

Circuit-breaker, 3p, 90A



**Part no.**                      **NZMH2-ME90**  
**265786**

<b>General specifications</b>		
Product name		Eaton Moeller series NZM molded case circuit breaker electronic
Part no.		NZMH2-ME90
EAN		4015082657864
Product Length/Depth		149 millimetre
Product height		184 millimetre
Product width		105 millimetre
Product weight		2.438 kilogram
Compliances		RoHS conform
Certifications		IEC/EN 60947 IEC
Product Tradename		NZM
Product Type		Molded case circuit breaker
Product Sub Type		Electronic
<b>Delivery program</b>		
Application		Use in unearthed supply systems at 690 V
Type		Circuit breaker
Circuit breaker frame type		NZM2
Number of poles		Three-pole
Amperage Rating		90 A
Release system		Electronic release
Special features		IEC/EN 60947-4-1, IEC/EN 60947-2 The circuit-breaker fulfills all requirements for AC-3 switching category. R.m.s. value measurement and "thermal memory" Adjustable time delay setting to overcome current peaks $t_r$ at $6 \times I_r$ also infinity (without overload releases) All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current applies to the circuit-breaker, $I_n = I_u$ . 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: 90 A
Fitted with:		Thermal protection
<b>Technical Data - Electrical</b>		
Voltage rating		690 V - 690 V
Rated insulation voltage (Ui)		1000 V
Rated impulse withstand voltage (Uimp) at auxiliary contacts		6000 V
Rated impulse withstand voltage (Uimp) at main contacts		8000 V
Rated operational current		78 A (690 V AC-3) 81 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 (Ii) - min		90 A
Instantaneous current setting (Ii) - max		1260 A
Overload current setting (Ir) - min		45 A
Overload current setting (Ir) - max		90 A
Short-circuit release non-delayed setting - min		180 A
Short-circuit release non-delayed setting - max		1260 A
Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 230 V, 50/60 Hz		150 kA
Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 400/415 V, 50/60 Hz		130 kA
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		40 kA
Rated operating power at AC-3, 230 V		22 kW
Rated operating power at AC-3, 400 V		45 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		6500 operations at 415 V AC-3 10000 operations at 400 V AC-1 5000 operations at 690 V AC-3 6500 operations at 400 V AC-3 7500 operations at 690 V AC-1 10000 operations at 415 V AC-1
Direction of incoming supply		As required
<b>Technical Data - Mechanical</b>		
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		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		Electronic
Climatic proofing		Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
Special features		IEC/EN 60947-4-1, IEC/EN 60947-2 The circuit-breaker fulfills all requirements for AC-3 switching category. R.m.s. value measurement and "thermal memory" Adjustable time delay setting to overcome current peaks $t_r$ at $6 \times I_r$ also infinity (without overload releases) All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current applies to the circuit-breaker, $I_n = I_u$ . 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: 90 A
Lifespan, mechanical		20000 operations
<b>Technical Data - Mechanical - Terminals</b>		
Standard terminals		Screw terminal
Optional terminals		Box terminal. Connection on rear. Tunnel terminal
Terminal capacity (control cable)		0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x) 0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x)
Terminal capacity (aluminum solid conductor/cable)		10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) direct at switch rear-side connection 16 mm <sup>2</sup> (1x) at tunnel terminal 10 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct at switch rear-side connection
Terminal capacity (aluminum stranded conductor/cable)		25 mm <sup>2</sup> - 50 mm <sup>2</sup> (1x) direct at switch rear-side connection 25 mm <sup>2</sup> - 50 mm <sup>2</sup> (2x) direct at switch rear-side connection 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at tunnel terminal
Terminal capacity (copper busbar)		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
Terminal capacity (copper solid conductor/cable)		16 mm <sup>2</sup> (1x) at tunnel terminal 10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) direct at switch rear-side connection

		10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at box terminal 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at box terminal 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct at switch rear-side connection
Terminal capacity (copper stranded conductor/cable)		25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at 1-hole tunnel terminal 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) direct at switch rear-side connection 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at box terminal 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) at box terminal 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) direct at switch rear-side connection
Terminal capacity (copper strip)		Min. 2 segments of 16 mm x 0.8 mm at rear-side connection (punched) Max. 10 segments of 24 mm x 0.8 mm at rear-side connection (punched) Min. 2 segments of 9 mm x 0.8 mm at box terminal Max. 10 segments of 16 mm x 0.8 mm at box terminal Max. 8 segments of 24 mm x 1 mm (2x) at box terminal
<b>Design verification as per IEC/EN 61439 - technical data</b>		
Rated operational current for specified heat dissipation (I <sub>n</sub> )		90 A
Equipment heat dissipation, current-dependent		6.68 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		Motor protection Phase failure sensitive

## 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 (ecl@ss13-27-37-04-01 [AGZ529021])

Overload release current setting	A	45 - 90
Adjustment range undelayed short-circuit release	A	90 - 1260
With thermal overload protection		Yes
Phase failure sensitive		Yes
Switch off technique		Electronic
Rated operating voltage	V	690 - 690
Rated permanent current I <sub>u</sub>	A	90

Rated operation power at AC-3, 230 V	kW	22
Rated operation power at AC-3, 400 V	kW	45
Power loss	W	
Type of electrical connection of main circuit		Screw connection
Type of control element		Rocker lever
Device construction		Built-in device fixed built-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	130
Degree of protection (IP)		IP20
Height	mm	184
Width	mm	105
Depth	mm	149