



Instruction Manual
Electronic Circuit Protector

ESX10-TA/-TB-DC 24 V-...-E / ESX10-TC-DC 12 V-...-E



Warning
This device is only suitable for operation at **12 V DC/24 V DC** (safety extra-low voltage). Direct connection of such devices to a 110 V, 230 V or 400 V AC power system or to power systems with a higher voltage may lead to death or severe personal injury or substantial property damage. Only qualified personnel should work on or around this equipment. The product will function correctly and safely only if it is transported, stored, set up and installed as intended.

Caution
Electrostatically sensitive devices (ESD).
Devices must exclusively be opened by the manufacturer.

Disposal guidelines
Packaging can be recycled and should generally be brought to re-use.

Note
More detailed information can be obtained from local E-T-A subsidiaries or from the homepage www.e-t-a.de. The product is subject to technical changes. In case of doubt the German version takes precedence. If used under Ex conditions, this device must only be operated if the immediate environment is verifiably not classified as a hazardous area. Special precautions must be taken in the system or machine (e.g. by use of a suitable safety PLC) which reliably prevent an automatic re-start of parts of the system (cf. Machinery Directive 2006/42/EC and EN 60204-1, Safety of Machinery). In the event of a failure (short circuit/overload) the load circuit will be disconnected electronically by the ESX10.

Mounting method
The ESX10 circuit protector can be plugged onto the power distribution modules 17plus and 18plus. The modules 17plus and 18plus can be mounted on a symmetrical rail EN60715-35x7.5. **The device must only be plugged in or removed in dead-voltage condition.** Please observe the marking of the ESX10 signal inputs / outputs as well as connection diagrams etc. Before start-up, the cables need to be marked correspondingly to avoid reverse polarity. The user has to ensure that the cable cross section of the load circuit in question complies with the current rating of the ESX10 used. In the event of EX applications it has to be ensured that protection degree IP54 is reached after installation in an UV-protected, closed room/control cabinet. IEC/EN 60079-0, IEC/EN60079-7, IEC/EN60079-14 and IEC/EN60079-15 have to be observed upon installation.

Safety
This device is not protected against reverse polarity of the input voltage. The device has to be protected against overvoltage > 30 V / 32 V. **Danger of explosion:** Incorrect connection of cables can cause ignition. The output and the device are protected by an internal, non-exchangeable blade fuse. Use in aggressive mixed media was not tested.

1. Description ESX10-Tx
The plug-in type ESX10-Tx electronic circuit protector selectively disconnects 12 V DC / 24 V DC load circuits by responding faster than the switch mode power supply to overload conditions. The manual ON/OFF switch on the device itself allows start-up of certain individual load circuits. As soon as the ESX10-Tx detects overload or short circuit in its load circuit, it blocks the load output transistor and disconnects the current flow in the faulty circuit. After remedy of the failure, the load output of the ESX10-Tx is re-activated by an electronic reset signal or manually by actuating the ON/OFF button.

2. Technical data
Operating data
Operating voltage U_B 12 V DC/ 24 V DC

General data
Fail-Safe-Element back-up fuse for ESX10-T not required, due to integral redundant fail-safe element (protective element)

Mounting
Ambient temperature 0...+50 °C (without condensation, cf. EN 60204-1)
Storage temperature -20...+70 °C

Time/current characteristic curve (TA = 25 °C)

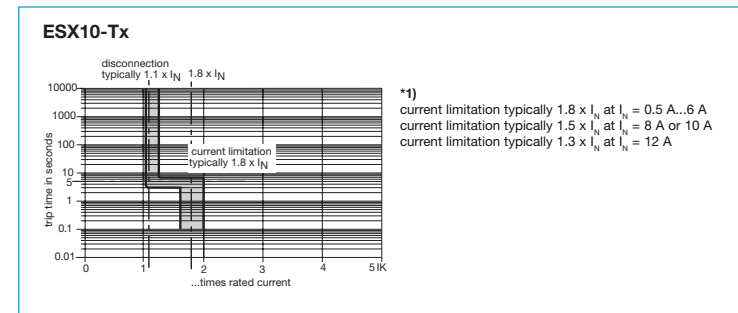


Table of max. current load when mounted in series:

Ambient temperature	Current rating (A)								
	0.5	1	2	3	4	6	8	10	12
25 °C	0.4	0.8	1.6	2.4	3.2	4.8	6.4	8	9.6
40 °C	0.4	0.8	1.6	2.4	3.2	4.8	6.4	8	9.6
50 °C	0.4	0.8	1.6	2.4	3.2	4	5.6	7.2	8.6
60 °C	0.3	0.7	1.3	2	2.6	3.5	5.2	6.5	7.8

For max. current when single mounted please see technical datasheet

Standards:

Degree of protection	to EN60529 enclosure IP30, terminals IP00
EMC	emitted interference to EN61000-6-3, noise immunity to EN61000-6-2:
Insulation co-ordination	0.5kV/ pollution degree 2, reinforced insulation in the operating area to IEC60934 / IEC60664
CE Logo	to 2014/30/EU 2014/34/EU 2011/65/EU
ATEX	IEC / EN 60079-0 : 06/2014 IEC / EN 60079-7 : 08/2016 IEC / EN 60079-15: 02/2011 EPS 18 ATEX 1 127 X IECEX EPS 18.0059X Ⓜ II 3G Ex ec IIC T4 Gc (devices without relay) Ⓜ II 3G Ex ec nC IIC T4 Gc (devices without relay)

