NZMH3-VE400-SVE - Circuit-breaker, 3p, 400A, withdrawable unit

168908 NZMH3-VE400-SVE

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Circuit-breaker, 3p, 400A, withdrawable unit

Alternate Catalog No.	NZMH3-VE400-SVE
EL-Nummer (Norway)	4357621

Series NZM circuit-breakers cover all application cases with just four compact sizes and are suitable for the IEC market. Installation is always flexible thanks to the use of modular function groups.

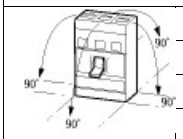
Delivery program

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
NZM3
Description
R.m.s. value measurement and “thermal memory”
Adjustable time delay setting to overcome current peaks tr at 6 x Ir also infinity (without overload releases)
Adjustable delay time tsd
Number of poles
3 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 [$I_n = I_u$]

400 A
Setting range
Overload trip [I_r]
200 - 400 A

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 temperatureAmbient temperature, storage
- 40 - + 70 °C
Ambient temperatureOperation
-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 61140Between auxiliary contacts and main contacts
500 V AC
Safe isolation to EN 61140between 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 protectionDevice
In the operating controls area: IP20 (basic degree of protection)
Degree of protectionEnclosures
With insulating surround: IP40
With door coupling rotary handle: IP66
Degree of protectionTerminations
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 [$I_n = I_u$]
400 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]
1000 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}]
143 kA
Rated short-circuit making capacity [I_{cm}]690 V 50/60 H[Ic]
70 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Icu to IEC/EN 60947 test cycle O-t-CO [Icu]240 V 50/60 Hz [I_{cu}]
150 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Icu to IEC/EN 60947 test cycle O-t-CO [Icu]400/415 V 50/60 Hz [I_{cu}]
150 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Icu to IEC/EN 60947 test cycle O-t-CO [Icu]440 V 50/60 Hz [I_{cu}]
130 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Icu to IEC/EN 60947 test cycle O-t-CO [Icu]525 V 50/60 Hz [I_{cu}]
65 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Icu to IEC/EN 60947 test cycle O-t-CO [Icu]690 V 50/60 Hz [I_{cu}]
35 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]240 V 50/60 Hz [I_{cs}]
150 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]400/415 V 50/60 Hz [I_{cs}]
150 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]440 V 50/60 Hz [I_{cs}]
130 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]525 V 50/60 Hz [I_{cs}]
33 kA
Rated short-circuit breaking capacity I_{cn} [I_{cn}]Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]690 V 50/60 Hz [I_{cs}]
9 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 currentt = 0.3 s [I_{cw}]
3.3 kA
Rated short-time withstand currentt = 1 s [I_{cw}]
3.3 kA
Utilization category to IEC/EN 60947-2
A
Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release) [Operations]
15000
Lifespan, electricalAC-1400 V 50/60 Hz [Operations]
5000
Lifespan, electricalAC-1415 V 50/60 Hz [Operations]
5000
Lifespan, electricalAC-1690 V 50/60 Hz [Operations]
3000
Lifespan, electricalAC--3400 V 50/60 Hz [Operations]
2000
Lifespan, electricalAC--3415 V 50/60 Hz [Operations]
2000
Lifespan, electricalAC--3690 V 50/60 Hz [Operations]
2000
Lifespan, electricalMax. operating frequency
60 Ops/h
Total break time at short-circuit
< 10 ms

Terminal capacity

Standard equipment
Screw connection
Accessories required
NZM3-XSVS
Optional accessories
Box terminal
Tunnel terminal
connection on rear
Round copper conductorBox terminalSolid
2 x 16 mm^2
Round copper conductorBox terminalStranded
1 x (35 - 240)

