

Overload relay, ZB150, Ir= 120 - 150 A, 1 N/O, 1 N/C, Separate mounting, IP00

**EATON**  
Powering Business Worldwide™

Part no. **ZB150-150/KK**  
Catalog No. **278472**  
Alternate Catalog No. **XTOB150GC1S**

## Delivery program

|                                                                                     |                                                                                                                                                                                                       |   |           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|
| Product range                                                                       | Overload relay ZB up to 150 A                                                                                                                                                                         |   |           |
| Product range                                                                       | Accessories                                                                                                                                                                                           |   |           |
| Accessories                                                                         | Overload relays                                                                                                                                                                                       |   |           |
| Frame size                                                                          | ZB150                                                                                                                                                                                                 |   |           |
| Phase-failure sensitivity                                                           | IEC/EN 60947, VDE 0660 Part 102                                                                                                                                                                       |   |           |
| Description                                                                         | Test/off button<br>Reset pushbutton manual/auto<br>Trip-free release                                                                                                                                  |   |           |
| Mounting type                                                                       | Separate mounting                                                                                                                                                                                     |   |           |
|     | I <sub>r</sub>                                                                                                                                                                                        | A | 120 - 150 |
| <b>Auxiliary contacts</b>                                                           |                                                                                                                                                                                                       |   |           |
| N/O = Normally open                                                                 | 1 N/O                                                                                                                                                                                                 |   |           |
| N/C = Normally closed                                                               | 1 N/C                                                                                                                                                                                                 |   |           |
| For use with                                                                        | DILM80<br>DILM95<br>DILM115<br>DILM150<br>DILM170<br>DILMF80<br>DILMF95<br>DILMF115<br>DILMF150<br>DIULM80<br>DIULM95<br>DIULM115<br>DIULM150<br>SDAINLM140<br>SDAINLM165<br>SDAINLM200<br>SDAINLM260 |   |           |
| <b>Short-circuit protection</b>                                                     |                                                                                                                                                                                                       |   |           |
| Type "1" coordination                                                               | gG/gL                                                                                                                                                                                                 | A | 315       |
|  |                                                                                                                                                                                                       |   |           |
| Type "2" coordination                                                               | gG/gL                                                                                                                                                                                                 | A | 250       |
|  |                                                                                                                                                                                                       |   |           |

## Notes

Overload trigger: tripping class 10 A

Short circuit protection: observe the maximum permissible fuse of the contactor with direct device mounting.

Suitable for protection of Ex e-motors.



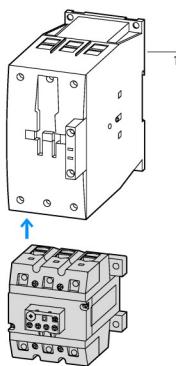
II(2)G [Ex d] [Ex e] [Ex px], II(2)D [Ex p] [Ex t]

PTB 10 ATEX 3010

Observe manual MN03407005Z-DE/EN.

## Notes

## Separate mounting



1 Contactor  
2 Bases

## Technical data

### General

|                                                                       |                                                                                |                                          |  |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------|--|
| Standards                                                             | IEC/EN 60947, VDE 0660, UL, CSA                                                |                                          |  |
| Climatic proofing                                                     | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |                                          |  |
| Ambient temperature                                                   | Operating range to IEC/EN 60947<br>PTB: -5 °C - +55 °C                         |                                          |  |
| Open                                                                  | °C                                                                             | -25 - +55                                |  |
| Enclosed                                                              | °C                                                                             | -25 - 40                                 |  |
| Temperature compensation                                              | Continuous                                                                     |                                          |  |
| Weight                                                                | kg                                                                             | 1.44                                     |  |
| Mechanical shock resistance                                           | g                                                                              | 10<br>Sinusoidal<br>Shock duration 10 ms |  |
| Degree of Protection                                                  | IP00                                                                           |                                          |  |
| Protection against direct contact when actuated from front (EN 50274) | Finger and back-of-hand proof                                                  |                                          |  |
| Altitude                                                              | m                                                                              | Max. 2000                                |  |

