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NZMH2-4-VX160/VAR-SVE - NZM2 PXR20 circuit breaker, 160A, 4p, variable, plug-in technology



191686 NZMH2-4-VX160/VAR-SVE

[Overview](#) [Specifications](#) [Resources](#)



# 191686 NZMH2-4-VX160/VAR-SVE

NZM2 PXR20 circuit breaker, 160A, 4p, variable, plug-in technology

EL-Nummer (Norway)

4362842






The xEffect NZM...-VX circuit breaker range with power expert release (PXR) electronic triggering system covers use cases for full range protection with only four compact sizes and is suitable for the IEC market. Test function and settings via micro USB port directly on the switch. Modular function groups always make mounting flexible and may be supplemented by the comprehensive range of accessories. R.m.s. value measurement and thermal memory.



- Delivery program
- Technical data
- Design verification as per IEC/EN 61439
- Technical data ETIM 7.0
- Characteristics
- Dimensions

## Delivery program

Product range  
Circuit-breaker  
Protective function  
Systems, cable, selectivity and generator protection  
Standard/Approval  
IEC  
Installation type  
Plug-in units  
Release system  
Electronic release  
Construction size  
NZM2  
Description  
LSI overload protection and delayed and non-delayed short-circuit protective device  
R.m.s. value measurement and "thermal memory"  
USB interface for configuration and test function with Power Xpert Protection Manager software  
Optionally communication-capable with interface module and internal Modbus RTU module or CAM  
Number of poles  
4 pole

Standard equipment  
 Screw connection  
 Switching capacity  
 400/415 V 50 Hz [ $I_{cu}$ ]  
 150 kA  
 Rated current = rated uninterrupted current [ $I_n = I_u$ ]  
 Rated current = rated uninterrupted current [ $I_n = I_u$ ]  
 160 A  
 Neutral conductor [% of phase conductor]  
 0 - 60 - 100 %  
**Setting range**  
 Overload trip  [ $I_t$ ]  
 64 - 160 A  
 Short-circuit releases  [ $I_{rm}$ ] Non-delayed  [ $I_t = I_n \times \dots$ ]  
 2 - 18  
 Short-circuit releases  [ $I_{rm}$ ] Delayed  [ $I_{sd} = I_t \times \dots$ ]  
 2 - 10

## 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

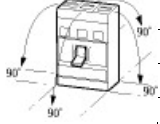
Safe isolation to EN 61140 Between auxiliary contacts and main contacts

500 V AC

Safe isolation to EN 61140 between the auxiliary contacts

300 V AC

#### Mounting position

Vertical and 90° in all directions	
	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	

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 [ $I_n = I_u$ ]

160 A

Rated surge voltage invariability [ $U_{imp}$ ] Main contacts

8000 V  
Rated surge voltage invariability [ $U_{imp}$ ] Auxiliary contacts  
6000 V  
Rated operational voltage [ $U_e$ ]  
690 V AC  
Overvoltage category/pollution degree  
III/3  
Rated insulation voltage [ $U_i$ ]  
690 V  
Use in unearthed supply systems  
 690 V  
Switching capacity  
Rated short-circuit making capacity [ $I_{cm}$ ] 240 V [ $I_{cm}$ ]  
330 kA  
Rated short-circuit making capacity [ $I_{cm}$ ] 400/415 V [ $I_{cm}$ ]  
330 kA  
Rated short-circuit making capacity [ $I_{cm}$ ] 440 V 50/60 Hz [ $I_{cm}$ ]  
286 kA  
Rated short-circuit making capacity [ $I_{cm}$ ] 525 V 50/60 Hz [ $I_{cm}$ ]  
110 kA  
Rated short-circuit making capacity [ $I_{cm}$ ] 690 V 50/60 Hz [ $I_{cm}$ ]  
40 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-CO [ $I_{cu}$ ] 240 V 50/60 Hz [ $I_{cu}$ ]  
150 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-CO [ $I_{cu}$ ] 400/415 V 50/60 Hz [ $I_{cu}$ ]  
150 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-CO [ $I_{cu}$ ] 440 V 50/60 Hz [ $I_{cu}$ ]  
130 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-CO [ $I_{cu}$ ] 525 V 50/60 Hz [ $I_{cu}$ ]  
50 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-CO [ $I_{cu}$ ] 690 V 50/60 Hz [ $I_{cu}$ ]  
20 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-CO-t-CO [ $I_{cs}$ ] 240 V 50/60 Hz [ $I_{cs}$ ]  
150 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-CO-t-CO [ $I_{cs}$ ] 400/415 V 50/60 Hz [ $I_{cs}$ ]  
150 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-CO-t-CO [ $I_{cs}$ ] 440 V 50/60 Hz [ $I_{cs}$ ]  
130 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-CO-t-CO [ $I_{cs}$ ] 525 V 50/60 Hz [ $I_{cs}$ ]  
37.5 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-CO-t-CO [ $I_{cs}$ ] 690 V 50/60 Hz [ $I_{cs}$ ]  
5 kA  
Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  
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  $I_{cw}$  = 0.3 s [ $I_{cw}$ ]  
1.9 kA  
Rated short-time withstand current  $I_{cw}$  = 1 s [ $I_{cw}$ ]  
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-1400 V 50/60 Hz [Operations]  
10000  
Lifespan, electrical AC-1415 V 50/60 Hz [Operations]  
10000  
Lifespan, electrical AC-1690 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) mm<sup>2</sup>  
 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) mm<sup>2</sup>  
 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>  
 Cu strip (number of segments x width x segment thickness) Box terminal [min.]  
 2 x 9 x 0.8 mm  
 Cu 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  
 Cu 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  
 Cu 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 [ $I_n$ ]