3. Status indication
Multi-coloured LED
green: - device is ON (S1 = ON)
- load circuit/Power-MOSFET connected
orange: - overload or short circuit until electronic disconnection
- load circuit/Power-MOSFET disconnected
red: - undervoltage
- after switch-on until the end of the switch-on delay period
OFF: - manually switched off (S1 = OFF) or device is dead-voltage, status output SF (option) potential-free auxiliary contact F (option) ON/OFF position of the switch S1

Terminals	LINE+/LOAD+/0V
screw terminals	M4
max. cable cross section rigid and flexible	0.5 - 16 mm ²
flexible with wire end ferrule w/wo plastic sleeve	0.5 - 10 mm ²
wire stripping length	10 mm
tightening torque (EN 60934)	1.5 - 1.8 Nm
multi-lead-connection (2 identical cables) rigid/flexible	0.5 - 4 mm ²
flexible with wire end ferrule without plastic sleeve	0.5 - 2.5 mm ²
flexible with TWIN wire end ferrule with plastic sleeve	0.5 - 6 mm ²
terminals	aux. contacts
screw terminals	M3
max. cable cross section flexible with wire end ferrule w/wo plastic sleeve	0.25 - 2.5 mm ²
wire stripping length	8 mm
tightening torque (EN 60934)	0.5 - 0.6 Nm

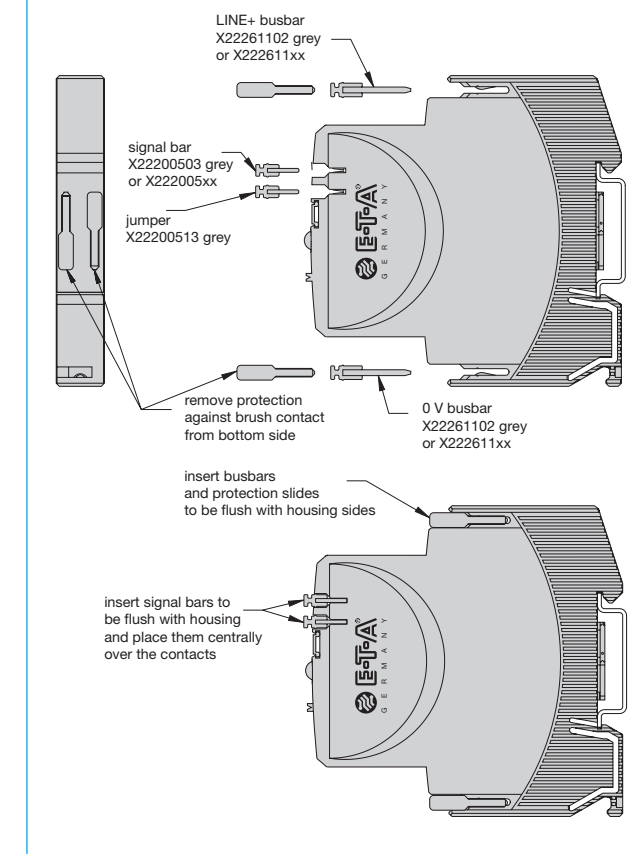
Mounting procedure:
Before wiring, insert busbars into protector block.
Max. 10 insertion/removal cycles for busbars.

Recommendation:
After 10 units the busbars and signal busbars should be interrupted and receive a new supply

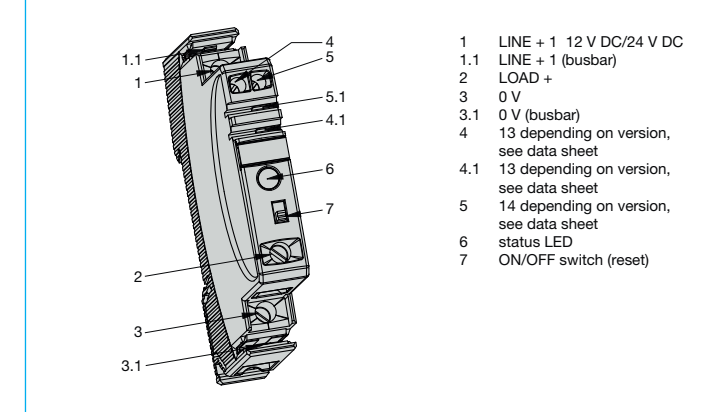
Table of lengths for busbars
(X 222 611 02 / X 222 005 03 or cut off, see accessories)

No. of units	2	3	4	5	6	7	8	9	10
Length of busbar (mm) ± 0.5 mm	22	34.5	47	59.5	72	84.5	97	109.5	122

5. Mounting Examples for ESX10-Tx



6. Pin assignment ESX10-Tx



ESX10-TC-DC12V
<http://www.e-t-a.de/qr1007/>



ESX10-Tx-DC24V
<http://www.e-t-a.de/qr1006/>

