

SOLUTIONS

for the machine building industry



WELCOME TO E-T-A

E-T-A was founded in 1948 and is the market leader in the overcurrent protection and power distribution area today. In our four production factories in Germany (Altdorf and Hohenfels), Tunisia and Indonesia, we produce a wide range of circuit breakers and electronic circuit protectors, power relays and system solutions for the global markets.

One thing is always at the heart of our endeavours: E-T-A products protect lives and assets. In everything we do, with each and every unit we produce that our customers install in their applications, we protect man and machine against the effects of overcurrent and short circuit.

For this purpose we offer mechanical and electronic solutions, single components or entire systems, standardised or customer-specific products. We ensure that the current, without which our modern life is simply unthinkable, remains manageable.

We know that you want to offer your customers the best possible solution. You'll manage even better by using E-T-A's high quality solutions. We hope to make the world a little safer by supporting you with our products.

Please do not hesitate to get in touch.

Christian Kube
Managing Director Operations

Dr. Jennifer Sell
Managing Director

Ralf Dietrich
CTO / Sales and Product Development

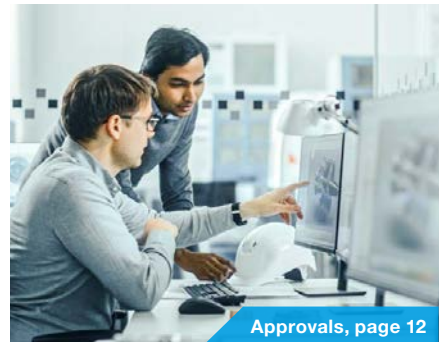
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WHAT CAN WE DO FOR YOU?

E-T-A solutions for the machine building industry

Requirements regarding machine uptime and production process transparency are constantly rising. The more automation technology is used in production, the higher the requirements regarding the power supplies - also in the DC 24V and DC 48V sector.

The control voltage in the DC 24 V or DC 48 V range is becoming more and more attractive. Control systems, sensors, actuators, safety and drive engineering systems are powered with DC 24 V. You can only ensure a stable power supply when all necessary components are perfectly complementing each other, including the AC protection as well as the switch mode power supply and the DC over-current protection. The combination of these components form the heart of each automation application and ensure trouble-free machine operation. The number of smart communication protection systems used here is constantly rising. These systems are the basis for targeted condition

monitoring solutions and remote maintenance. All users strive for maximum machine uptime which can only be achieved when all components match each other so that they work together perfectly.

E-T-A provides customer-specific protection in a compact design.

E-T-A products for the machine building industry are professional and approved solutions for injection-moulding machines, machine tools, assembly and processing systems, packaging machines and warehouse automation. E-T-A is in close contact with customers in the machine building sector and provides various components and complete solutions.







