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Worldwide English



NZM2-A50-BT - Circuit-breaker, 3p, 50A, box terminals



110288 NZMH2-A50-BT

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110288 NZMH2-A50-BT

Circuit-breaker, 3p, 50A, box terminals

EL-Nummer (Norway)

4358755

Circuit-breaker NZM2, 3 pole, Switching capacity 400/415 V 50 Hz (I_{cu}): 150 kA, Rated current = rated uninterrupted current Rated current = rated uninterrupted current ($I_n = I_u$): 50 A, Installation type: Fixed, Box terminal, Standard/Approval: IEC, Protective function: System and cable protection

- [Delivery program](#)

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Delivery program

Product range

Circuit-breaker

Protective function

System and cable protection

Standard/Approval

IEC

Installation type

Fixed

Release system

Thermomagnetic release

Construction size

NZM2

Number of poles

3 pole

Standard equipment

Box terminal

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 [$I_n = I_u$]

50 A

Setting range

Overload trip  [I_t]

40 - 50 A

Short-circuit releases $\left[I_{\Delta} \right]$ Non-delayed $\left[I_{\Delta} \right]$ $[I_{\Delta} = I_n \times \dots]$

6 - 10

Short-circuit releases $\left[I_{\Delta} \right]$

300 - 500 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 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

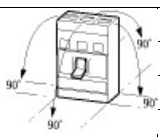
Safe isolation to EN 61140 Between auxiliary contacts and main contacts

500 V AC

Safe isolation to EN 61140 between the auxiliary contacts

300 V AC

Mounting position

Vertical and 90° in all directions	
	With XF 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)

[Temperature dependency, Derating](#)

Circuit-breakers

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

50 A

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

8000 V

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

6000 V

Rated operational voltage $[U_b]$

690 V AC

Rated operational voltage $[U_b]$

750 V DC

The following settings are required in order to ensure correct tripping:

The fast-response release will take longer to respond when used for DC applications. Because of this, the setting on the trip block inscription, which is specified for AC currents, must be set to a lower value for DC currents.

DC correction factor for instantaneous release response value:

o NZM1: 1.25

o NZM2: 1.35

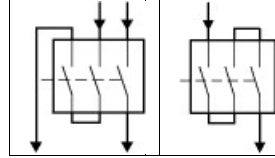
o NZMB: 1.45

Example: NZMB $I_e = 500A$. Desired DC tripping current: $10 * I_e = 5000A$.

Calculation:

- Desired DC value / correction factor = AC setting on trip block
- $5000A / 1.45 = 3448 A \sim 7 * I_e = \text{Value that needs to be set on the trip block}$

Permitted circuit configurations:



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}]

105 kA

Rated short-circuit making capacity [I_{cm}] 690 V 50/60 H [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_{cu} to IEC/EN 60947 test cycle O-t-CO [I_{cu}] 500 V DC [I_{cu}]

60 kA

Rated short-circuit breaking capacity I_{cn} [I_{cn}] I_{cu} to IEC/EN 60947 test cycle O-t-CO [I_{cu}] 750 V DC [I_{cu}]

60 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}] I_{cs} to IEC/EN 60947 test cycle O-t-CO-t-CO [I_{cs}] 500 V DC [I_{cs}]

15 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}] 750 V DC [I_{cs}]

15 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 $I_{tt} = 0.3 s$ [I_{tw}]

1.9 kA

Rated short-time withstand current $I_{tt} = 1 s$ [I_{tw}]

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, electricalAC-1400 V 50/60 Hz [Operations]
10000

Lifespan, electricalAC-1415 V 50/60 Hz [Operations]
10000

Lifespan, electricalAC-1690 V 50/60 Hz [Operations]
7500

Lifespan, electricalAC--3400 V 50/60 Hz [Operations]
6500

Lifespan, electricalAC--3415 V 50/60 Hz [Operations]
6500

Lifespan, electricalAC--3690 V 50/60 Hz [Operations]
5000

Lifespan, electricalDC-1500 V DC [Operations]
7500

Lifespan, electricalDC-1750 V DC [Operations]
7500

Lifespan, electricalDC - 3500 V DC [Operations]
3000

Lifespan, electricalDC - 3750 V DC [Operations]
3000

Lifespan, electricalMax. operating frequency
120 Ops/h

Total break time at short-circuit
< 10 ms

Terminal capacity

Standard equipment

Box terminal

Optional accessories

Screw terminal

Tunnel terminal

connection on rear

Round copper conductorBox terminalSolid

1 x (10 - 16)

2 x (6 - 16) mm²

Round copper conductorBox terminalStranded

1 x (25 - 185)

2 x (25 - 70) mm²

Round copper conductorTunnel terminalSolid

1 x 16 mm²

Round copper conductorTunnel terminalStranded1-hole

1 x (25 - 185) mm²

Round copper conductorBolt terminal and rear-side connectionDirect on the switchSolid

1 x (10 - 16)

2 x (6 - 16) mm²

Round copper conductorBolt terminal and rear-side connectionDirect on the switchStranded

1 x (25 - 185)

2 x (25 - 70) mm²

Al circular conductor Tunnel terminalSolid

1 x 16 mm²

Al circular conductor Tunnel terminalStrandedStranded

1 x (25 - 185) mm²

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 connectionFlat 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 connectionFlat copper strip, with holes [max.]

10 x 24 x 0.8 mm

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

M8

Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionDirect 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) mm²

Design verification as per IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]

50 A

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

17.03 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)

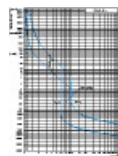
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ec1@ss10.0.1-27-37-04-09

[AJZ716013])

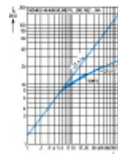
Rated permanent current I_n
 50 A
 Rated voltage
 690 - 690 V
 Rated short-circuit breaking capacity I_{cu} at 400 V, 50 Hz
 150 kA
 Overload release current setting
 40 - 50 A
 Adjustment range short-term delayed short-circuit release
 0 - 0 A
 Adjustment range undelayed short-circuit release
 300 - 500 A
 Integrated earth fault protection
 No
 Type of electrical connection of main circuit
 Frame clamp
 Device construction
 Built-in device fixed built-in technique
 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 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

Characteristic curve



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_3p](#)
File
(Web)

Step files

- [DA-CS-nzm2_3p](#)
File
(Web)

Additional product information

- [Temperature dependency, Derating](#)
(Web)
- [CurveSelect characteristics program](#)
(Web)
- [additional technical information for NZM power switch](#)
(PDF)

Dimensions single product

- ☐ [123X312](#)
Line drawing
Circuit-breaker, switch-disconnector, 3-pole
☐ Blow out area, minimum clearance to adjacent parts
☐ Minimum clearance to adjacent parts
- ☐ [123X341](#)
Line drawing
Circuit-breakers, switch-disconnectors

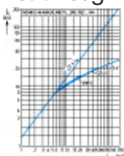
Product photo



[1230PIC-802](#)
Photo

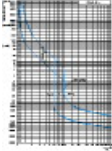
Characteristic curve

- ☐ [1230DIA-57](#)
Coordinate visualization
Let-through characteristics



[1230DIA-8](#)
Coordinate visualization

Let-through current



123U176

Coordinate visualization

NZM2-A40...250 tripping characteristic

Symbol

-  0000SPC-173
Graphic
Logo new yellow small

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