

User Information

English translation

Correct Use

The SRTC is an expansion module that can be operated with any basic device from the ZANDER SR series, e.g. SR2C or SR3C, in order to permit delayed switch-off of machine parts. This could be the case if it is safer to return a tool to its initial position first instead of stopping operation immediately. The SRTC was developed as a component for a modular system. Any combination of SRTC units and non-time-delayed SREC expansion blocks can be interconnected with just a few lines, permitting realization of an overall system with different times and the specific number of safety contacts required.

Features

- 3 safe, redundant, time-delayed relay outputs
- 1 auxiliary contact (fault monitoring)
- Activation via basic device from the ZANDER SR series
- Continuously adjustable delay, 1 to 30 s
- Corresponds to STOP category 1
- Fault monitoring by basic device
- Indication of the switching state via LED



Product Safety
Functional
Safety
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ID: 090000000



(not for plug-in terminals)

Function

The time-delayed emergency stop safety switching device SRTC in combination with a basic device from the ZANDER SR series is designed for safe isolation of safety circuits according to EN 60204-1 and can be used up to safety category 3, PL d according to EN ISO 13849-1.

The SRTC provides a control voltage of DC 24 V at terminal S11. In order for the SRTC to switch together with the connected basic device, the control voltage at S11 is connected to terminals S15 and S16 of the SRTC via one of the safety contacts of the basic device (see *Wiring* section on page 2).

The safety contacts of the basic device close when the basic device is activated, and the control voltage at terminal S11 is then connected with terminals S15 and S16 of the SRTC. The safety contacts of the SRTC switch immediately.

The basic device disconnects the control voltage when the safety switch is operated, and the safety contacts of the SRTC open after the time set on the SRTC elapses (the power supply must be present during the time sequence).

If a fault occurs in the SRTC, this is detected by the basic device via terminals S25 and S26.

Independent operation without basic device is not possible.

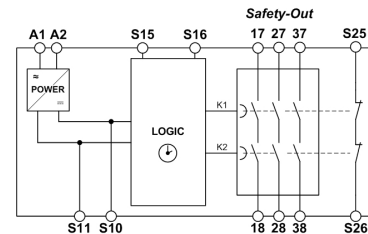


Fig. 1 Block diagram SRTC

Installation

As per EN 60204-1, the device is intended for installation in control cabinets with a minimum degree of protection of IP54. It is mounted on a 35 mm DIN rail according to DIN EN 60715 TH35.

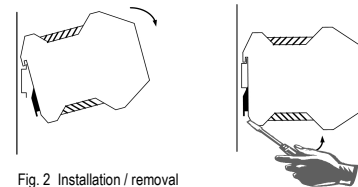


Fig. 2 Installation / removal

Safety Precautions

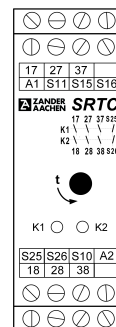


- Installation and commissioning of the device must be performed **only by authorized personnel**.
- Observe the country-specific regulations when installing the device.
- The electrical connection of the device is only allowed to be made with the device isolated.
- The wiring of the device must comply with the instructions in this user information, otherwise there is a risk that the safety function will be lost.
- It is not allowed to open the device, tamper with the device or bypass the safety devices.

- All relevant safety regulations and standards are to be observed.
- The overall concept of the control system in which the device is incorporated must be validated by the user.
- Failure to observe the safety regulations can result in death, serious injury and serious damage.
- Note down the version of the product (see label "Ver: x") and check it prior to every commissioning of a new device. If the version has changed, the overall concept of the control system in which the device is incorporated must be validated again by the user.

Electrical Connection

- When the 24 V version is used, a safe transformer according to EN 61558-2-6 or a power supply unit with electrical isolation from the mains must be connected.
- External fusing of the safety contacts must be provided.
- A maximum length of the control lines of 1000 meters with a line cross section of 0.75 mm² must not be exceeded.
- The line cross section must not exceed 2.5 mm².
- If the device does not function after commissioning, it must be returned to the manufacturer unopened. Opening the device will void the warranty.



- A1: Power supply
- A2: Power supply
- S11: DC 24V control voltage
- S10: Control line
- S15: Control line
- S16: Control line
- S25: Fault monitoring
- S26: Fault monitoring
- 17-18: Time-delayed safety contact 1
- 27-28: Time-delayed safety contact 2
- 37-38: Time-delayed safety contact 3

Fig. 3 Connections

Applications

Depending on the application, the device must be wired with a ZANDER basic device as shown in Fig. 1 to Fig. 6.