160 A

Equipment heat dissipation, current-dependent [ $P_{vid}$ ]

21.12 W

Operating ambient temperature min.

-25 °C

Operating ambient temperature max.

+70 °C

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 Strength of materials and parts 10.2.3.1 Verification of thermal stability of enclosures

Meets the product standard's requirements.

10.2 Strength of materials and parts 10.2.3.2 Verification of resistance of insulating materials to normal heat

Meets 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

Meets 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 parts 10.2.5 Lifting

Does 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 parts 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 Insulation properties 10.9.3 Impulse withstand voltage  
Is the panel builder's responsibility.

10.9 Insulation properties 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 7.0

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<sub>u</sub>

160 A

Rated voltage

690 - 690 V

Rated short-circuit breaking capacity I<sub>cu</sub> at 400 V, 50 Hz

150 kA

Overload release current setting

64 - 160 A

Adjustment range short-term delayed short-circuit release

2 - 10 A

Adjustment range undelayed short-circuit release

2 - 18 A

Integrated earth fault protection

No

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

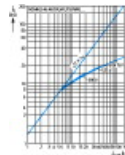
With switched-off indicator

No

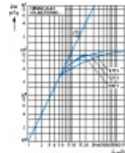
With under voltage release  
No  
Number of poles  
4  
Position of connection for main current circuit  
Front side  
Type of control element  
Rocker lever  
Complete device with protection unit  
Yes  
Motor drive integrated  
No  
Motor drive optional  
Yes  
Degree of protection (IP)  
IP20

## Characteristics

Characteristic curve

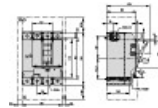


Let-through current  
Characteristic curve

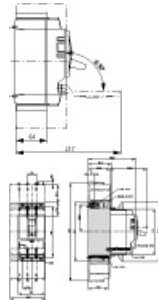


Let-through energy

## Dimensions



- Blow out area, minimum clearance to adjacent parts
- Minimum clearance to adjacent parts



## CAD data

- [Product-specific CAD data](#)  
(Web)
- [3D Preview](#)  
(Web)

## DWG files

- [DA-CD-nzm2\\_xsve](#)  
File  
(Web)

## Step files

- [DA-CS-nzm2\\_xsve](#)  
File

(Web)

## Additional product information

- [Weight](#)  
(Web)
- [Temperature dependency, Derating](#)  
(Web)
- [Effective power loss](#)  
(Web)
- [additional technical information for NZM power switch](#)  
(PDF)

## Product photo

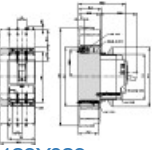


[wa\\_ren\\_00618\\_c](#)  
Photo

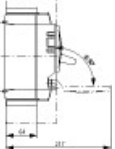


[wa\\_ren\\_00618\\_r](#)  
Photo

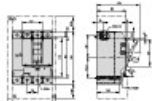
## Dimensions single product



[123X029](#)  
Line drawing  
Plug-in adapter elements



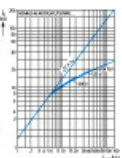
[123X341](#)  
Line drawing  
Circuit-breakers, switch-disconnectors



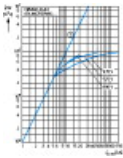
[123X508](#)  
Line drawing  
Circuit-breaker, switch-disconnector, 4-pole

- Blow out area, minimum clearance to adjacent parts
- Minimum clearance to adjacent parts
- Does not apply to DC applications

## Characteristic curve



[1230DIA-178](#)  
Coordinate visualization



1230DIA-185

Coordinate visualization

## Instruction Leaflet

- [IL012099ZU](#)  
Asset  
(PDF, Language independent)

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