



# NZM N2-4-PX250/VAR-SVE

Overview

Specifications

Resources







## **DELIVERY PROGRAM**

Delivery program

Product range Orcuit-breaker

Technical data

Protective function

Design verification as per IEC/EN 61439

Systems, cable, selectivity and generator protection

Technical data ETIM 7.0

Standard/Approval

IEC

Characteristics

Installation type Plug-in units

Dimensions

Release system **Bectronic release** 

Construction size NZM2

Description

LSI overload protection and delayed and non-

delayed short-circuit protective device
Class 1 energy measurement, r.ms. value
measurement, and "thermal memory"
USB interface for configuration and test function
with Power Xpert Protection Manager software
Interface module in equipment supplied.
Optionally communication-capable with internal
Modbus RTU module or CAM

Number of poles 4 pole

Standard equipment Screw connection

#### Rated current = rated uninterrupted current $[I_n = I_u]$

Rated current = rated uninterrupted current [ $I_h = I_u$ ] 250 A

Neutral conductor [% of phase conductor] 0-60-100%

#### **Setting range**

Overload trip
[I<sub>r</sub>]
100 - 250 A

Short-circuit releases  $\downarrow$  [ $l_{rm}$ ] Non-delayed  $\downarrow$  [ $l_{t} = l_{h} \times ...$ ] 2-12

#### **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 - 40 - + 70 °C

Ambient temperature Operation -25 - +70 °C

Mechanical shock resistance (10 ms half-sinusoidal shock) according to IEC 60068-2-27 20 (half-sinusoidal shock 20 ms) g

Safe isolation to EN 61140 Between auxiliary contacts and main contacts 500 V AC

Safe isolation to EN 61140 between the auxiliary contacts 300 V AC

Weight 3.5 kg

#### Mounting position

Vertical and 90° in all directions

With XFI earth-fault release:

- □ NZM1, N1, NZN2, N2: vertical and 90° in all directions
  - with plug-in unit
  - NZM1, N1, NZM2, N2: vertical, 90° right/left with withdrawable unit:
  - NZMB, 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

Direction of incoming supply as required

Degree of protection
Device
In the operating controls area: IP20 (basic degree of protection)

Degree of protection Enclosures With insulating surround: IP40 With door coupling rotary handle: IP66

Degree of protection 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 [ $I_n = I_{ul}$ ] 250 A

Rated surge voltage invariability [ $U_{mp}$ ] Main contacts 8000 V

Rated surge voltage invariability [ $U_{mp}$ ] Auxiliary contacts  $6000\ V$ 

Rated operational voltage [ $U_e$ ] 690 V AC

Overvoltage category/pollution degree IIV3

Rated insulation voltage [U<sub>i</sub>] 690 V

Use in unearthed supply systems  $\square$  690 V

#### **Switching capacity**

Rated short-circuit making capacity [ $l_{cm}$ ] 240 V [ $l_{cm}$ ] 187 kA

Rated short-circuit making capacity [ $l_{cm}$ ] 400/415 V [ $l_{cm}$ ] 105 kA

Rated short-circuit making capacity [ $l_{cm}$ ] 440 V 50/60 Hz [ $l_{cm}$ ] 74 kA

Rated short-circuit making capacity [ $l_{cm}$ ] 525 V 50/60 Hz [ $l_{cm}$ ] 53 kA

Rated short-circuit making capacity [ $l_{cm}$ ] 690 V 50/60 H [lc] 40 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcu to IEC/EN 60947 test cycle O-t-CO [lcu] 525 V 50/60 Hz [ $l_{cu}$ ] 25 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcu to IEC/EN 60947 test cycle O-t-CO [lcu] 690 V 50/60 Hz [ $l_{cu}$ ] 20 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcs to IEC/EN 60947 test cycle O-t-CO-t-CO [lcs] 240 V 50/60 Hz [ $l_{cs}$ ] 85 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcs to IEC/EN 60947 test cycle O-t-CO-t-CO [lcs] 400/415 V 50/60 Hz [ $l_{cs}$ ] 50 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcs to IEC/EN 60947 test cycle O-t-CO-t-CO [lcs] 440 V 50/60 Hz [ $l_{cs}$ ] 35 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcs to IEC/EN 60947 test cycle O-t-CO-t-CO [lcs] 525 V 50/60 Hz [ $l_{cs}$ ] 25 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] lcs to IEC/EN 60947 test cycle O-t-CO-t-CO [lcs] 690 V 50/60 Hz [ $l_{cs}$ ] 5 kA

Rated short-circuit breaking capacity  $l_{cn}$  [ $l_{cn}$ ] 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  $t = 0.3 \text{ s } [l_{\text{sw}}]$  1.9 kA

