

User Information

English translation

Correct Use

TE-OR3(D) is an all-purpose safe output-extension module with three safe relay-contacts. In combination with basic module TALOS® TB-I1403, it ensures the quick and safe deactivation of the moving parts of a machine in case of danger.

TE-OR3(D) extends the safe semiconductor outputs of the basic module for galvanic isolation and power adjustment.

TE-OR3D is specially designed and certified for the use in furnaces and ancillary equipment in continuously mode according to EN 50156-1 and EN 746-2.



Features

- 3 safe, redundant contacts
1 auxiliary contact
- Extension of the safe semiconductor outputs of the basic module for galvanic isolation and power adjustment
- Cyclical self-monitoring
- Feedback loop can be used for monitoring by previous basic module (optional)
- Configurable on each of the safe outputs of the basic module by setting a jumper at the front of the module

- Low amount of cabling because of driving via TBUS-loading system
- LED indicator for status channel 1 and 2
- Up to PL e, SILCL 3, category 4

Function

The safe extension module TE-OR3 is designed for safe isolation of safety circuits according to EN 60204-1 and can be used up to safety category 4, PL e according to EN ISO 13849-1.

The internal logical system closes the safety contacts when the safety output of the basic module is switched on.

If the safety output of the basic module is switched off, the positively driven safety contacts are opened and safely switch the machine off. It is ensured that a single fault does not lead to a loss of the safety function and that every fault is detected by cyclical self-monitoring no later than when the system is switched off and switched on again.

The use without the basic module is not possible.

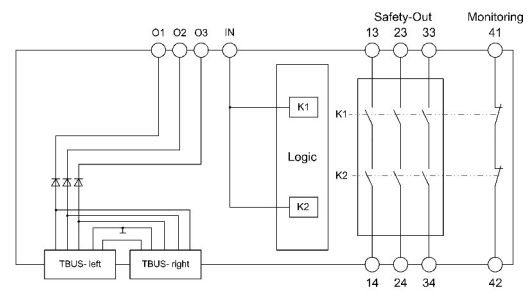


Fig. 1 Block diagram TE-OR3(D)

Installation

As per EN60204-1, the device is intended for installation in control cabinets with a minimum degree of protection of IP54. There has to be an adequate heat dissipation in the control cabinet. It is mounted on a 35 mm DIN rail according to EN 60715 TH35 with a pre-installed TBUS-terminal. The device has to be mounted on the right side of the basic module. The device will be connected by the PCB-connector on its backside with the TBUS-terminal.

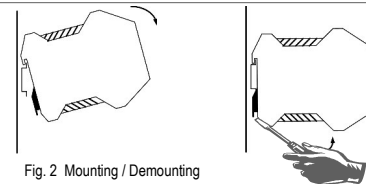


Fig. 2 Mounting / Demounting

Safety Precaution

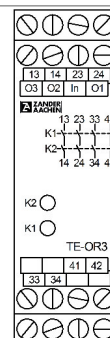


- Installation and commissioning of the device must be performed **only by authorized personnel**.
- Observe the country-specific regulations when installing the device.
- The electrical connection of the device is only allowed to be made with the device isolated.
- The wiring of the device must comply 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.
- There have to be the same electrical potential on the current paths 13-14 and 23-24.
- 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.") 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

- External fusing of the safety contacts must be provided.
- The line cross section does not have to 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.



- O1: Safety output 1
- O2: Safety output 2
- O3: Safety output 3
- In: Input control line
- 13-14: Safety contact 1
- 23-24: Safety contact 2
- 33-34: Safety contact 3
- 41-42: Auxiliary contact

Fig. 3 Terminals

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Applications

The device has to be wired as shown in Fig. 1.