Wiring

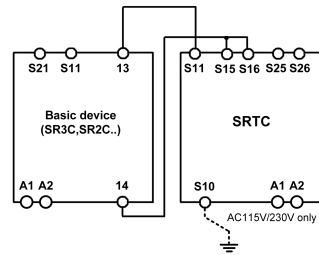


Fig. 1: Connection of SRTC to basic device

Wiring of the SRTC via only 4 lines:

A safety contact of the basic device (e.g. 13-14) activates the relays of the SRTC (S11 and S15/S16).

Two lines on S25 and S26 are required for feedback/fault monitoring. According to the application, they have to be wired according to Fig. 3 respective Fig. 4.

A fault in the SRTC thereby prevents the entire safety chain from restarting. Earth faults in the control lines are detected in addition to internal faults.

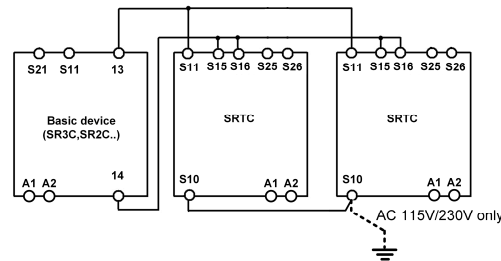


Fig. 2: Connection of several SRTC units to basic device

If further SRTC units are to be integrated into the system, terminals S11 must be connected in parallel on all SRTC units. This also applies to terminals S10 and terminals S15/S16.

The feedback-loops (S25-S26) of the several expansion devices have to be wired in series to the start of the basic device (see Fig. 3 respective Fig. 4).

Notice:

In order to activate earth fault monitoring, S10 must be connected to PE (protective earth) on the AC115/230V devices. With AC/DC 24 V, connect PE only to the power supply unit according to EN60204-1.

Feedback Loop

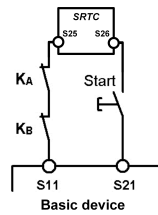


Fig. 3: Feedback loop

Contacts connected to the SRTC or the basic devices are monitored via the feedback loop of the basic device. KA and KB are the positively driven contacts of the connected contactor or expansion module.

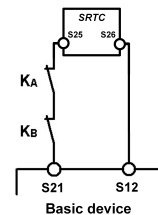


Fig. 4: Feedback Loop with Auto-Start

Contacts connected to the SRTC or the basic devices are monitored via the feedback loop of the basic device. KA and KB are the positively driven contacts of the connected contactor or expansion module.

Power supply and Safety contacts

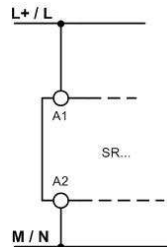


Fig. 5:
Power supply A1 and A2.

(Power supply according to techn. Data)

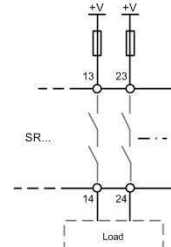


Fig. 6:
Connecting load to safety contacts.

(Figure shows example. Voltage „+V“ according to techn. Data)

Commissioning Procedure



Note: The items listed under "Electrical connection" must be observed during commissioning.

1. Wiring SRTC:

Wire the SRTC with the ZANDER basic device according to your application (see Fig. 1 to Fig. 2).

2. Wiring basic device:

Wire the basic device according to the required Performance Level determined (see user information for the basic device).

3. Wiring feedback loop:

Wire the feedback loop as shown in Fig. 3 or Fig. 4.

4. Wiring power supply:

Connect the power supply to terminals A1 and A2 (Fig. 5).

Warning: Wiring only in de-energized state.

5. Setting delay time:

Set the desired time delay on the rotary knob and seal the knob with the supplied sticker.

Warning:

Scale division lines should be regarded only as a setting aid. Always make sure to measure the delay time.

6. Starting the device:

Switch the operating voltage on.

Warning:

If the "Automatic start" starting behavior is set on the basic device, the safety contacts will close immediately after Power-On. If the "Monitored manual start" starting behavior is set, close the start button on the basic device to close the safety contacts.

The LEDs **K1** and **K2** on the basic device and on the SRTC are lit when the safety contacts are closed.

7. Triggering safety function:

Open the emergency stop circuit by actuating the connected safety switch. The safety contacts of the basic device open immediately, the safety contacts of the SRTC open after expiration of the time set on the rotary knob.

Warning: Measure the delay time.