CONDITION MONITORING

for DC 24 V protection and power distribution

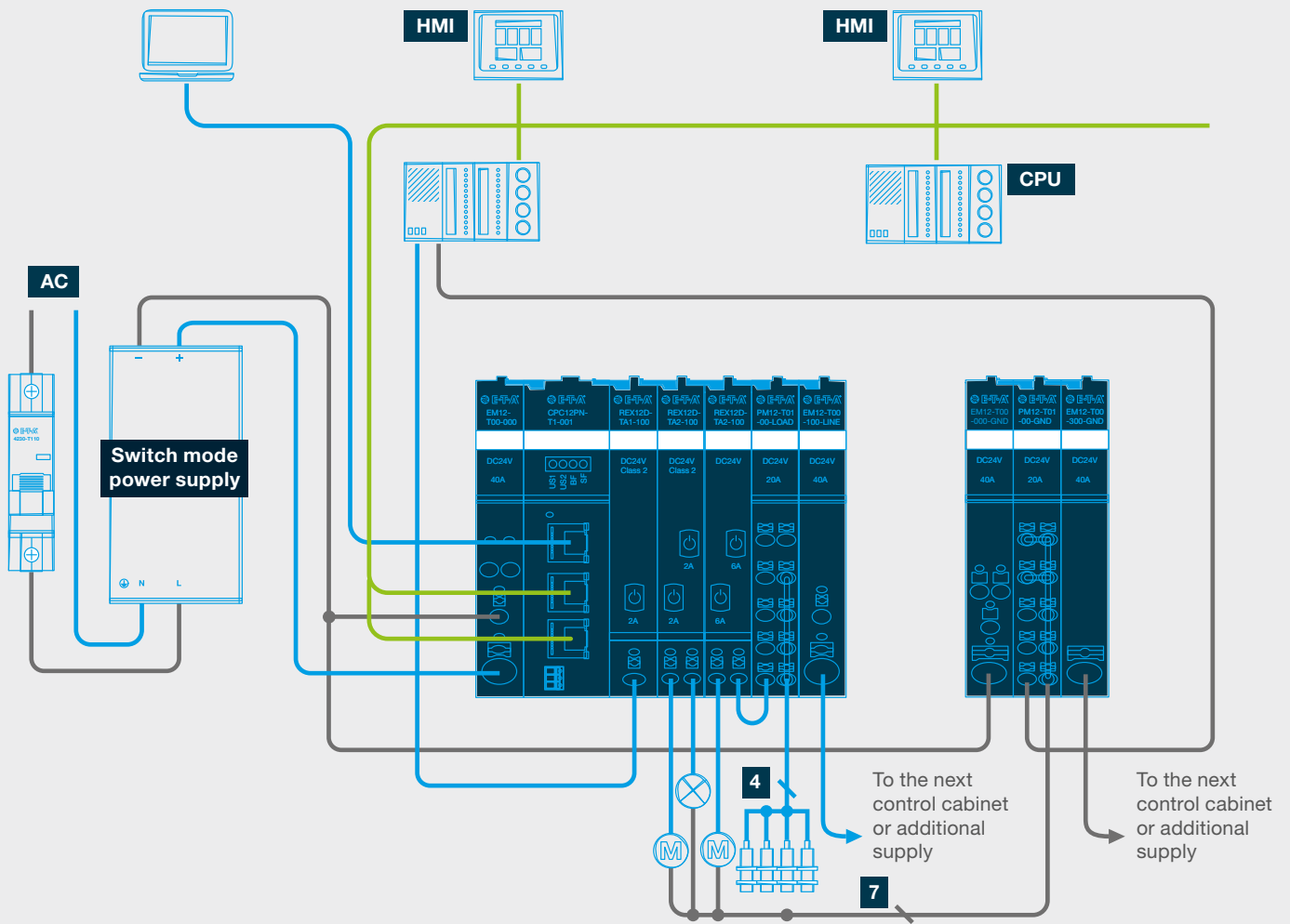
The fourth industrial revolution has a very special impact on the machine building industry. The overall goal is to increase machine uptime and product quantities via digitisation.

A central task of Industry 4.0 is to further increase machine availability and output quantities by means of digitisation solutions. Collecting, saving and

evaluating various machine and system data and creating a digital twin are prerequisites for such comprehensive maintenance concepts. Data is the resource of the future. An optimised, condition-based maintenance strategy requires permanent monitoring, so-called "condition monitoring". The intelligent and communicative protection and power distribution solution of the REX system helps collect data in a

targeted way for the DC 24 V range - the heart of each automation solution. By means of different protocols, these data are transmitted to the superordinate control level.