Wiring diagram

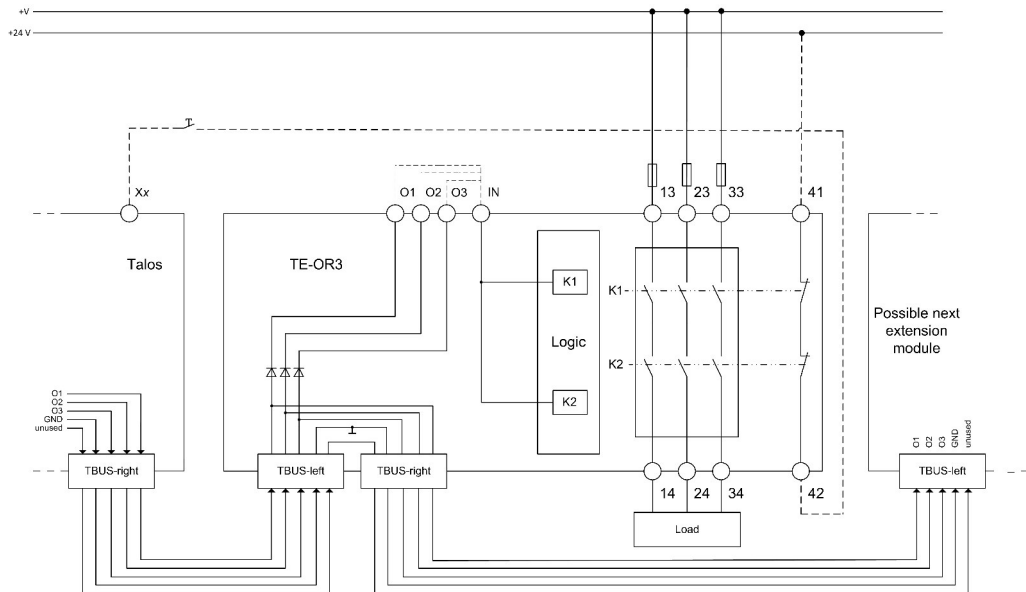


Fig. 1:
Single channel emergency stop. (category 4, up to PL e / SIL 3)

Connecting load to safety contacts.
(Figure shows example. Voltage „+V“ according to technical data)

If a feedback loop is necessary for the application, it can be wired to the auxiliary contact 41-42 (e.g. like in Fig.1).

Caution:
Safety contacts will be activated immediately by switching on the control line.
Up to 5 extension modules may be connected to each safety output of the basic module.

Commissioning Procedure



Advice: Follow the guidelines in „Electrical Connection“ during the start-up.

1. Feedback loop:

If a feedback loop is necessary for the application, it has to be wired as shown in Fig.1

2. Connecting control line:

Connect the terminal **In** and the terminal **O1**, **O2** or **O3** with a jumper, depending on which output of the basic module the TE-OR3 shall react.

Caution: Wiring only in de-energized state.

Each expansion module may only be connected to one safety output of the basic device. Multiple connection is not permitted.

3. Starting the device:

Turning on the safety output of the basic module.

Caution:

The safety contacts will close immediately by turning on the control line.

The LEDs **K1** and **K2** are lit.

4. Triggering safety function:

Turning off the safety output of the basic module. The safety contacts will open immediately.

The LEDs **K1** and **K2** go out.

5. Reactivation:

Turning on the safety output of the basic module. The safety contacts will close immediately.

The LEDs **K1** and **K2** are lit.

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Maintenance

The device must be checked once per month for proper function and for signs of tampering and bypassing of the safety function.

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

For furnaces which operate continuously where regular inspection at sufficient short intervals in accordance to EN 50156-1 may not be performed, are excluded from this (only TE-OR3D).

What to do in Case of a Fault?

Device does not switch on:

- Check the wiring by comparing it to the wiring diagrams.
- Check the jumper between In and Ox.
- Check the correct fit on the DIN rail.
- If the feedback loop is used, is it closed?

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

Load (DC-13; 24 V) per contact	<= 0,1 A	<= 1 A	<= 2 A
Max. lifetime [years]	20	20	20
Category	4	4	4
PL	e	e	e
PFHd [1/h]	1,2E-08	1,2E-08	1,2E-08
nop [Cycles per year]	<= 500.000	<= 350.000	<= 100.000

Safety Characteristics according to EN 62061 / EN 61508

Calculation under the following conditions:

Days of operation per year: 365; Hours of operation per day: 24; Switching-cycle per hour: 1; Maximum load AC-15 / DC-13

Max. lifetime [years]	20
Proof test interval [years]	20
PFH [1/h]	3,31E-10
PFDAVG	2,87E-05
SILCL	3

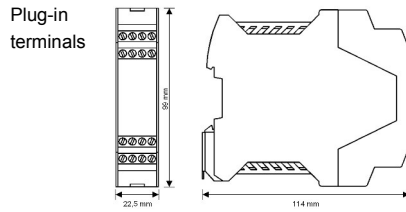
Advice: For other applications than described, please contact the manufacturer for further information.

