



**NZM2 PXR25 circuit breaker - integrated energy measurement class 1, 160A, 4p, variable, Screw terminal, earth-fault protection and zone selectivity**

**Part no.** **NZMN2-4-PX160/VAR-TZ**  
**192228**  
**EL Number** **4363144**  
**(Norway)**

**General specifications**

Product name	Eaton Moeller series NZM molded case circuit breaker electronic
Part no.	NZMN2-4-PX160/VAR-TZ
EAN	4015081927791
Product Length/Depth	190 millimetre
Product height	160 millimetre
Product width	145 millimetre
Product weight	3 kilogram
Compliances	RoHS conform
Certifications	IEC IEC/EN 60947
Product Tradename	NZM
Product Type	Molded case circuit breaker
Product Sub Type	Electronic

**Delivery program**

Application	Use in unearthed supply systems at 690 V
Type	Circuit breaker
Circuit breaker frame type	NZM2
Number of poles	Four-pole
Amperage Rating	160 A
Release system	Electronic release
Features	Motor drive optional Protection unit
Special features	LSIG overload protection and delayed and non-delayed short-circuit protective device, earth-fault protection Class 1 energy measurement, r.m.s. value measurement, and "thermal memory" USB interface for configuration and test function with Power Xpert Protection Manager software Zone selectivity ZSI Interface module in equipment supplied. Optionally communication-capable with internal Modbus RTU module or CAM 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

**Technical Data - Electrical**

Voltage rating	690 V - 690 V
Rated insulation voltage (Ui)	690 V AC
Rated impulse withstand voltage (Uimp) at auxiliary contacts	6000 V
Rated impulse withstand voltage (Uimp) at main contacts	8000 V
Current rating of neutral conductor	0 - 60% - 100% of phase conductor
Rated short-time withstand current ( $t = 0.3$ s)	1.9 kA
Rated short-time withstand current ( $t = 1$ s)	1.9 kA
Earth-fault current setting ( $I_g$ ) - min	$32 \times I_n$
Earth-fault current setting ( $I_g$ ) - max	$160 \times I_n$
Instantaneous current setting ( $I_i$ ) - min	2 A
Instantaneous current setting ( $I_i$ ) - max	18 A
Overload current setting ( $I_r$ ) - min	64 A
Overload current setting ( $I_r$ ) - max	160 A
Short delay current setting ( $I_{sd}$ ) - min	2 A
Short delay current setting ( $I_{sd}$ ) - max	10 A

Short-circuit release delayed setting - min	128 A
Short-circuit release delayed setting - max	1600 A
Short-circuit release non-delayed setting - min	320 A
Short-circuit release non-delayed setting - max	2880 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	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	110 kA
Rated short-circuit making capacity $I_{cm}$ at 440 V, 50/60 Hz	77 kA
Rated short-circuit making capacity $I_{cm}$ at 525 V, 50/60 Hz	55 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	120
Handle type	Rocker lever
Utilization category	A (IEC/EN 60947-2)
Overvoltage category	III
Pollution degree	3
Lifespan, electrical	10000 operations at 415 V AC-1 10000 operations at 400 V AC-1 7500 operations at 690 V AC-1
Direction of incoming supply	As required
<b>Technical Data - Mechanical</b>	
Mounting Method	DIN rail (top hat rail) mounting optional Built-in device fixed built-in technique Fixed
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 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, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
Special features	LSIG overload protection and delayed and non-delayed short-circuit protective device, earth-fault protection Class 1 energy measurement, r.m.s. value measurement, and "thermal memory" USB interface for configuration and test function with Power Xpert Protection Manager software Zone selectivity ZSI Interface module in equipment supplied. Optionally communication-capable with internal Modbus RTU module or CAM 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
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> - 1.5 mm <sup>2</sup> (2x) 0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x)
Terminal capacity (aluminum solid conductor/cable)	16 mm <sup>2</sup> (1x) at tunnel terminal

Terminal capacity (aluminum stranded conductor/cable)	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 Min. 16 mm x 5 mm direct at switch rear-side connection M8 at rear-side screw connection
Terminal capacity (copper solid conductor/cable)	10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at box terminal 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 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct at switch rear-side connection 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at box terminal
Terminal capacity (copper stranded conductor/cable)	25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) direct at switch rear-side connection 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) 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> - 185 mm <sup>2</sup> (1x) at 1-hole tunnel terminal
Terminal capacity (copper strip)	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 Min. 2 segments of 9 mm x 0.8 mm at box terminal 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)
<b>Design verification as per IEC/EN 61439 - technical data</b>	
Rated operational current for specified heat dissipation (In)	160 A
Equipment heat dissipation, current-dependent	21.12 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	Earth-fault protection Systems, cable, selectivity and generator protection Zone selectivity Integrated earth fault 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 <sub>u</sub>	A	160
Rated voltage	V	690 - 690

Rated short-circuit breaking capacity Icu at 400 V, 50 Hz	kA	50
Overload release current setting	A	64 - 160
Adjustment range short-term delayed short-circuit release	A	2 - 10
Adjustment range undelayed short-circuit release	A	2 - 18
Power loss	W	21.12
Device construction		Built-in device fixed built-in technique
Integrated earth fault protection		Yes
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		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		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