8. Reactivation:

Close the emergency stop circuit. If "Automatic start" is selected on the basic device, the safety contacts will close immediately.

If the "Monitored manual start" starting behavior is set, close the start button on the basic device to close the safety contacts of the basic device and the SRTC.

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Maintenance

Once per month, the device must be checked for proper function and for signs of tampering and bypassing of the safety function (to do this, check the wiring of the device and activate the emergency stop function. Check the delay time).

The device is otherwise maintenance free, provided that it was installed properly.

What to Do in Case of a Fault?

Device does not switch on:

- Check the wiring of the SRTC and the basic device by comparing it with the wiring diagrams (also see user information for the basic device).
- Check the safety switch used on the basic device for correct function and adjustment.
- Check whether the emergency stop circuit of the basic device is closed.
- Check whether the start button on the basic device (with manual start) is closed.
- Check the operating voltage at A1 and A2 on the basic device and on the SRTC.
- Is the feedback loop closed?

Device cannot be switched on again after an emergency stop:

- Check whether the emergency stop circuit was closed again.
- Was the start button opened before closing of the emergency stop circuit (with manual start)?
- Is the feedback loop closed?
- Is the power supply present during the time sequence?

If the fault still exists, perform the steps listed under "Commissioning Procedure".

If these steps do not remedy the fault either, return the device to the manufacturer for examination.

Opening the device is impermissible and will void the warranty.

Safety Characteristics According to EN ISO 13849-1

The device is certified according to EN ISO 13849-1 up to a Performance Level of PL d.

Note:

Additional data can be requested from the manufacturer for applications that deviate from these conditions.

| Safety characteristics according to EN ISO 13849-1 for all variants of SRTC | | | |
|---|------------|-----------|-----------|
| Load (DC-13; 24 V) | <= 0,1 A | <= 1 A | <= 2 A |
| T10d [years] | 20 | 20 | 20 |
| Category | 3 | 3 | 3 |
| PL | d | d | d |
| PFHd [1/h] | 1,03E-07 | 1,03E-07 | 1,03E-07 |
| nop [cycle / year] | <= 400.000 | <= 73.000 | <= 17.000 |

Techn. Data

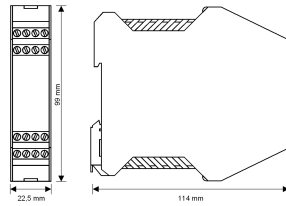
| | | |
|---|---|------------------|
| Corresponds to the standards | EN 60204-1; EN ISO 13849-1 ; EN 62061 | |
| Operating voltage | AC 230 V, AC 115 V, AC/DC 24 V | |
| Rated supply frequency | AC: 50-60 Hz | |
| Permissible deviation | + / - 10 % | |
| Power consumption | DC 24 V | AC 230 V |
| | approx. 1.5 W | approx. 4 VA |
| Delay time | 1 to 30 s, continuously adjustable | |
| Control voltage at S11 | DC 24 V | |
| Control current S11...S14 | max. 40 mA | |
| Safety contacts | 3 NO contacts | |
| Auxiliary contacts | 1 NC contact; monitoring contact for basic device | |
| Max. switching voltage | AC 250 V | |
| Safety contact breaking capacity | AC: 230 V, 1500 VA, 6 A for ohmic load 230 V, 4 A for AC-15 DC: 24 V, 30 W, 1.25 A for ohmic load 24 V, 30 W, 2 A for DC-13 Max. total current through all 3 contacts: 10.5 A | |
| Minimum contact load | 24 V, 20 mA | |
| Contact fuses | 6 A gG | |
| Max. line cross section | 0.14 - 2.5 mm ² | |
| Max. length of control line | 1000 m with 0.75 mm ² | |
| Contact material | AgNi | |
| Contact service life | mech. approx. 1 x 10 ⁷ | |
| Test voltage | 2.5 kV (control voltage/contacts) | |
| Rated impulse withstand voltage, leakage path/air gap | 4 kV (DIN VDE 0110-1) | |
| Rated insulation voltage | 250 V | |
| Degree of protection | IP20 | |
| Temperature range | DC 24 V: | -15 °C to +60 °C |
| | AC 115 V / 230 V: | -15 °C to +40 °C |
| Degree of contamination | 2 (DIN VDE 0110-1) | |
| Overvoltage category | 3 (DIN VDE 0110-1) | |
| Weight | approx. 230 g | |
| Mounting | DIN rail according to EN 60715 TH35 | |

