ESX10 electronic circuit protectors
The suitable solution for any application
Active current limitation – unrivalled system availability

Correct protection of loads supplied by switch mode power supplies holds certain challenges. Switch mode power supplies are limited in power and in the event of a failure, they can only supply limited current. A conventional MCB requires a multiple of its own current rating to ensure timely trip in the event of a failure. This makes the use in standard protection solutions provided by MCBs problematic. Switch mode power supplies often are not able to supply the required trip current in the event of a failure.

E-T-A’s ESX10 portfolio has an electronic trip characteristic to ensure optimum protection in the event of a failure. The trip curve of the ESX10 devices also includes an active current limitation. It provides limitation of the fault current to a firmly defined value.

A simple rule of thumb for electrical planning can be as follows:

Trip current = maximum current = 1.8 times rated current

It allows easy calculation of the effects of short circuit or overload in the load circuit so that they can be taken into account already in the planning stage.

The magnetic trip range of an MCB with C characteristic (45 A ... 90 A) is not always within the allowed overload range of the 20 A power supply: the DC 24 V output voltage breaks down.

The electronic trip range is within the admissible overload range of the 20 A power supply – The DC 24 V supply remains stable.
For many applications, single or group signalling of the protection devices is a must so as to ensure uninterrupted monitoring of the protected load circuits. The ESX10 portfolio offers a range of signalling and alerting options. These include conventional, potential-free break contacts, make contacts and changeover contacts or also pure status outputs in standard or negative version. For all requirements, the ESX portfolio holds the suitable product version. In addition, there are remotely controllable versions available with reset function in the event of a failure and with complete controllability.

**ESX10**
- Signalling, remote functions, fixed current ratings
- 0.5 A ... 16 A

**ESX10-TA-24 V**
- Fixed current ratings
- 0.5 A ... 12 A

**ESX10-TC-12 V**
- Remote functions, fixed current ratings
- 1 A ... 10 A

**ESX10-S**
- Signalling, remote functions, adjustable current ratings
- 1 A ... 10 A

**ESX10-TB-24 V**
- Signalling, remote functions, fixed current ratings
- 0.5 A ... 25 A

**ESX10-TC-48 V**
- Voltage range
- 18 V ... 60 V, signalling, fixed current ratings
- 0.5 A ... 16 A

**ESX10-TC-12 V**
- Voltage range
- 18 V ... 60 V, signalling, fixed current ratings
- 0.5 A ... 10 A

**ESX10-TC-48 V**
- Voltage range
- 18 V ... 60 V, signalling, fixed current ratings
- 0.5 A ... 16 A

**ESX10-TB-24 V**
- Signalling, remote functions, adjustable current ratings
- 0.5 A ... 25 A

Your benefits

- **Increases machine uptime** through clear failure detection and stable power supply
- **Simplifies planning** through clear sizes and ratings
- **Saves costs and time** through fast and flexible mounting including integral power distribution
Plug-in type electronic circuit protectors
ESX10 and ESX10- S

<table>
<thead>
<tr>
<th>Technical data</th>
<th>ESX10</th>
<th>ESX10-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>DC 24 V (18... 32 V)</td>
<td>DC 24 V (18 ... 32 V)</td>
</tr>
<tr>
<td>Rated current</td>
<td>0.5 A ... 10A</td>
<td>1.0 A ... 10 A</td>
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<tr>
<td>Adjustable</td>
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<td></td>
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<tr>
<td>Overload factor</td>
<td>1.1 x I_N</td>
<td>1.2 x I_N</td>
</tr>
<tr>
<td>Overload trip time</td>
<td>3 s</td>
<td>3 s</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>1.8 x I_N</td>
<td>1.4 x I_N</td>
</tr>
<tr>
<td>Short circuit trip time</td>
<td>100 ms - 3 s</td>
<td>100 ms - 3 s</td>
</tr>
<tr>
<td>Capacitive load</td>
<td>75.000 µF</td>
<td>40.000 µF</td>
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<tr>
<td>Ambient temperature</td>
<td>0 °C ... +50 °C</td>
<td>-0 °C ... +50 °C</td>
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</tbody>
</table>

Signalling
- Make contact
- Change-over contact
- Status output
- Input remote ON/OFF
- Input remote reset

The plug-in types ESX10 and ESX10-T allow fast and flexible mounting of the devices and create more space for planning. Wiring of the terminal blocks can be done in advance. The circuit protectors can even be plugged in only a few moments before start-up. In addition they make adjustment of current ratings to changing load conditions easy. Thanks to an electronic trip curve with active current limitation, all loads can selectively be protected.

At a width of only 12.5 mm, ratings up to 16 A are available, so that even powerful loads can be protected without problems.

