265719
NZMN1-M50

Overview
Specifications
Resources

DELIVERY PROGRAM

Product range
Circuit-breaker

Protective function
Motor protection

IE3

Standard/Approval
IEC

Installation type
Fixed

Release system
Thermomagnetic release

Construction size
NZM1

Description
With phase-failure sensitivity
Tripping class 10 A
IEC/EN 60947-4-1, IEC/EN 60947-2
The circuit-breaker fulfills all requirements for AC-3 switching category.

Number of poles
3 pole

Standard equipment
Box terminal

Switching capacity

400/415 V 50 Hz [I_{cu}]
50 kA

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

Setting range

Overload trip
[I_r]
40 - 50 A

Short-circuit releases [I_{rm}]
Non-delayed [$I_i = I_n$ x ...]
8 - 14

Motor rating AC-3 50/60 Hz [P]

380 V 400 V [P]
22 kW

Motor rating AC-3 50/60 Hz [P]

400 V [P]
22 kW

Rated operational current AC-3 50/60 Hz [I_e]

400 V [I_e]
41 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

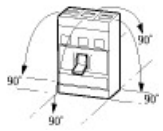
Ambient temperature
Operation
-25 - +70 °C

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 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)
Temperature dependency, Derating

Circuit-breakers

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

Rated surge voltage invariability [U_{imp}]
Main contacts
6000 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}]
187 kA

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

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

Rated short-circuit making capacity [I_{cm}]
525 V 50/60 Hz [I_{cm}]
40 kA

Rated short-circuit making capacity [I_{cm}]
690 V 50/60 H [Ic]
17 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}]
85 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}]
50 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}]
35 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}]
20 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}]
10 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}]
85 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}]
50 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}]
35 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}]
10 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}]
7.5 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.

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
AC--3
400 V 50/60 Hz [Operations]
7500

Lifespan, electrical
AC--3
415 V 50/60 Hz [Operations]
7500

Lifespan, electrical
AC--3
690 V 50/60 Hz [Operations]
5000

Lifespan, electrical
Max. operating frequency
120 Ops/h

Total break time at short-circuit
< 10 ms

Terminal capacity

Standard equipment
Box terminal

Optional accessories
Screw connection
Tunnel terminal
connection on rear

Round copper conductor
Box terminal
Solid
1 x (10 - 16)
2 x (6 - 16) mm^2

Round copper conductor
Box terminal
Stranded
1 x (10 - 70) [3)]
2 x (6-25) mm^2

Round copper conductor
Box terminal
[3)] Up to 95 mm^2 can be connected depending on the cable manufacturer.

Round copper conductor
Tunnel terminal
Solid
1 x 16 mm^2

Round copper conductor
Tunnel terminal
Stranded
1-hole
1 x (25 - 95) mm^2

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

Round copper conductor
Bolt terminal and rear-side connection
Direct on the switch
Stranded
1 x (10 - 70) [3)]
2 x 25 mm^2

Round copper conductor
Bolt terminal and rear-side connection
Direct on the switch
[3)] Up to 95 mm^2 can be connected depending on the cable manufacturer.

Al circular conductor
Tunnel terminal
Solid
1 x 16 mm^2

Al circular conductor
Tunnel terminal
Stranded
Stranded
1 x (25 - 95) mm^2

Al circular conductor
Bolt terminal and rear-side connection
Direct on the switch
Solid
1 x (10 - 16)
2 x (10 - 16) mm^2

Al circular conductor
Bolt terminal and rear-side connection
Direct on the switch
Stranded
1 x (25 - 35)
2 x (25 - 35) mm^2

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.]
9 x 9 x 0.8 mm

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Screw connection
M6

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

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

Control cables
1 x (0.75 - 2.5)
2 x (0.75 - 1.5) mm^2

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}]
14.1 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) / Motor protection circuit-breaker (EC000074)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016])

Overload release current setting
40 - 50 A

Adjustment range undelayed short-circuit release
400 - 700 A

With thermal protection
Yes

Phase failure sensitive
Yes

Switch off technique
Thermomagnetic

Rated operating voltage
690 - 690 V

Rated permanent current Iu
50 A

Rated operation power at AC-3, 230 V
15 kW

Rated operation power at AC-3, 400 V
22 kW

Type of electrical connection of main circuit
Other

Type of control element
Rocker lever

Device construction
Built-in device fixed built-in technique

With integrated auxiliary switch
No

With integrated under voltage release
No

Number of poles
3

Rated short-circuit breaking capacity Icu at 400 V, AC
50 kA

Degree of protection (IP)
IP20

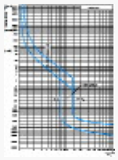
Height
145 mm

Width
90 mm

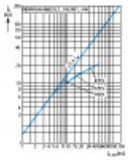
Depth
88 mm

CHARACTERISTICS

Characteristic curve

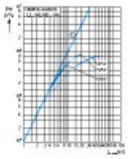


Characteristic curve



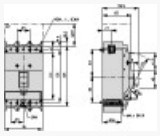
Let-through current

Characteristic curve



Let-through energy

DIMENSIONS



□ Blow out area, minimum clearance to adjacent parts