290364
NZMH2-A160-S1

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

Description
NZM..S1 terminal type: NZM..XKSA cover required

Number of poles
3 pole

Standard equipment
Screw connection

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

Switching capacity

1000 V 50/60 Hz [I_{cu}]
10 kA

Setting range

Overload trip
[I_r]
125 - 160 A

Short-circuit releases [I_{rm}]
Non-delayed [$I_i = I_n$ x …]
6 - 10

TECHNICAL DATA

Circuit-breakers

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

Rated surge voltage invariability [U_{imp}]
Auxiliary contacts
6000 V

Rated operational voltage [Ue]
1000 V AC

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

160 A

Overvoltage category/pollution degree
III/3

Rated insulation voltage [U_i]
1000 V

Utilization category
A

Ambient temperature
Ambient temperature, storage
- 40 - + 70 °C

Ambient temperature
Operation
-25 - +70 °C

Rated short-circuit making capacity [I_{cm}]

240 V 50/60 Hz [I_{cm}]
330 kA

400/415 V 50/60 Hz [I_{cm}]
330 kA

440 V 50/60 Hz [I_{cm}]
286 kA

525 V 50/60 Hz [I_{cm}]
105 kA

690 V 50/60 H [Ic]
40 kA

1000 V 50/60 Hz [Icm]
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}]
150 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
400/415 V 50 Hz [I_{cu}]
150 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
440 V 50/60 Hz [I_{cu}]
130 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
525 V 50/60 Hz [I_{cu}]
50 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
690 V 50/60 Hz [I_{cu}]
20 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
1000 V 50/60 Hz [I_{cu}]
10 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
230 V 50/60 Hz [I_{cs}]
150 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
400/415 V 50/60 Hz [I_{cs}]
150 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
440 V 50/60 Hz [I_{cs}]
130 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
525 V 50/60 Hz [I_{cs}]
37.5 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
690 V 50/60 Hz [I_{cs}]
5 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
1000 V AC [Ics]
3 kA

Rated short-time withstand current

t = 0.3 s [I_{cw}]
1.9 kA

t = 1 s [I_{cw}]
1.9 kA

Lifespan, mechanical [Operations]
20000

Max. operating frequency
120 Ops/h

Lifespan, mechanical: of which max. 50 % trip by shunt/undervoltage release

Lifespan, electrical

1000 V 50/60 Hz [Operations]
3000

Terminal capacity

Standard equipment
Screw connection

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

Round copper conductor
Box terminal
Stranded
1 x (25 - 185)
2 x (25-70) mm^2

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

Round copper conductor
Tunnel terminal
Stranded
Stranded

1 x (25 - 185) mm^2

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

Round copper conductor
Bolt terminal and rear-side connection
Direct on the switch
Stranded
1 x (25 - 50)
2 x (25 - 50) mm^2

Al conductors, Cu cable
Tunnel terminal
Solid
1 x 16 mm^2

Al conductors, Cu cable
Tunnel terminal
Stranded
Stranded
1 x (25 - 185) [2] mm^2

Al conductors, Cu cable
Tunnel terminal
Stranded
[2] Up to 240 mm^2 can be connected depending on the cable manufacturer.

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 16 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^2

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}]
38.4 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 Iu
160 A

Rated voltage
1000 - 1000 V

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

Overload release current setting
125 - 160 A

Adjustment range short-term delayed short-circuit release
0 - 0 A

Adjustment range undelayed short-circuit release
960 - 1600 A

Integrated earth fault protection
No

Type of electrical connection of main circuit
Screw connection

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

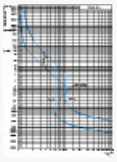
Motor drive integrated
No

Motor drive optional
Yes

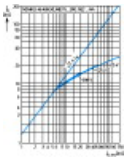
Degree of protection (IP)
IP20

CHARACTERISTICS

Characteristic curve

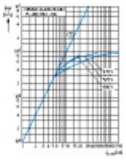


Characteristic curve



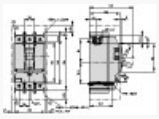
Let-through current

Characteristic curve



Let-through energy

DIMENSIONS



□ Blow out area, minimum clearance to adjacent parts