278441
ZB12-12

Overview | Specifications | Resources

DELIVERY PROGRAM

Product range
Overload relay ZB up to 150 A

Product range
Accessories

Accessories
Overload relays

Frame size
ZB12

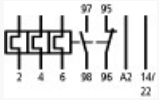
Phase-failure sensitivity
IEC/EN 60947, VDE 0660 Part 102

Description
Test/off button
Reset pushbutton manual/auto
Trip-free release

Mounting type
Direct mounting

[I_r]
9 - 12 A

Contact sequence



Auxiliary contacts

N/O = Normally open
1 N/O

N/C = Normally closed
1 N/C

For use with
DILM7, DILM9, DILM12, DILM15,
DIULM7, DIULM9, DIULM12,
SDAINLM12,
SDAINLM16,
SDAINLM22
DS7-34…SX012…

Short-circuit protection

Type “1” coordination [gG/gL]
50 A

Type “2” coordination [gG/gL]
25 A

Notes
Overload release: tripping class 10 A

short-circuit protective device: Observe the maximum permissible fuse of the contactor with direct device mounting.

Suitable for protection of Ex e-motors.

II(2)G [Ex d] [Ex e] [Ex px], II(2)D [Ex p] [Ex t]

PTB 10 ATEX 3010

Observe manual MN03407005Z-DE/EN.

Notes

Fitted directly to the contactor

1 Contactor

TECHNICAL DATA

General

Standards
IEC/EN 60947, VDE 0660, UL, CSA

Climatic proofing
Damp heat, constant, to IEC 60068-2-78
Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature
Operating range to IEC/EN 60947
PTB: -5 °C - +55 °C

