

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



**Part no.** **NZMN2-4-PX160/VAR-TZ-SVE**  
**Catalog No.** **192086**

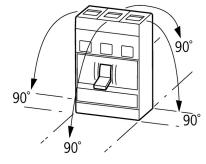
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## Delivery program

Product range	Circuit-breaker		
Protective function	Systems, cable, selectivity and generator protection Earth-fault protection Zone selectivity		
Standard/Approval	IEC		
Installation type	Plug-in units		
Release system	Electronic release		
Construction size	NZM2		
Description	LSIG Overload, delayed and non-delayed short-circuit and earth-fault protective device   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 interface module and internal Modbus RTU module (additional ECAM Communication Adapter Modules available)		
Number of poles	4 pole		
Standard equipment	Screw connection		
<b>Switching capacity</b>			
400/415 V 50 Hz	$I_{cu}$	kA	50
<b>Rated current = rated uninterrupted current</b>			
Rated current = rated uninterrupted current	$I_n = I_u$	A	160
Neutral conductor	% of phase conductor	%	0 - 60 - 100
<b>Setting range</b>			
Overload trip	$I_r$	A	64 - 160
Short-circuit releases	$I_s = I_n \times \dots$		
Non-delayed	$I_s = I_r \times \dots$		2 - 18
Delayed	$I_{sd} = I_r \times \dots$		2 - 10
Setting range of earth fault release min.	$I_g = I_n \times \dots$		32
Setting range of earth fault release max.	$I_g = I_n \times \dots$		160

## Technical data

General			
Standards	IEC/EN 60947		
Protection against direct contact	Finger and back of hand proof to VDE 0106 Part 100		
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30		
Ambient temperature			
Ambient temperature, storage	$^{\circ}\text{C}$	- -40 - + 70	
Operation	$^{\circ}\text{C}$	-25 - +70	

Mechanical shock resistance (10 ms half-sinusoidal shock) according to IEC 60068-2-27	g	20 (half-sinusoidal shock 20 ms)
Safe isolation to EN 61140		
Between auxiliary contacts and main contacts	V AC	500
between the auxiliary contacts	V AC	300
Mounting position		<p>Vertical and 90° in all directions</p>  <p>With XFI earth-fault release:  - NZM1, N1, NZM2, N2: vertical and 90° in all directions  with plug-in unit  - NZM1, N1, NZM2, N2: vertical, 90° right/left  with withdrawable unit:  - NZM3, N3: vertical, 90° right/left  - NZM4, N4: vertical  with remote operator:  - NZM2, N(S)2, NZM3, N(S)3,  NZM4, N(S)4: vertical and 90° in all directions</p>
Direction of incoming supply		as required
Degree of protection		
Device		In the operating controls area: IP20 (basic degree of protection)
Enclosures		With insulating surround: IP40 With door coupling rotary handle: IP66
Terminations		Tunnel terminal: IP10 Phase isolator and strip terminal: IP00
Other technical data (sheet catalogue)		Weight Temperature dependency, Derating Effective power loss

### Circuit-breakers

Rated current = rated uninterrupted current	$I_n = I_u$	A	160
Rated surge voltage invariability	$U_{imp}$		
Main contacts		V	8000
Auxiliary contacts		V	6000
Rated operational voltage	$U_e$	V AC	690
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_i$	V	690
Use in unearthing supply systems		V	$\leq 690$

