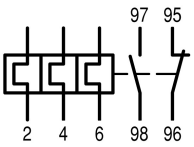
# Overload relay, electronic, 1-5A, +earth-fault protection

**Part no.** ZEB12-5-GF
**Article no.** 136484
**Catalog No.** XTOE005BGS

Powering Business Worldwide

## Delivery program

| | | | |
|---|---|---|---|
| Product range | | | Electronic overload relays ZEB |
| Phase-failure sensitivity | | | IEC/EN 60947, VDE 0660 Part 102 |
| Description | | | Test/off button<br>Reset pushbutton<br>Manual/auto reset selectable<br>Protection with heavy starting duty (Class 10A-30) |
| Mounting type | | | Direct mounting |
| **Earth-fault protection** | | | |
| Earth-fault protection | | | with |
| Trip at approx. | | | > 0.5 x $I_r$ in 2 s<br>> 1.5 x $I_r$ in 1 s |
| **Setting range** | | | |
| Overload releases | $I_r$ | A | 1 - 5 |
| Contact sequence | | |  |
| **Auxiliary contacts** | | | |
| N/O = Normally open | | | 1 N/O |
| N/C = Normally closed | | | 1 N/C |
| For use with | | | DILM7<br>DILM9<br>DILM12<br>DILM15<br>DIULM7<br>DIULM9<br>DIULM12<br>SDAINLM12<br>SDAINLM16<br>SDAINLM22 |



## 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 | | | |
| Open | | °C | -25 - +65 |
| Ambient temperature open max. | | °C | 65 |
| Mechanical shock resistance | | g | 15<br>Shock duration 10 ms<br>according to IEC 60068-2-27 |
| Degree of Protection | | | IP20 |
| Protection against direct contact when actuated from front (EN 50274) | | | Finger and back-of-hand proof |

### Main conducting paths

| | | | |
|---|---|---|---|
| Rated impulse withstand voltage | $U_{imp}$ | V AC | 6000 |
| Overvoltage category/pollution degree | | | III/3 |
| Rated insulation voltage | $U_i$ | V AC | 690 |
| Rated operational voltage | $U_e$ | V AC | 690 |
| Rated frequency | f | Hz | 50/60 |
| Safe isolation to EN 61140 | | | |
| Between auxiliary contacts and main contacts | | V AC | 600 |
| Between main circuits | | V AC | 600 |

| | | | |
|---|---|---|---|
| Terminal capacities | | $mm^2$ | |
| Solid | | $mm^2$ | 1 x 1.5 - 16 |
| Solid or stranded | | AWG | 1 x 14 - 4 |

## Auxiliary and control circuits

| | | | |
|---|---|---|---|
| Rated impulse withstand voltage | $U_{imp}$ | V | 6000 |
| Overvoltage category/pollution degree | | | III/3 |
| Terminal capacities | | $mm^2$ | |
| Solid | | $mm^2$ | 2 x (0.75 - 4) |
| Flexible with ferrule | | $mm^2$ | 2 x (0.75 - 2.5) |
| Solid or stranded | | AWG | 2 x (18 - 12) |
| Terminal screw | | | M3.5 |
| Tightening torque | | Nm | 0.8 - 1.2 |
| Tightening torque | | lb-in | 7 |
| Tools | | | |
| Pozidriv screwdriver | | Size | 2 |
| Standard screwdriver | | mm | 1 x 6 |
| Rated insulation voltage | $U_i$ | V AC | 500 |
| Rated operational voltage | $U_e$ | V AC | 500 |
| Safe isolation to EN 61140 | | | |
| between the auxiliary contacts | | V AC | 240 |
| Conventional thermal current | $I_{th}$ | A | 5 |
| Rated operational current | $I_e$ | A | |
| AC-15 | | | |
| Make contact | | | |
| 120 V | $I_e$ | A | 1.5 |
| 220 V 230 V 240 V | $I_e$ | A | 1.5 |
| 380 V 400 V 415 V | $I_e$ | A | 0.5 |
| 500 V | $I_e$ | A | 0.5 |
| Break contact | | | |
| 120 V | $I_e$ | A | 1.5 |
| 220 V 230 V 240 V | $I_e$ | A | 1.5 |
| 380 V 400 V 415 V | $I_e$ | A | 0.9 |
| 500 V | $I_e$ | A | 0.8 |
| DC-13 L/R - 15 ms | | | |
| 24 V | $I_e$ | A | 0.9 |
| 60 V | $I_e$ | A | 0.75 |
| 110 V | $I_e$ | A | 0.4 |
| 220 V | $I_e$ | A | 0.2 |
| Short-circuit rating without welding | | | |
| max. fuse | | A gG/gL | 6 |

# Design verification as per IEC/EN 61439

| | | | |
|---|---|---|---|
| Technical data for design verification | | | |
| Rated operational current for specified heat dissipation | $I_n$ | A | 5 |
| Heat dissipation per pole, current-dependent | $P_{vid}$ | W | 0.17 |
| Equipment heat dissipation, current-dependent | $P_{vid}$ | W | 0.51 |
| Static heat dissipation, non-current-dependent | $P_{vs}$ | W | 0 |
| Heat dissipation capacity | $P_{diss}$ | W | 0 |
| Operating ambient temperature min. | | °C | -25 |
| Operating ambient temperature max. | | °C | 65 |
| 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. |