Compatible power distribution: Module 17plus and Module 18plus

ESX10 and ESX10-S electronic circuit protectors are suitable for mounting on the power distribution modules Module 17plus and Module 18plus. These modular terminal blocks allow fast and clearly laid-out wiring and make set-up of load distribution easy. Mounting is directly on the symmetrical rail, the modular design enables adjustment to varying requirements. By means of plug-in type busbars, protection and potential distribution solutions for up to 80 A total current can very quickly be set up.
Plug-in type electronic circuit protectors

Flexible in use

Applications
- Automation
- Car production
- Chemistry, oil and gas
- Steel industry
- Power plants
- Renewable energies
- Pharmaceuticals and foodstuffs

Schaltnetzteil
Power supply
24 V

0.5A
2A
3A
6A
6A
2A
3A
0.5A

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Electronic circuit protectors for rail mounting

ESX10-Tx

<table>
<thead>
<tr>
<th>Technical data</th>
<th>ESX10-TC12V</th>
<th>ESX10-TA</th>
<th>ESX10-TB</th>
<th>ESX10-TD</th>
<th>ESX10-TC48V</th>
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</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>DC 12 V (9 ... 18 V)</td>
<td>DC 24 V (18 ... 32 V)</td>
<td>DC 24 V (18 ... 32 V)</td>
<td>DC 24 V (18 ... 32 V)</td>
<td>DC 48 V (18 ... 60 V)</td>
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<tr>
<td>Rated current</td>
<td>1 to 10 A</td>
<td>0.5 A to 12 A</td>
<td>0.5 A to 25 A</td>
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<td>1 A to 16 A</td>
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<tr>
<td>Overload factor</td>
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<td>1.1 x Iₙ</td>
<td>1.1 x Iₙ</td>
<td>1.1 x Iₙ</td>
<td>1.2 x Iₙ</td>
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<td>3 s</td>
<td>&lt; 500 ms</td>
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<td>1.8 x Iₙ</td>
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<td>1.4 x Iₙ</td>
<td>1.2 x Iₙ</td>
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<td>&gt; 6 ms</td>
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<td>Capacitive load</td>
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<td>75.000 µF</td>
<td>75.000 µF</td>
<td>75.000 µF</td>
<td>&gt; 5.000 µF</td>
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<td>-25 °C ... +60 °C</td>
<td>-25 °C ... +60 °C</td>
<td>-25 °C ... +60 °C</td>
<td>-25 °C ... +60 °C</td>
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<td>Signalling</td>
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<td>Make contact</td>
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<tr>
<td>Input remote reset</td>
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The ESX10-Tx compact electronic circuit protectors have integral power distribution and are track-mountable. Due to their versatility and their electronic trip curve with active current limitation, they are suitable for protection of all DC 12 V, DC 24 V, DC 36 V and DC 48 V load circuits. By means of busbars, you can build up multi-channel solutions with modular devices. This reduces the wiring efforts significantly. Signal busbars allow easy configuration of single or group signalling. Both the mechanical design and the internal design of the component allow a negative load feedback directly to the module.

In addition, very powerful loads with current ratings up to 25 A can also be protected without problems. The ESX10-TD versions provide additional flexibility with adjustable current ratings. The entire ESX10-T portfolio meets the requirements of a range of international standards and is therefore fit for global use.
Electronic circuit protectors for rail mounting
A compact protection solution

The ESX10-T electronic circuit protector is the comprehensive solution for symmetrical rail mounting. It comprises current protection, active current limitation and selective protection from DC 12 V to DC 48 V load circuits in one compact device.

Applications
- Automation
- Car production
- Machine construction
- Renewable energies
- Pharmaceuticals and foodstuffs

Exemplary solutions for packaging machines

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### Overview

#### Approvals

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#### ATEX/IECEx

For global use in all kinds of systems and plants, approval to specific standards for explosion-protected areas becomes more and more important. The use of approved components allows decentralised use of the systems within an EX zone. This avoids complicated laying of externally supplied lines. Devices of the **ESX10 portfolio** with the suffix -E have an approval for use in **Ex zone 2 to ATEX and IECEx**.

In addition, the circuit protector is approved to **Class I, Div 2** for use in North America. These devices are available as plug-in types to go with power distribution systems **Module 17plus** and **Module 18plus** and as track-mountable types.

#### Typical applications:

- Chemical industry
- Pipeline construction
- Production of oil & gas (also offshore)

- Refineries
- Paint shops

### Diagram

- **Zone 0**: Gas mixture always present or over longer periods of time or frequently
- **Zone 1**: Gas mixture occasionally present in normal duty
- **Zone 2**: Gas mixture not present in normal duty or only for a short time

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