



# BZ931 T

## Safety Relay 24VDC

With SIL2 similar function and release delay  
B+Z Art. Nr. 888



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## Article / Function

### Application

This safety relay is designed for use in industrial continuous operation applications. Safety relay according to standard EN61810 type A with forcibly guided contacts and integrated protection circuit for mounting on standard T Rail system. Inside 2 relay coils are in parallel use, but the contacts are in serial connection to achieve a kind of SIL2 safety. In total there are 4 contacts NO and 2 contacts NC. The unit is equipped with a release delay circuit which has a fix delay time of 500 mS.

Safe isolation distance between coil and contact area (>5,5 mm); as well as between contacts (>5,5 mm)  
Medium required power ca. 0,66W, Hold force ca. 0,20W  
The LED at the front panel indicates when power is applied to the coil.

### Technical Data

Type designation: **BZ931T 24V**

#### • Standards

The product is manufactured in accordance with the following standards:

ISO 9001:2015  
Electronic equipment used on rolling stock: EN50155  
Electromagnetic compatibility: EN50121-3-2  
Isolation: EN50124-1  
Shock and vibration: EN50155/EN61373  
Fire protection according to EN 45545

The standards applicable to this product are dependent on the version available at the time of development.

### Mechanical data

Measures (WxHxD): 22,5 x 120 x 88mm  
Max. length: with counterconnector in place ca. 175mm  
Weight: ca. 95g (without counterconnector)

#### • Materials

Housing: Plastic  
PCB: Epoxy resin

• **Mounting:** Horizontal snap on standard Rail 35mm, (EN-50022-35)

• **Marking / Labeling** Wiring label on housing



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## Connector

- **Screwless front edge connector**

14-pin edge connector: WAGO (coded at PIN5 !)

- **Counter connector (optional)**

14-pin female connector strip: WAGO single row or double row available  
Grid 5.08mm. (not included at delivery)

## Electrical Data

- **Operating Voltage**

Nominal voltage: 24V DC  
Tolerance according to railway standard: -30% +25%

Idle Current : ca. 56mA at 24VDC

- **Contact data**

Relay type: A, nach EN61810  
Load max DC: ohm = 50V/2A, induktive = 50V/0.8A  
**Minimal current:** 10mA at 10V



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• **Relay data:**                      **Relay type: A, according to EN61810**

**Contact Data**

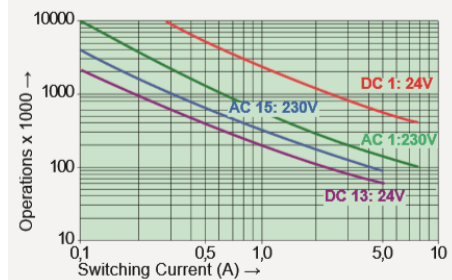
|                                   |                                   |
|-----------------------------------|-----------------------------------|
| Contact material                  | AgCuNi + 0,2 µm Au                |
| Type of contact                   | Single contact with notched crown |
| Rated switching capacity          | 250 VAC 8 A AC1 2000 VA           |
| Electr. Life AC1(360 S / h)       | approx. 100000                    |
| Inrush current max.               | 30 A for 20 ms                    |
| Switching voltage range           | 5 to 250 VDC / VAC                |
| Switching current range*          | 3 mA to 8 A                       |
| Switching capacity range*         | 40 mW to 2000 W(VA)               |
| Contact resistance (as delivered) | ≤100 mΩ / 6 V / 100 mA            |

\*Guided values

**Insulation Data**

|                                     |                        |
|-------------------------------------|------------------------|
| - Double or reinforced insulation   | at 250 VAC             |
| - Air and creepage distance         | >5,5 mm                |
| - Test voltage                      | 4000 V / 50 Hz / 1 min |
| Test voltage contact open           | 1500 V / 50 Hz / 1 min |
| Creepage resistance                 | CTI 175                |
| Pollution degree                    | 2                      |
| Overvoltage category                | III                    |
| Insulation resistance at Up 500 VDC | >100 MΩ                |

**Contact Lifetime for NO Contacts**



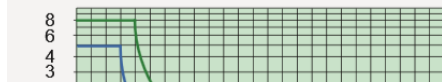
Maximal switching characteristics (DIN EN 60947-5-1)

|         |                     |
|---------|---------------------|
| AC 1:   | 250 V / 8 A         |
| AC 15:  | 230 V / 5 A         |
| DC 1:   | 24 V / 8 A          |
| DC 13:  | 24 V / 5 A / 0,1 Hz |
| UL 508: | B300 / R300         |

Maximal contact load at AC 1 with 230 V:

- 2 contacts with 8 A each
- 3 contacts with 6 A each
- 4 contacts with 4,5 A each