Rated short-time withstand current  $t = 1 \text{ s } [I_{\text{cw}}]$  1.9 kA

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

Lifespan, electrical AC-1 415 V 50/60 Hz [Operations] 10000

Lifespan, electrical AC-1 690 V 50/60 Hz [Operations] 7500

Lifespan, electrical Max. operating frequency 120 Ops/h Total break time at short-circuit < 10 ms

#### **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 1 x (10 - 16) 2 x (6 - 16) mm²

Round copper conductor Box terminal Stranded 1 x (25 - 185) 2 x (25 - 70) mm<sup>2</sup>

Round copper conductor Tunnel terminal Solid 1 x 16 mm<sup>2</sup>

Round copper conductor Tunnel terminal Stranded 1-hole 1 x (25 - 185) mm<sup>2</sup>

Round copper conductor
Bolt terminal and rear-side connection
Direct on the switch
Solid
1 x (10 - 16)
2 x (6 - 16) mm²

Round copper conductor

Bolt terminal and rear-side connection

Direct on the switch

Stranded 1 x (25 - 185) 2 x (25 - 70) mm<sup>2</sup>

Al circular conductor Tunnel terminal Solid 1 x 16 mm<sup>2</sup>

Al circular conductor Tunnel terminal Stranded Stranded 1 x (25 - 185) mm<sup>2</sup>

Ou strip (number of segments x width x segment thickness)

Box terminal [min.]

2 x 9 x 0.8 mm

Ou strip (number of segments x width x segment thickness)
Box terminal [max.]
10 x 16 x 0.8
(2x) 8 x 15.5 x 0,8 mm

Ou strip (number of segments x width x segment thickness)

Bolt terminal and rear-side connection

Flat copper strip, with holes [min.]

2 x 16 x 0.8 mm

Ou strip (number of segments x width x segment thickness)

Bolt terminal and rear-side connection

Flat copper strip, with holes [max.]

10 x 24 x 0.8 mm

Copper busbar (width x thickness) [mm] Bolt terminal and rear-side connection Screw connection M8

Copper busbar (width x thickness) [mm] Bolt terminal and rear-side connection Direct on the switch [min.] 16 x 5 mm

Copper busbar (width x thickness) [mm] Bolt terminal and rear-side connection Direct on the switch [max.] 24 x 8 mm Control cables 1 x (0.75 - 2.5) 2 x (0.75 - 1.5) mm<sup>2</sup>

#### **DESIGN VERIFICATION AS PER IEC/EN 61439**

#### Technical data for design verification

Rated operational current for specified heat dissipation  $[I_n]$  250 A

Equipment heat dissipation, current-dependent  $[P_{id}]$  51.56 W

Operating ambient temperature min. -25 °C

Operating ambient temperature max. +70 °C

#### IEC/EN 61439 design verification

10.2 Strength of materials and parts10.2.2 Corrosion resistanceMeets the product standard's requirements.

10.2 Strength of materials and parts10.2.3.1 Verification of thermal stability of enclosuresMeets the product standard's requirements.

10.2 Strength of materials and parts10.2.3.2 Verification of resistance of insulating materials to normal heatMeets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.3 Verification of resistance of insulating
materials to abnormal heat and fire due to internal
electric effects
Weets the product standard's requirements.

10.2 Strength of materials and parts 10.2.4 Resistance to ultra-violet (UV) radiation Meets the product standard's requirements.

10.2 Strength of materials and parts10.2.5 LiftingDoes not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts 10.2.6 Mechanical impact Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts10.2.7 InscriptionsMeets the product standard's requirements.

10.3 Degree of protection of ASSEVBLIES 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 Insulation properties10.9.3 Impulse withstand voltage

Is the panel builder's responsibility.

10.9 Insulation properties10.9.4 Testing of enclosures made of insulating materialIs 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 7.0**

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

Bectric engineering, automation, process control engineering / Low-voltage switch technology / Orcuit breaker (LV < 1 kV) / Orcuit breaker for power transformer, generator and system protection (ecl@ss10.0.1-27-37-04-09 [AJZ716013])

Rated permanent current lu 250 A

Rated voltage 690 - 690 V

Rated short-circuit breaking capacity Icu at 400 V,

50 Hz

50 kA

Overload release current setting 100 - 250 A Adjustment range short-term delayed short-circuit release 2-10A Adjustment range undelayed short-circuit release 2-12A Integrated earth fault protection Type of electrical connection of main circuit Screw connection Device construction Built-in device plug-in technique Suitable for DIN rail (top hat rail) mounting DIN rail (top hat rail) mounting optional Yes Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact 0 Number of auxiliary contacts as change-over contact 0 With switched-off indicator With 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)	

# **CHARACTERISTICS**

Characteristic curve
Let-through current
Characteristic curve
Let-through energy

## **DIMENSIONS**

Discount and a sisteman alconomic	a faradharad	

☐ Blow out area, minimum clearance to adjacent parts

	☐ Minimum clearance to adjacent parts
X	

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