Technical data

In compliance with	EN 60204-1; DIN EN ISO 13849-1; EN 62061; IEC 61508 Parts 1-2 and 4-7; IEC 61511-1; EN 50156-1; EN 746-2 (only TE-OR3D)
Operating voltage	DC 24 V
Allowable tolerance	+ / - 10 %
Number of modules per safety output of the basic module	Max. 5 modules
Safety contact	3 NO
Auxiliary contacts	1 NC
Switching voltage max.	AC 250 V
Contact rating of safety contacts (13-14, 23-24, 33-34) (6 switching cycles/ min)	AC: 250 V, 2000 VA, 8 A for resistive load 250 V, 5 A for AC-15 DC: 30 V, 240 W, 8 A for resistive load 24 V, 4 A for DC-13
Cumulative current	Max. 15 A (13-14, 23-24, 33-34)
Contact rating of auxiliary contact (41-42)	AC: 250 V, 500 VA, 2 A for resistive load DC: 30 V, 60 W, 2 A for resistive load
Minimum voltage/ current	24 V, 10 mA
External fuses for safety contacts	10 A gG 6 A gG for applications acc. to EN 50156-1 (See Chapter 10.5.5.3.4)
Wire width	0.14 - 2.5 mm ²
Contact material	AgSnO ₂
Service life	mech. approx. 1 x 10 ⁷ cycles
Rated impulse withstand voltage	2.5 kV (control voltage / contacts)
Dielectric strength (EN 60664-1)	6 kV between safety relays contacts, control lines and internal logic
Rated insulation voltage	250 V
Protection	IP20
Temperature range	-15 °C up to +55 °C
Degree of pollution	2 (EN 60664-1)
Overvoltage category	3 (EN 60664-1)

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Dimension Drawing



Varianten

Order No. 472610	TE-OR3, DC 24 V,	without plug-in terminals
Order No. 472620	TE-OR3D, DC 24 V,	without plug-in terminals
Order No. 472590	Bus connector TALOS	
Order No. 472592	EKLS4, plug-in screw terminals kit	
Order No. 472593	EKLZ4, plug-in spring-cage terminals kit	
Order No. 474610	TE-OR3, DC 24 V,	incl. plug-in screw terminals
Order No. 474620	TE-OR3D, DC 24 V,	incl. plug-in screw terminals
Order No. 475610	TE-OR3, DC 24 V,	incl. plug-in spring-cage terminals
Order No. 475620	TE-OR3D, DC 24 V,	incl. plug-in spring-cage 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 Product Name Nom du produit	Anbringung der CE-Kennzeichnung Affixing of CE marking: Application du marque CE	Zertifikats-Nr. No of Certificate N° du certificat
SRLC.....	2016.....	01/2005/5463.01/16
SR2C.....	2016.....	01/2005/5463.01/16
SR3C.....	2016.....	01/2005/5463.01/16
SR3D.....	2016.....	01/2005/5463.01/16
SK3D.....	2016.....	01/2005/5463.01/16
TE-OR3.....	2016.....	01/2005/5463.01/16
TE-OR3D.....	2016.....	01/2005/5463.01/16

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>>

2014/30/EU : EMV Richtlinie
 2014/30/EU : EMC directive
 2014/30/EU : Directive <<CEM>>

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 der benannten Stelle:
 According to the certificate of the below mentioned organisation:
 Selon de organisme notifié:

EN 62061:2005 +AC:2010+A1:2013+A2:2015 **DIN EN ISO 13849-1:2015**
IEC 61508 Parts 1-2 and 4-7:2010 **IEC 61511-1:2016**
EN 50156-1:2015 in extracts (SR3D, SK3D, TE-OR3D) **EN 746-2:2010** in extracts (SR3D, SK3D, TL-OR3D)

Benannte Stelle / Organisme notifié: Nr. NB 0035
 TÜV Rheinland Industrie Service GmbH
 10882 Berlin
 Zertifizierungsstelle für Maschinen

Dokumentationsbeauftragte/r: Christianc Nitschalk
 Documentation manager
 Autorisé à constituer le dossier technique

Aachen, den 27.07.2016

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 Ver. A
 E61-058-00