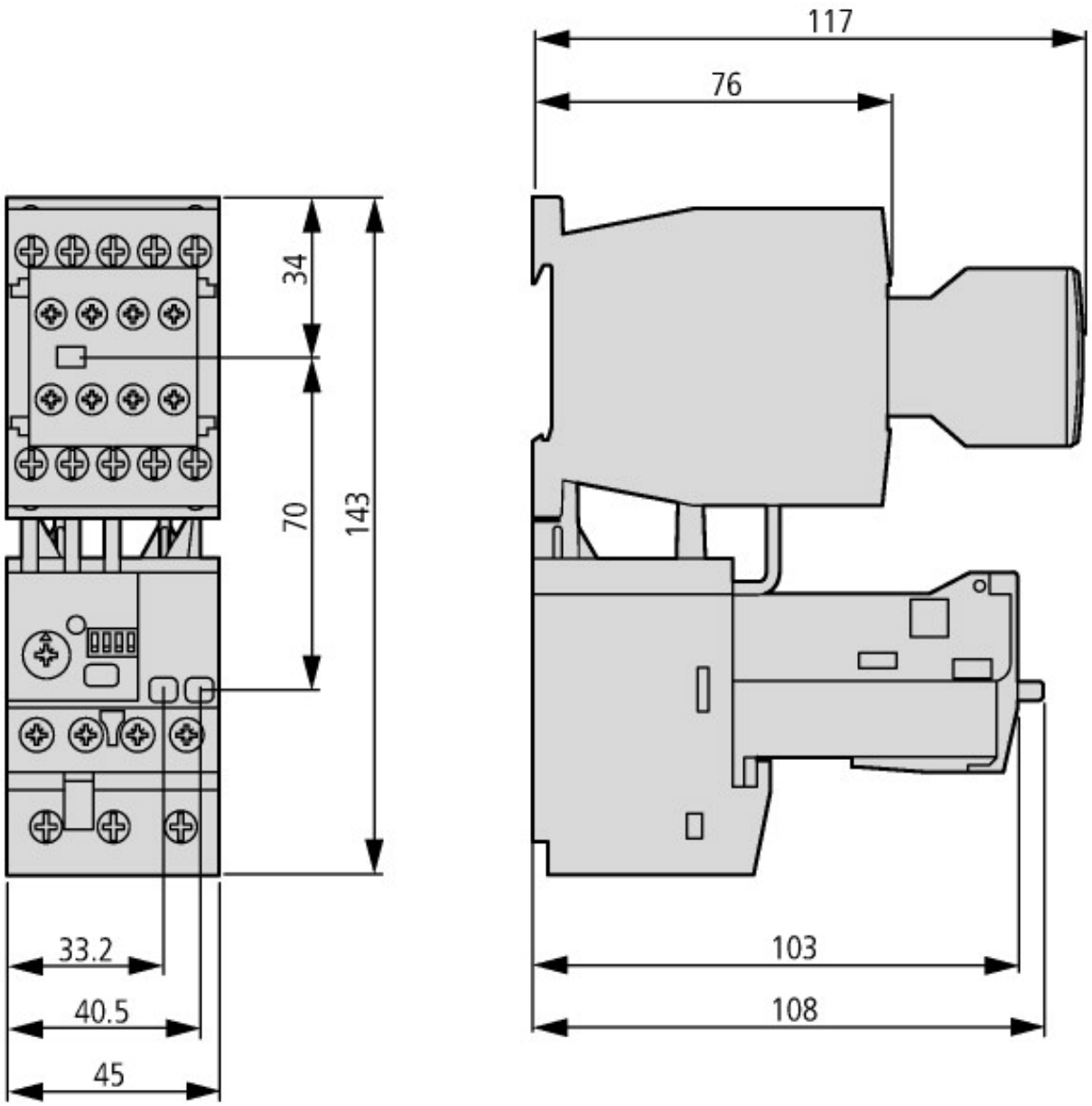
## Technical data ETIM 6.0

| | | |
|---|---|---|
| Low-voltage industrial components (EG000017) / Electronic overload relay (EC001080) | | |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Overload protection device / Electronic overload relay (ecl@ss8.1-27-37-15-02 [AKF076011]) | | |
| Adjustable current range | A | 1 - 5 |
| 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 |
| Rated control supply voltage Us at AC 50HZ | V | 0 - 0 |
| Rated control supply voltage Us at AC 60HZ | V | 0 - 0 |
| Rated control supply voltage Us at DC | V | 0 - 0 |
| Release class | | Adjustable |
| Voltage type for actuating | | Selfsupplied |

## Approvals

| | | |
|---|---|---|
| Product Standards | | UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking |
| UL File No. | | E1230 |
| UL Category Control No. | | NKCR |
| CSA File No. | | 2290956 |
| 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: - |

## Dimensions




## Additional product information (links)

| IL04210002E Solid-state motor protection relay | |
|---|---|
| IL04210002E Solid-state motor protection relay | ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04210002E2012_06.pdf |