### Main conducting paths

|                                                |           |                 |                                |
|------------------------------------------------|-----------|-----------------|--------------------------------|
| Rated impulse withstand voltage                | $U_{imp}$ | V AC            | 8000                           |
| Overvoltage category/pollution degree          |           |                 | III/3                          |
| Rated insulation voltage                       | $U_i$     | V               | 1000                           |
| Rated operational voltage                      | $U_e$     | V AC            | 1000                           |
| Safe isolation to EN 61140                     |           |                 |                                |
| Between auxiliary contacts and main contacts   |           | V AC            | 440                            |
| Between main circuits                          |           | V AC            | 440                            |
| Temperatur compensation residual error > 40 °C |           |                 | ≤ 0.25 %/K                     |
| Current heat loss (3 conductors)               |           |                 |                                |
| Lower value of the setting range               |           | W               | 16.3                           |
| Maximum setting                                |           | W               | 25.5                           |
| Terminal capacities                            |           | mm <sup>2</sup> |                                |
| Solid                                          |           | mm <sup>2</sup> | 1 x (4 - 16)<br>2 x (4 - 16)   |
| Flexible with ferrule                          |           | mm <sup>2</sup> | 1 x (4 - 70)<br>2 x (4 - 70)   |
| Stranded                                       |           | mm <sup>2</sup> | 1 x (16 - 70)<br>2 x (16 - 70) |
| Solid or stranded                              |           | AWG             | 3/0                            |
| Terminal screw                                 |           |                 | M10                            |
| Tightening torque                              |           | Nm              | 10                             |
| Stripping length                               |           | mm              | 24                             |
| Tools                                          |           |                 |                                |
| Hexagon socket-head spanner                    | SW        | mm              | 5                              |

### Auxiliary and control circuits

|                                 |           |   |      |
|---------------------------------|-----------|---|------|
| Rated impulse withstand voltage | $U_{imp}$ | V | 4000 |
|---------------------------------|-----------|---|------|

|                                       |                 |                 |                                                                                 |
|---------------------------------------|-----------------|-----------------|---------------------------------------------------------------------------------|
| Overvoltage category/pollution degree |                 |                 | III/3                                                                           |
| Terminal capacities                   |                 | mm <sup>2</sup> |                                                                                 |
| Solid                                 |                 | mm <sup>2</sup> | 1 x (0.75 - 4)<br>2 x (0.75 - 4)                                                |
| Flexible with ferrule                 |                 | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5)                                            |
| Solid or stranded                     |                 | AWG             | 2 x (18 - 14)                                                                   |
| Terminal screw                        |                 |                 | M3.5                                                                            |
| Tightening torque                     |                 | Nm              | 1.2                                                                             |
| Stripping length                      |                 | mm              | 8                                                                               |
| Tools                                 |                 |                 |                                                                                 |
| Pozidriv screwdriver                  |                 | Size            | 2                                                                               |
| Standard screwdriver                  |                 | mm              | 1 x 6                                                                           |
| Rated insulation voltage              | U <sub>i</sub>  | V AC            | 500                                                                             |
| Rated operational voltage             | U <sub>e</sub>  | V AC            | 500                                                                             |
| Safe isolation to EN 61140            |                 |                 |                                                                                 |
| between the auxiliary contacts        |                 | V AC            | 240                                                                             |
| Conventional thermal current          | I <sub>th</sub> | A               | 6                                                                               |
| Rated operational current             | I <sub>e</sub>  | A               |                                                                                 |
| AC-15                                 |                 |                 |                                                                                 |
| Make contact                          |                 |                 |                                                                                 |
| 120 V                                 | I <sub>e</sub>  | A               | 1.5                                                                             |
| 220 V 230 V 240 V                     | I <sub>e</sub>  | A               | 1.5                                                                             |
| 380 V 400 V 415 V                     | I <sub>e</sub>  | A               | 0.5                                                                             |
| 500 V                                 | I <sub>e</sub>  | A               | 0.5                                                                             |
| Break contact                         |                 |                 |                                                                                 |
| 120 V                                 | I <sub>e</sub>  | A               | 1.5                                                                             |
| 220 V 230 V 240 V                     | I <sub>e</sub>  | A               | 1.5                                                                             |
| 380 V 400 V 415 V                     | I <sub>e</sub>  | A               | 0.9                                                                             |
| 500 V                                 | I <sub>e</sub>  | A               | 0.8                                                                             |
| DC L/R ≤ 15 ms                        |                 |                 | Switch-on and switch-off conditions based on DC-13, time constant as specified. |
| 24 V                                  | I <sub>e</sub>  | A               | 0.9                                                                             |
| 60 V                                  | I <sub>e</sub>  | A               | 0.75                                                                            |
| 110 V                                 | I <sub>e</sub>  | A               | 0.4                                                                             |
| 220 V                                 | I <sub>e</sub>  | A               | 0.2                                                                             |
| Short-circuit rating without welding  |                 |                 |                                                                                 |
| max. fuse                             |                 | A gG/gL         | 6                                                                               |