STATUS INDICATION

Status indication	Short circuit	Overcurrent

CONTROL UNIT

Control ON	Control OFF	Control RESET

DATA LOGGING

Load current	Load voltage	Input voltage

PARAMETRISATION

Current rating adjustment	Limit value

DATA ANALYSIS

Limit value	Current curve	Voltage curve



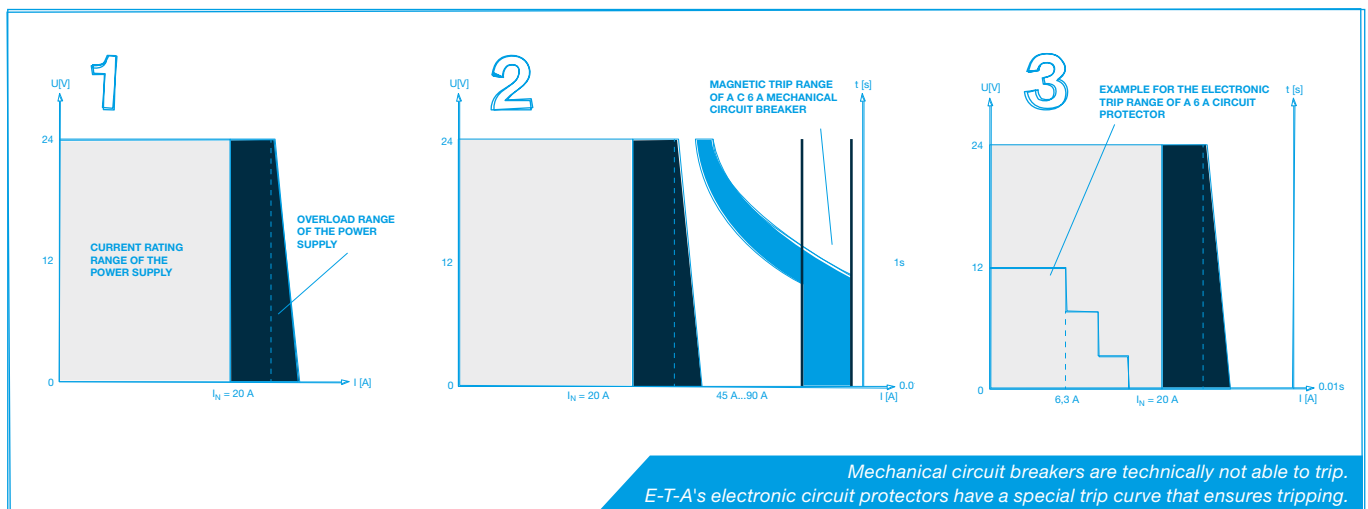
ELECTRONIC OVERCURRENT PROTECTION

for a selective protection of DC 24 V and DC 48 V switch mode power supplies

Switch mode power supplies have meanwhile become state-of-the-art in the DC 24V and DC 48V systems of the machine building industry and are actually indispensable. They feature a compact design and high reliability in permanent operation. However, in the overload range they can offer only very limited power reserves, normally, at only 1.5 times rated current.

Even if an overload or short circuit theoretically exceeds this value, the power supply would practically protect itself and turn down the output voltage correspondingly. All loads supplied from here, including the sensitive control unit, are no longer supplied, resulting in undefined machine

conditions. If an MCB is operated at such an output for protection purposes, this MCB is technically not capable to trip. The current required for an MCB to trip simply cannot be provided by the power supply. E-T-A's electronic circuit protectors have a special trip curve that ensures tripping nevertheless. All load paths that are not affected are reliably supplied. Selective error detection features fast troubleshooting and excludes undefined machine conditions. This significantly increases machine uptime.







TIME AND SPACE SAVINGS OF 70 %
Compact and flexible overcurrent protection and power distribution concepts

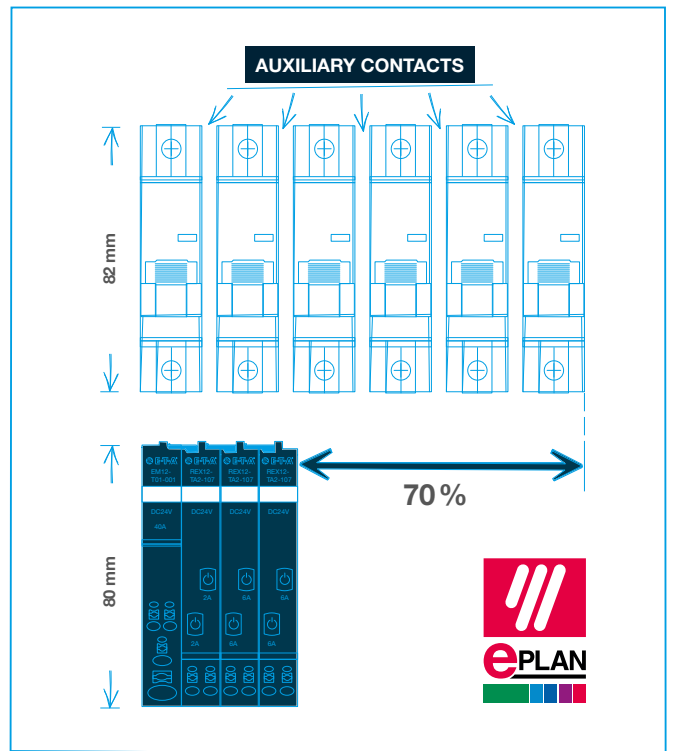
E-T-A's overcurrent protection and power distribution concepts are extremely compact and flexibly designed. The 12.5 mm slim and only 80 mm high devices enable modular, tool-free and time-saving wiring and adjustment of your DC 24 V and DC 48 V protection.

Saving space in control cabinets is an important subject in the machine building industry. Many end customers not only want smaller control cabinets, but also additional space reserves of at least 20 % to 30 %, to be able to easily modify or extend the system in retrospect.

With modular electronic circuit protectors, the user saves up to 70 % space in the control cabinet. For an easy application integration, we also provide ePlan macros in the EDS format.