2 x (25-120) mm²
Round copper conductorTunnel terminalSolid
1 x 16 mm²
Round copper conductorTunnel terminalStranded1-hole
1 x (16 - 185) mm²
Round copper conductorBolt terminal and rear-side connectionDirect on the switchSolid
1 x 16
2 x 16 mm²
Round copper conductorBolt terminal and rear-side connectionDirect on the switchStranded
1 x (25 - 240)
2 x (25 - 240) mm²
Round copper conductorBolt terminal and rear-side connectionConnection width extensionConnection width extension
2 x 300 mm²
Al circular conductor Tunnel terminalSolid
1 x 16 mm²
Al circular conductor Tunnel terminalStrandedStranded
1 x (25 - 185) [2] mm²
Al circular conductor Tunnel terminalStrandedDouble hole
1 x (50 - 240)
2 x (50 - 240) mm²
Al circular conductor Tunnel terminalStranded
[2] Up to 240 mm² can be connected depending on the cable manufacturer.
Cu strip (number of segments x width x segment thickness)Box terminal [min.]
6 x 16 x 0.8 mm
Cu strip (number of segments x width x segment thickness)Box terminal [max.]
10 x 24 x 1.0
+ 5 x 24 x 1.0
(2 x) 8 x 24 x 1.0 mm
Cu strip (number of segments x width x segment thickness)Bolt terminal and rear-side connectionFlat copper strip, with holes [min.]
6 x 16 x 0.8 mm
Cu strip (number of segments x width x segment thickness)Bolt terminal and rear-side connectionFlat copper strip, with holes [max.]
10 x 32 x 1.0 + 5 x 32 x 1.0 mm
Cu strip (number of segments x width x segment thickness)Bolt terminal and rear-side connectionConnection width extension
(2 x) 10 x 50 x 1.0 mm
Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionScrew connection
M10
Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionDirect on the switch [min.]
20 x 5 mm
Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionDirect on the switch [max.]
30 x 10
+ 30 x 5 mm
Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionConnection width extensionConnection width extension [max.]
2 x (10 x 50) mm
Control cables
1 x (0.75 - 2.5)
2 x (0.75 - 1.5) mm²

Design verification as per IEC/EN 61439

Technical data for design verification
Rated operational current for specified heat dissipation [I_n]
400 A
Equipment heat dissipation, current-dependent [P_{vid}]
48 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 resistance
Meets the product standard's requirements.
10.2 Strength of materials and parts10.2.3.1 Verification of thermal stability of enclosures
Meets the product standard's requirements.
10.2 Strength of materials and parts10.2.3.2 Verification of resistance of insulating materials to normal heat
Meets the product standard's requirements.

10.2 Strength of materials and parts10.2.3.3 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 parts10.2.4 Resistance to ultra-violet (UV) radiation
Meets the product standard's requirements.
10.2 Strength of materials and parts10.2.5 Lifting
Does not apply, since the entire switchgear needs to be evaluated.
10.2 Strength of materials and parts10.2.6 Mechanical impact
Does not apply, since the entire switchgear needs to be evaluated.
10.2 Strength of materials and parts10.2.7 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 properties10.9.2 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 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

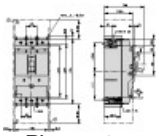
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ecl@ss10.0.1-27-37-04-09 [AJZ716013])
Rated permanent current Iu
400 A
Rated voltage
690 - 690 V
Rated short-circuit breaking capacity Icu at 400 V, 50 Hz
150 kA
Overload release current setting
200 - 400 A
Adjustment range short-term delayed short-circuit release
400 - 4000 A
Adjustment range undelayed short-circuit release
800 - 4400 A
Integrated earth fault protection
No
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
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
3
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

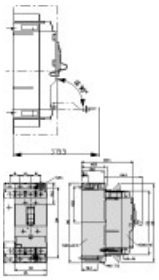
Characteristics

Let-through current
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)

edz files

- DA-CE-ETN.NZMH3-VE400-SVE
  File
  (Web)

Additional product information

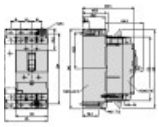
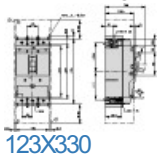
- Weight
  (Web)
- Temperature dependency, Derating
  (Web)
- Effective power loss
  (Web)

- additional technical information for NZM power switch
(PDF)

Product photo

- 
1230PIC-1324
Photo

Dimensions single product

- 
1230DIM-425
Line drawing
- 
123X330
Line drawing
Circuit-breakers
☐ Blow out area, minimum clearance to adjacent parts
☐ Minimum clearance to adjacent parts
- 
123X553
Line drawing
Circuit-breakers, switch-disconnectors

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