delay current setting (I <sub>sd</sub> ) - max		0 A

Short-circuit release non-delayed setting - min		350 A
Short-circuit release non-delayed setting - max		350 A
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		10 kA
Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 690 V, 50/60 Hz		7.5 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		40 kA
Rated short-circuit making capacity Icm at 690 V, 50/60 Hz		17 kA
Short-circuit total breaktime		< 10 ms
Low-voltage HBC fuse - max		200 A gG/gL
Electrical connection type of main circuit		Frame clamp
Isolation		500 V AC (between auxiliary contacts and main contacts) 300 V AC (between the auxiliary 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 400 V AC-1
Direction of incoming supply		As required
<b>Technical Data - Mechanical</b>		
Mounting Method		Built-in device fixed built-in technique DIN rail (top hat rail) mounting optional Fixed
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)
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 Icn) Rated current = rated uninterrupted current: 20 A Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate. Fixed overload releases Ir
Lifespan, mechanical		20000 operations
<b>Technical Data - Mechanical - Terminals</b>		
Standard terminals		Box terminal
Terminal capacity (control cable)		14 mm <sup>2</sup> - 18 mm <sup>2</sup> (1x) 16 mm <sup>2</sup> - 18 mm <sup>2</sup> (2x)
Terminal capacity (aluminum solid conductor/cable)		16 mm <sup>2</sup> (1x) at tunnel terminal
Terminal capacity (copper busbar)		M8 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)		16 mm <sup>2</sup> - 95 mm <sup>2</sup> (1x) at tunnel terminal 6 mm <sup>2</sup> - 12 mm <sup>2</sup> (1x) at box terminal 6 mm <sup>2</sup> - 12 mm <sup>2</sup> (1x) direct at switch rear-side connection 6 mm <sup>2</sup> - 9 mm <sup>2</sup> (2x) direct at switch rear-side connection

Terminal capacity (copper stranded conductor/cable)		4 mm <sup>2</sup> - 3/0 mm <sup>2</sup> (1x) at tunnel terminal 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (1x) at box terminal 4 mm <sup>2</sup> - 2/0 mm <sup>2</sup> (1x) direct at switch rear-side connection 25 mm <sup>2</sup> (2x) at box terminal
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
<b>Design verification as per IEC/EN 61439 - technical data</b>		
Rated operational current for specified heat dissipation (In)		20 A
Equipment heat dissipation, current-dependent		9.82 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
<b>Design verification as per IEC/EN 61439</b>		
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.
<b>Additional information</b>		
Functions		System and cable protection Current limiting circuit breaker

## 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 Iu	A	20
Rated voltage	V	690 - 690
Rated short-circuit breaking capacity Icu at 400 V, 50 Hz	kA	50
Overload release current setting	A	20 - 20
Adjustment range short-term delayed short-circuit release	A	0 - 0
Adjustment range undelayed short-circuit release	A	350 - 350
Power loss	W	9.8
Device construction		Built-in device fixed built-in technique
Integrated earth fault protection		No
Type of electrical connection of main circuit		Frame clamp
Suitable for DIN rail (top hat rail) mounting		No
DIN rail (top hat rail) mounting optional		Yes

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			3
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			No
Degree of protection (IP)			IP20