E-T-A circuit protectors save space up to 70 %



APPROVALS

Individually usable worldwide

Circuits require protection against the impacts of overcurrent. The "overcurrent protection of control circuits" (section 7.2.4 of DIN VDE 0113-1) says that circuits must be protected against overcurrent with overcurrent protection equipment.

For cable protection, not only the type of installation and the ambient temperature must be taken into account, but also the maximum conductor capacity. The capacity depends on the cross section and thus on the maximum current per time (I^2t value) e.g. in the event of a short circuit. Users in the machine building industry have to strictly observe the harmonised European standard DIN EN 60204-1 (VDE 0113-1).

UL CERTIFICATIONS ON BOARD

A lot of machinery and equipment manufactured in Europe is in the end delivered to North America. For this market, it is paramount to have components approved according to UL standards which are accepted both by European and North American UL inspectors. E-T-A offers a wide range of overcurrent protection devices with approvals for the international market. Besides the UL489, UL508, UL1077, UL2367, UL1310 and NEC Class2, these devices meet the requirements of cable protection according to EN60204-1.



NEC Class2







SOLUTIONS for injection-moulding machines

COMPACT DIGITISATION

Innovations regarding availability and digitisation are decisive for the injection-moulding industry. The challenges for the DC 24 V protection and condition monitoring systems are increasing tremendously. Permanent transmission of status information and current and voltage measuring data via the E-T-A **ControlPlex**[®] Controller is the basis for a well-designed condition monitoring system. The data transmission via IO link features easy implementation into the superordinate control system. Machine availability must be significantly increased. Consistent "digitisation" of the entire

machine and creating a "digital twin" combined with AI algorithms are prerequisites for a targeted maintenance strategy. This allows a cost-saving and stable operation. The REX system for DC 24 V applications is highly attractive thanks to its facilitated extension option for customer-specific special solutions and thanks to its flexible usability. It is suitable for a modular and space-saving implementation into the control cabinet.





YOUR BENEFITS

- Increased **machine availability**
- IO link based **condition monitoring**
- Compactness, facilitated mounting, modularity and easy handling

REX SYSTEM

DC 24 V protection and power distribution with IO link



NEC Class2 according to UL1310
up to 4 A



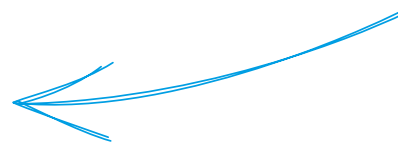
SOLUTIONS

for machine tools, assembly
and processing systems

E-T-A's electronic circuit protectors are connected to the superordinate control via the **ControlPlex**® Controller and help increase transparency. This allows fast reaction to changing conditions in the application, increasing the productivity of every machine in the DC 24 V **ControlPlex**® complete system.

HIGHER PRODUCTIVITY ON A SMALL FOOTPRINT

A machine's footprint costs money, every day. The compactness of the machine starts in the metal lathe and ends in the control cabinet. The design engineers highly feature a compact design for all control cabinet components. This is also an important factor for the selection of the DC 24 V protection and power distribution solution. E-T-A's REX12D / REX22D circuit protectors for up to 20 A rated current convince with their modular and compact design. They highly contribute to the overall space savings.



EtherCAT

EtherNet/IP

PROFINET

Modbus

IO-Link



YOUR BENEFITS

- **Increased productivity** through high transparency and remote diagnosis thanks to IO link technology
- **Easy PLC integration** through pre-cut functional modules and libraries
- **Space-saving** through a modular and compact design

ControlPlex®

Transparency and communication

Integral power distribution solution for +24 V and GND

Adjustable and fixed current ratings up to 20 A

The web server as maintenance interface

Optional power distribution

Fieldbus communication via PROFINET, EtherCAT, EtherNet/IP, Modbus-TCP and IO link

Supply of different voltage potentials



NEC Class2 according to UL1310
up to 4 A



SOLUTIONS

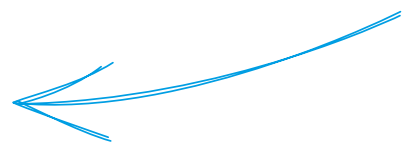
for packaging machines

STABLE OPERATION THROUGH EFFICIENT PROTECTION SOLUTIONS

The packaging machine sector demands absolute flexibility of their components due to the different requirements. The modular single pole ESX10-T circuit protector for DC 12V-, DC 24V- and DC 48 V applications provides this flexibility and can be individually adjusted to the respective application. These circuit protectors also feature high space-savings thanks to the integral power distribution. This efficient ESX10-T protection solution with active current limitation ensures the highly required supply stability. Even DC drives with high inrush currents can be protected without compromise. This reliability is one of the prerequisites for the high availability and production quantity of a packaging machine.