### Switching capacity

Rated short-circuit making capacity	$I_{cm}$		
240 V	$I_{cm}$	kA	187
400/415 V	$I_{cm}$	kA	105
440 V 50/60 Hz	$I_{cm}$	kA	74
525 V 50/60 Hz	$I_{cm}$	kA	53
690 V 50/60 Hz	$I_c$	kA	40
Rated short-circuit breaking capacity $I_{cn}$	$I_{cn}$		
Icu to IEC/EN 60947 test cycle 0-t-CO	$I_{cu}$	kA	
240 V 50/60 Hz	$I_{cu}$	kA	85
400/415 V 50/60 Hz	$I_{cu}$	kA	50
440 V 50/60 Hz	$I_{cu}$	kA	35
525 V 50/60 Hz	$I_{cu}$	kA	25
690 V 50/60 Hz	$I_{cu}$	kA	20
Ics to IEC/EN 60947 test cycle 0-t-CO-t-CO	$I_{cs}$	kA	
240 V 50/60 Hz	$I_{cs}$	kA	85
400/415 V 50/60 Hz	$I_{cs}$	kA	50
440 V 50/60 Hz	$I_{cs}$	kA	35
525 V 50/60 Hz	$I_{cs}$	kA	25
690 V 50/60 Hz	$I_{cs}$	kA	5
			Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.
Rated short-time withstand current			

t = 0.3 s	I <sub>cw</sub>	kA	1.9
t = 1 s	I <sub>cw</sub>	kA	1.9
Utilization category to IEC/EN 60947-2			A
Lifespan, mechanical (of which max. 50 % trip by shunt/undervoltage release)	Operations		20000
Lifespan, electrical			
AC-1			
400 V 50/60 Hz	Operations		10000
415 V 50/60 Hz	Operations		10000
690 V 50/60 Hz	Operations		7500
Max. operating frequency		Ops/h	120
Total break time at short-circuit		ms	< 10

### Terminal capacity

Standard equipment			Screw connection
Accessories required			NZM2-4-XSVS
Optional accessories			Box terminal Tunnel terminal connection on rear
Round copper conductor			
Box terminal			
Solid	mm <sup>2</sup>		1 x (10 - 16) 2 x (6 - 16)
Stranded	mm <sup>2</sup>		1 x (10 - 185)   2 x (10 - 70)
Tunnel terminal			
Solid	mm <sup>2</sup>		1 x 16
Stranded	mm <sup>2</sup>		
1-hole	mm <sup>2</sup>		1 x (25 - 185)
Bolt terminal and rear-side connection			
Direct on the switch			
Solid	mm <sup>2</sup>		1 x (10 - 16) 2 x (6 - 16)
Stranded	mm <sup>2</sup>		1 x (10 - 185)   2 x (10 - 70)
Al circular conductor			
Tunnel terminal			
Solid	mm <sup>2</sup>		1 x 16
Stranded	mm <sup>2</sup>		
Stranded	mm <sup>2</sup>		1 x (25 - 185)
Bolt terminal and rear-side connection			
Direct on the switch			
Solid	mm <sup>2</sup>		1 x (10 - 16)   2 x (10 - 16)
Stranded	mm <sup>2</sup>		1 x (25 - 50)   2 x (25 - 50)
Cu strip (number of segments x width x segment thickness)			
Box terminal			
	min.	mm	2 x 9 x 0.8
	max.	mm	10 x 16 x 0.8 (2x) 8 x 15.5 x 0.8
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	2 x 16 x 0.8
Flat copper strip, with holes	max.	mm	10 x 24 x 0.8
Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M8
Direct on the switch			
	min.	mm	16 x 5
	max.	mm	24 x 8
Control cables		mm <sup>2</sup>	1 x (0.75 - 2.5)

## Design verification as per IEC/EN 61439

Technical data for design verification		$I_n$	A	160
Rated operational current for specified heat dissipation		$P_{vid}$	W	21.12
Equipment heat dissipation, current-dependent			°C	-25
Operating ambient temperature min.			°C	70
Operating ambient temperature max.				
IEC/EN 61439 design verification				
10.2 Strength of materials and parts				
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 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric 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 Insulation properties				
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.

## Technical data ETIM 8.0

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@ss10.0.1-27-37-04-09 [AJZ716013])	
Rated permanent current $I_n$	A 160
Rated voltage	V 690 - 690
Rated short-circuit breaking capacity $I_{cu}$ 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
Integrated earth fault protection	Yes
Type of electrical connection of main circuit	Other
Device construction	Built-in device plug-in technique
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	Connection at separate chassis part
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