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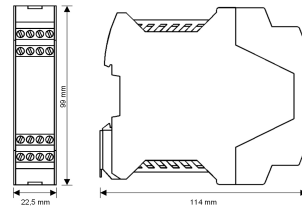
English translation

Dimension Drawing

Fixed Terminals



Plug-In Terminals



Variants

| | | |
|------------------|--|--------------------------------------|
| Order No. 472190 | SRTC, AC 230 V (50-60 Hz), | fixed screw terminals |
| Order No. 472191 | SRTC, AC 115 V (50-60 Hz), | fixed screw terminals |
| Order No. 472192 | SRTC, AC/DC 24 V (AC: 50-60 Hz), | fixed screw terminals |
| Order No. 473190 | SRTC, AC 230 V (50-60 Hz), | without terminals |
| Order No. 473191 | SRTC, AC 115 V (50-60 Hz), | without terminals |
| Order No. 473192 | SRTC, AC/DC 24 V (AC: 50-60 Hz), | without terminals |
| Order No. 474190 | SRTC, AC 230 V (50-60 Hz), | incl. plug-in screw terminals |
| Order No. 474191 | SRTC, AC 115 V (50-60 Hz), | incl. plug-in screw terminals |
| Order No. 474192 | SRTC, AC/DC 24 V (AC: 50-60 Hz), | incl. plug-in screw terminals |
| Order No. 475190 | SRTC, AC 230 V (50-60 Hz), | incl. plug-in dual tensile terminals |
| Order No. 475191 | SRTC, AC 115 V (50-60 Hz), | incl. plug-in dual tensile terminals |
| Order No. 475192 | SRTC, AC/DC 24 V (AC: 50-60 Hz), | incl. plug-in dual tensile terminals |
| Order No. 472592 | EKLS4, plug-in screw terminals kit | |
| Order No. 472593 | EKLZ4, set of plug-in tensile spring terminals | |

CE Konformitätserklärung EC Declaration of Conformity Déclaration de conformité

Hersteller: H. ZANDER GmbH & Co. KG
Producer: Am Gut Wolf 15 • 52070 Aachen • Deutschland
Fabricant:

Produktgruppe: Sicherheits-Not-Halt-Schaltgeräte
Product Group: Safety emergency stop switching devices
Groupe de produits: Relais de sécurité d'arrêt d'urgence

| Produkt Name | Anbringung der CE-Kennzeichnung | Zertifikats-Nr. |
|----------------|---------------------------------|-------------------|
| Product Name | Affixing of CE marking: | No of Certificate |
| Nom du produit | Application du marque CE | N° du certificat |
| SRTC.....2014 | | 968/ EZ 380.01/14 |
| SREC.....2014 | | 968/ EZ 385.01/14 |

Die Produkte stimmen mit den Vorschriften folgender Europäischer Richtlinien überein:
The products conform with the essential protection requirements of the following European directives:
Les produits sont conformes aux dispositions des directives européennes suivantes:

2006/42/EG : Maschinenrichtlinie
2006/42/EG : Machinery directive
2006/42/EG : Directive <<Machines>>

2004/108/EG : EMV Richtlinie bis 2016-04-19 2014/30/EU : EMV Richtlinie ab 2016-04-20
2004/108/EG : EMC directive till 2016-04-19 2014/30/EU : EMC directive from 2016-04-20
2004/108/EG : Directive <<CEM>> jusqu' à 2016-04-19 2014/30/EU : Directive <<CEM>> dès 2016-04-20

Die Übereinstimmung der bezeichneten Produkte mit den Vorschriften der o.a. Richtlinie wird, falls anwendbar, nachgewiesen durch die vollständige Einhaltung folgender Normen:
If applicable, the conformity of the designated products is proved by full compliance with the following standards:
Le strict respect des norms suivantes confirme, s'il y a lieu, que les produits désignés sont conformes aux dispositions de la directive susmentionnée:

EN 60439-1:2005-01 EN 60947-1:2011-10 EN 60947-5-1:2010-04
EN 61000-6-2:2006-03 EN 61000-6-3:2011-09 DIN EN 61326-3-1:2008-11

Gemäß Zertifikat TÜV-Rheinland:
According to the certificate of TÜV-Rheinland:
Selon de organisme TÜV-Rheinland:

DIN EN ISO 13849-1:2008+AC:2009

EN 62061:2005 +AC:2010:A1:2013

Dokumentationsbeauftragte/r: Christiane Nittschalk
Documentation manager
Autorisé à constituer le dossier technique

Aachen, den 02.03.2016

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Manager for EC declaration of conformity
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