EFFECTIVELY PROTECTED WORLDWIDE

The ESS31-T circuit breaker for DC 24 V applications does not only meet the requirements of the UL 1077 as „Supplementary Protector“ and UL1310 »Class2 Power Unit«, but is also compliant to EN / IEC 60934 and thus globally approved. It combines the standard compliance with an effective protection of DC 24 V circuits. After tripping due to a short circuit or an overload, the circuit protector indicates the status via the red LED. The green LED indicates the OK status. The visualisation allows clear detection of defective circuits. The device can be easily switched on or off or reset after an error via push button. This well-designed handling facilitates trouble-shooting and provides high system availability.





YOUR BENEFITS

- **Individual use worldwide** thanks to comprehensive international approvals
- **Increased stability** of the DC 12V, DC 24V and DC 48V supply through integral linear current limitation
- **Reduced complexity** of the application through an integral wiring solution

ESX10-T

with active current limitation

ESS31-T

provides standard compliant and effective protection

Integral power distribution solution for +24V and GND

Current ratings up to 25 A

DC12V, 24V and 48V

Optional remote and signal functions

Physical isolation

Screw terminals up to 16 mm²

Push button and LED



US NEC Class2 according to UL1310
up to 4 A



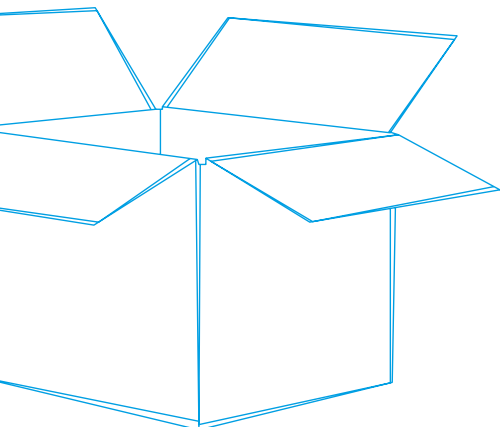
SOLUTIONS

for intralogistics, warehouse automation and conveyor technology

RELIABLE PROTECTION AGAINST SHORT CIRCUITS AND OVERLOAD

In the fourth industrial revolution era, flexible and quickly adjustable automation technology plays an important role. Conveyor systems for a reliable product transport are indispensable. In addition to electronic circuit protectors, E-T-A's mechanical circuit breakers are also often used for protecting different voltage potentials. The 1180, 2210-T or 8340-T circuit breakers reliably protect system components

against short circuits and overload. The devices are very compact and can be flexibly used worldwide thanks to their many approvals. Mechanical solutions provide high current ratings and can be used either in AC or DC networks.



1180
Thermal circuit breaker

Plug-in mounting

Only 8.2 mm

Reset function





YOUR BENEFITS

- **Space-saving** through modular and compact devices
- **Global use** thanks to many different approvals
- **Various application options** through AC and DC compatibility

2210-T

Thermal-magnetic circuit breaker

Only 12.5 mm
incl. auxiliary contact



Current ratings up to 32A

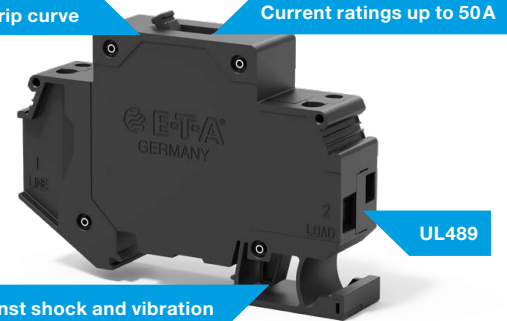
Approvals:
VDE, UL, CSA, CCC, KC, GL

8340-T

Hydraulic-magnetic circuit breakers

Temperature-
independent trip curve

Current ratings up to 50A



UL489

Resistant against shock and vibration



WORLDWIDE

Our production and sales network



You can find information about our contact persons worldwide here:
www.e-t-a.de/contact

You can find information about our premium partners in Germany here:
www.e-t-a.de/premiumpartner



Our E-T-A

Sales subsidiaries

- | | |
|-----------|-----------|
| Australia | UK |
| France | China |
| Austria | Japan |
| Spain | Singapore |
| Benelux | USA |
| Italy | |



4 production facilities

Germany

- Altdorf (1948)
- Hohenfels (1961)

Tunisia

- Akoula (1977)

Indonesia

- Surabaya (1996 & 2007)