## 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<br>B600 at same polarity |
| DC operated                  |  |      | R300                                               |
| Short Circuit Current Rating |  | SCCR |                                                    |
| Basic Rating                 |  |      |                                                    |
| SCCR                         |  | kA   | 10                                                 |
| max. Fuse                    |  | A    | 300 Class J                                        |

## Design verification as per IEC/EN 61439

|                                                          |                  |   |     |
|----------------------------------------------------------|------------------|---|-----|
| Technical data for design verification                   |                  |   |     |
| Rated operational current for specified heat dissipation | I <sub>n</sub>   | A | 150 |
| Heat dissipation per pole, current-dependent             | P <sub>vid</sub> | W | 8.5 |

|                                                                                                                        |                   |    |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------|-------------------|----|----------------------------------------------------------------------------------------------------------------------------------|
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 25.5                                                                                                                             |
| Static heat dissipation, non-current-dependent                                                                         | P <sub>vs</sub>   | W  | 0                                                                                                                                |
| Heat dissipation capacity                                                                                              | P <sub>diss</sub> | W  | 0                                                                                                                                |
| Operating ambient temperature min.                                                                                     |                   | °C | -25                                                                                                                              |
| Operating ambient temperature max.                                                                                     |                   | °C | 55                                                                                                                               |
| IEC/EN 61439 design verification                                                                                       |                   |    |                                                                                                                                  |
| 10.2 Strength of materials and parts                                                                                   |                   |    |                                                                                                                                  |
| 10.2.2 Corrosion resistance                                                                                            |                   |    | Meets the product standard's requirements.                                                                                       |
| 10.2.3.1 Verification of thermal stability of enclosures                                                               |                   |    | Meets the product standard's requirements.                                                                                       |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat                                             |                   |    | Meets the product standard's requirements.                                                                                       |
| 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.                                                                                       |
| 10.2.4 Resistance to ultra-violet (UV) radiation                                                                       |                   |    | Meets the product standard's requirements.                                                                                       |
| 10.2.5 Lifting                                                                                                         |                   |    | Does not apply, since the entire switchgear needs to be evaluated.                                                               |
| 10.2.6 Mechanical impact                                                                                               |                   |    | Does not apply, since the entire switchgear needs to be evaluated.                                                               |
| 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.                                                                                           |
| 10.9.3 Impulse withstand voltage                                                                                       |                   |    | Is the panel builder's responsibility.                                                                                           |
| 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 8.0

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                                | A | 120 - 150         |
| Max. rated operation voltage Ue                         | V | 1000              |
| 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 A        |
| Reset function input                                    |   | No                |
| Reset function automatic                                |   | Yes               |
| Reset function push-button                              |   | Yes               |