Ambient temperature
Open
-25 - +55 °C

Ambient temperature
Enclosed
- 25 - 40 °C

Temperature compensation
Continuous

Weight
0.145 kg

Mechanical shock resistance
10
Sinusoidal
Shock duration 10 ms g

Degree of Protection
IP20

Protection against direct contact when actuated

from front (EN 50274)
Finger and back-of-hand proof

Altitude
Max. 2000 m

Main conducting paths

Rated impulse withstand voltage [U_{imp}]
6000 V AC

Overvoltage category/pollution degree
III/3

Rated insulation voltage [U_i]
690 V

Rated operational voltage [U_e]
690 V AC

Safe isolation to EN 61140
Between auxiliary contacts and main contacts
440 V AC

Safe isolation to EN 61140
Between main circuits
440 V AC

Temperatur compensation residual error > 40 °C
□ 0.25 %/K

Current heat loss (3 conductors)
Lower value of the setting range
3.9 W

Current heat loss (3 conductors)
Maximum setting
6.9 W

Terminal capacities
Solid
1 x (1 - 6)
2 x (1 - 6) mm^2

Terminal capacities
Flexible with ferrule

1 x (1 - 4)
2 x (1 - 4) mm²

Terminal capacities
Solid or stranded
18 - 8 AWG

Terminal screw
M4

Tightening torque
1.8 Nm

Stripping length
10 mm

Tools
Pozidriv screwdriver
2 Size

Tools
Standard screwdriver
1 x 6 mm

Auxiliary and control circuits

Rated impulse withstand voltage [U_{imp}]
4000 V

Overvoltage category/pollution degree
III/3

Terminal capacities
Solid
1 x (0.75 - 4)
2 x (0.75 - 4) mm²

Terminal capacities
Flexible with ferrule
1 x (0.75 - 2.5)
2 x (0.75 - 2.5) mm²

Terminal capacities
Solid or stranded
2 x (18 - 14) AWG

Terminal screw
M3.5

Tightening torque
1.2 Nm

Stripping length
8 mm

Tools
Pozidriv screwdriver
2 Size

Tools
Standard screwdriver
1 x 6 mm

Rated insulation voltage [U_i]
500 V AC

Rated operational voltage [U_e]
500 V AC

Safe isolation to EN 61140
between the auxiliary contacts
240 V AC

Conventional thermal current [I_{th}]
6 A

Rated operational current [I_e]
AC-15
Make contact
120 V [I_e]
1.5 A

Rated operational current [I_e]
AC-15
Make contact
220 V 230 V 240 V [I_e]
1.5 A

Rated operational current [I_e]
AC-15
Make contact
380 V 400 V 415 V [I_e]
0.5 A

Rated operational current [I_e]
AC-15
Make contact
500 V [I_e]
0.5 A

Rated operational current [I_e]
AC-15
Break contact
120 V [I_e]
1.5 A

Rated operational current [I_e]
AC-15
Break contact
220 V 230 V 240 V [I_e]
1.5 A

Rated operational current [I_e]
AC-15
Break contact
380 V 400 V 415 V [I_e]
0.9 A

Rated operational current [I_e]
AC-15
Break contact
500 V [I_e]
0.8 A

Rated operational current [I_e]
DC L/R □ 15 ms
Switch-on and switch-off conditions based on
DC-13, time constant as specified.

Rated operational current [I_e]
DC L/R □ 15 ms
24 V [I_e]
0.9 A

Rated operational current [I_e]
DC L/R □ 15 ms
60 V [I_e]
0.75 A

Rated operational current [I_e]
DC L/R □ 15 ms
110 V [I_e]
0.4 A

Rated operational current [I_e]

DC L/R □ 15 ms
220 V [I_e]
0.2 A

Short-circuit rating without welding
max. fuse
6 A gG/gL

Notes

Notes
Ambient air temperature: Operating range to IEC/EN 60947, PTB: -5°C to +55°C
Main circuits terminal capacity solid and flexible conductors with ferrules: When using 2 conductors use equal cross-sections.

Rating data for approved types

Auxiliary contacts
Pilot Duty
AC operated
B300 at opposite polarity
B600 at same polarity

Auxiliary contacts
Pilot Duty
DC operated
R300

Short Circuit Current Rating
600 V High Fault
SCCR (fuse)
100 kA

Short Circuit Current Rating
600 V High Fault
max. Fuse
15 Class J/CC A

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]

12 A

Heat dissipation per pole, current-dependent [P_{vid}]
2.3 W

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

Static heat dissipation, non-current-dependent [P_{vs}]
0 W

Heat dissipation capacity [P_{diss}]
0 W

Operating ambient temperature min.
-25 °C

Operating ambient temperature max.
+55 °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) / Thermal overload relay (EC000106)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Overload protection device / Thermal overload relay (ecl@ss10.0.1-27-37-15-01 [AKF075014])

Adjustable current range
9 - 12 A

Max. rated operation voltage Ue
690 V

Mounting method
Direct attachment

Type of electrical connection of main circuit
Screw connection

Number of auxiliary contacts as normally closed contact
1

Number of auxiliary contacts as normally open contact
1

Number of auxiliary contacts as change-over contact
0

Release class
CLASS 10

Reset function input
No

Reset function automatic
Yes

Reset function push-button
Yes

APPROVALS

Product Standards
IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking

UL File No.
E29184

UL Category Control No.
NKCR

CSA File No.
12528

CSA Class No.
3211-03

North America Certification
UL listed, CSA certified

Specially designed for North America
No

Suitable for
Branch circuits

Max. Voltage Rating
600 V AC

Degree of Protection
IEC: IP20, UL/CSA Type: -

CHARACTERISTICS

Characteristic curve

These tripping characteristics are mean values of the spreads at 20 °C ambient air temperature in a cold state.
Tripping time depends on response current.
When the devices are at operational temperature the tripping time of the overload relay falls to approx. 25 % of the read off value.
1: Minimum level, 3-phase
2: Maximum level, 3-phase
3: Minimum marker, 2-phase
4: Highest marker, 2-phase

DIMENSIONS

□ OFF
□ Reset/ON