**Load Limit Curve with Direct Current**



**Additional Data**

|                                            |                                     |
|--------------------------------------------|-------------------------------------|
| Mechanical endurance                       | >10 x 10 <sup>6</sup> operations    |
| Switching frequency, mechanical            | 15 Hz                               |
| Response time (all NO closed)              | typically 20 ms                     |
| Drop-out time** (NC closed)                | typically 8 ms                      |
| Bounce time of NO contact                  | typically 1,5 ms                    |
| Bounce time of NC contact                  | typically 15 ms                     |
| Shock resistance 16 ms                     | NO > 10g<br>NC > 6g                 |
| Vibration resistance (10-200 Hz)           | NO > 10g<br>NC > 2g                 |
| Resistance to short circuiting contacts NO | 1000 A SCPD 10 A gG / gL (pre-fuse) |
| Resistance to short circuiting contacts NC | 1000 A SCPD 6 A gG / gL (pre-fuse)  |
| Ambient temperature                        | -40°C to +70°C                      |
| Thermal Resistance                         | 47 K / W                            |
| Temperature limit for coil                 | 120°C                               |
| Weight                                     | approx. 35 g                        |
| Mounting position                          | any                                 |
| Type of protection                         | RT II                               |
| Solder bath temperature                    | 270°C / 5 s                         |

\*\*without spark suppression

• **Internal electrical protection**

Protection circuits:                      Reverse polarity protection, protective circuit for relay coil and Transients suppression diodes

• **Mechanical protection**

Type:                                          IP30



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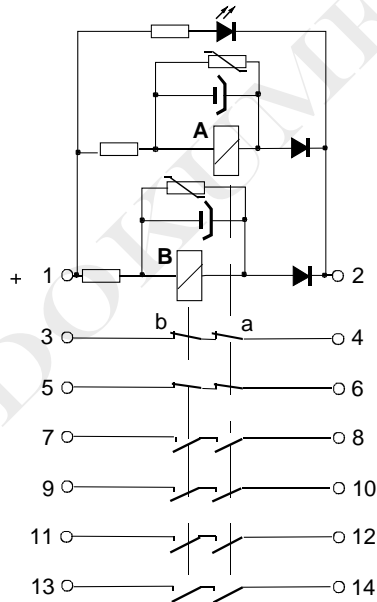
- **Climatic conditions**

Environment temperature: -20°C bis +70°C  
Humidity : max 90% rF, at30°C, non condensing.

- **Disposal / Recycling**

According to local regulations

### 3. Wiring diagram



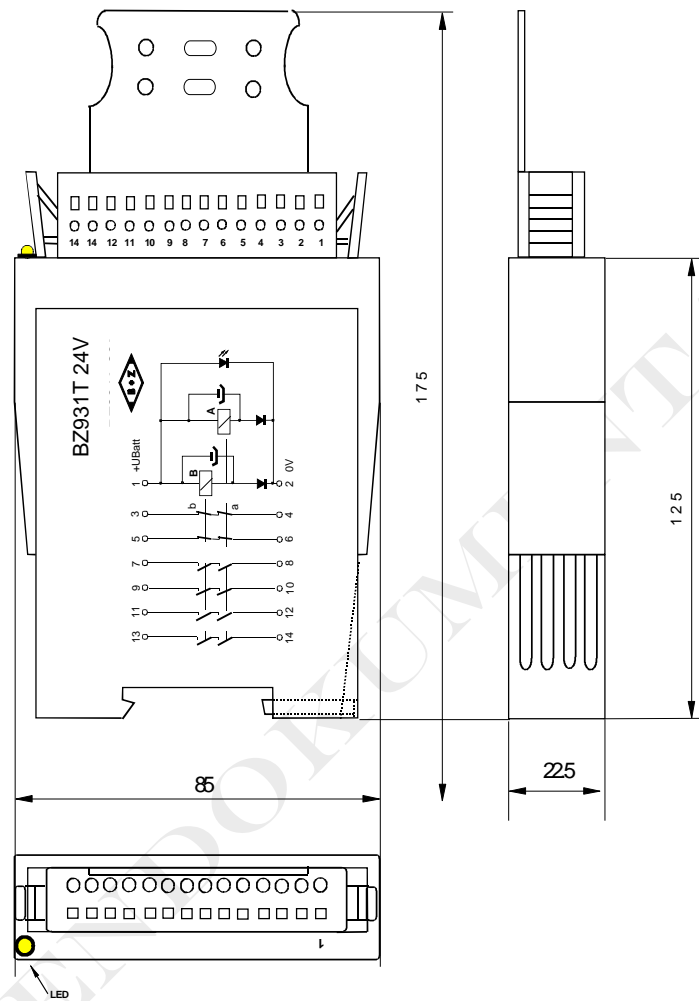
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## 4. Measures



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