

## Cover Story

**ControlPlex<sup>®</sup> Board** including IO-Link  
Parameterisable DC 24 V power distribution  
with diagnostic functions

## Switching high currents

Power Relays MPR10/HPR10

## Interlinking

power plants



### There's method in our innovations

E-T-A Director  
Dr. Clifford Sell on modern  
methods to achieve  
genuine innovations



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Power Relays MPR10/HPR10  
Switching high currents



## 6/7

**ControlPlex®** Board  
including IO-Link



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## 10

FAQ – Frequently Asked Questions  
All you ever wanted to know about  
E-T-A products



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Typically Austrian:  
“Kaiserschmarrn with plum sauce”

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**ControlPlex®** Board with CPC10IO-Modul,  
equipped with electronic circuit protector  
ESX50D-S

## Impressum

**Current**, Customer Magazine of  
E-T-A Elektrotechnische Apparate GmbH

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At times when innovation is the only way to ensure continuous business success, companies must leave the old well-trodden paths. Anyone relying on the same tools and procedures for product design will continue to see the same results.



The Vienna-based LEAD Innovation Management GmbH helps us narrow down the questions in intensive workshops and we gradually approach genuine innovations.

This process, along with other tools, is allowing us to launch more new products this year than ever before. We look forward

E-T-A strives to be an innovative supplier of state of the art German engineering and products. Following our motto “Engineering Technology” we offer solutions, which eliminate complexity and make it easier for you to do your job.

to supporting you with your applications and questions. Do you have any current projects or tasks that an E-T-A solution can be used? Please do not hesitate to get in touch. We look forward to speaking with you.

We do not only rely on chance to do this. We use a range of modern methods to identify which products will be sought after

in the markets and what our customer expectations are. As an example, the LEAD User Method allows us to look at certain topics with particularly

Yours



Dr. Clifford Sell

Executive Committee

E-T-A Elektrotechnische Apparate GmbH

progressive users, the “LEAD Users”, and jointly look for exciting solutions. In addition, we talk to experts from the so-called “analog”, i.e. from the related areas, who often contribute fascinating new perspectives.

## There's method in our innovations



**At a glance - features and benefits of the power relays MPR10/HPR10**

- Water-proof and dust-proof IP67
- Side mount and foot mount
- Low weight (< 300 g)
- Long life-span
- High continuous current (300 A DC)
- Low current consumption and power loss
- Wide temperature range -40 °C...+85 °C
- Free-wheeling diode optional
- Protection against overheating optional
- Hybrid version with integral electronic control unit
- Barrier between main terminals

Power Relays MPR10/HPR10

# Switching high currents

Transportation efficiency, environmental friendliness and safety continue to drive trends in the commercial vehicle industry. These trends immediately affect the vehicle design process. Over the past few years, trucks, agricultural vehicles, buses and construction machinery have become more and more ecologically designed. The requirements are still growing and are a real challenge for the manufacturers and their design partners.

E-T-A is a long-standing supplier to the automotive industry and has a broad portfolio of automotive circuit breakers to ensure vehicle reliability and safety. Major manufacturers of commercial vehicles all over the world use components and systems designed by E-T-A.

E-T-A is further extending its product range to include power relays to switch high loads on/off. The new MPR10 and HPR10 power relays are designed for use in utility vehicles and passenger cars. Both relays can carry or switch up to 300 A continuous current in 12 V or 24 V DC on-board electrical systems and can tolerate current peaks of up to eight times rated current.

The number of loads in vehicles is constantly increasing which makes it necessary for designers to move toward energy-saving electrical loads. Power relays are often used as battery isolation switches directly in the main circuit. For this purposes the relay itself must consume a minimal amount of power. In the ON position, standard monostable power relays require more than 10 W of power to activate. E-T-A's MPR10 uses a bistable relay where only a short current impulse is required for switching. A permanent magnet, which requires no current, holds the contact in its position.



The new E-T-A power relays: **MPR10/HPR10**

It is easy to include bistable relay activation in a new vehicle concept. But what about replacing monostable relays in an existing system, where only a control signal with high (ON) or low level (OFF) is available (e.g. an artless ON/OFF switch)? E-T-A's HPR10 hybrid relay can solve this problem. The HPR10, which has the same form factor as the MPR10, also includes control electronics. It provides intelligent activation of the bistable electro-mechanical mechanism. This allows the microcontroller to take over more functions. The electronic control unit monitors the switching operation making preventive maintenance possible, checking the following questions: Is the mechanical switching operation actually completed? What current is flowing through the contact system? Will the contact system be overloaded? Has the operating temperature limit been reached or exceeded? Has the end of life span been reached?

To date, a similar diagnosis is not available with standard relays. A reaction is only possible after a complete failure. This is clearly too late because by then the entire electrical system is shut down incurring

downtime and high repair costs. The electronic control unit provides low voltage monitoring and also load-shedding. Timer functions, such as ON or OFF delay, can also easily be accomplished with the electronic control unit.

In addition to the functional properties, the weight of individual components is also important for manufacturers. Light-weight components are sought after in passenger car production. Design engineers in the utility vehicle market are also constantly looking for ways to reduce vehicle weight – including buses where every kilogram of weight must move.

E-T-A's power relays are fitted into modern fiber-reinforced moulded enclosures. This helps to significantly reduce the component weight compared to standard cup-type relays with metal enclosures and also to seal the relay against corrosive liquids used in commercial vehicles.

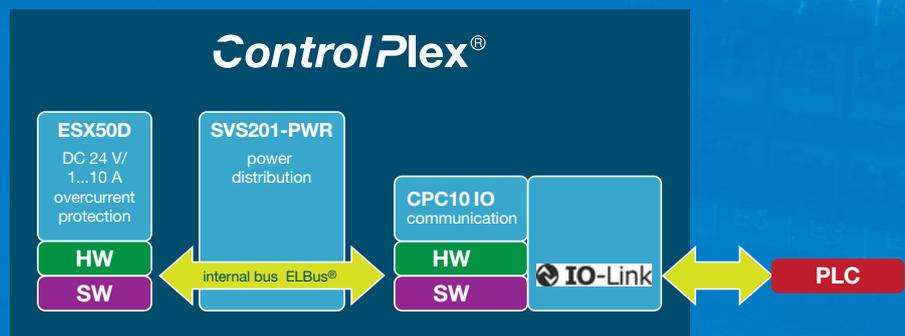
**E-T-A's new power relays MPR10 and HPR10 drive you safely into the future.**



More information?  
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**At a glance - customer benefits of *ControlPlex*® with IO-Link**

- Intelligence combined with power distribution - ensures a reliable DC 24 V control voltage and provides new diagnostic features on the machine level
- Integral wiring without additional distribution terminals - more space in the control cabinet, less installation costs
- Connection of max. 16 circuit protectors at a single IO-Link-port - helps to cut costs for digital I/O assemblies or additional field bus couplers
- Parameterisable electronic overcurrent protection with current limitation - prevents voltage dips in the event of a short circuit in the load circuit
- Genuine “Plug & Play” and “Hot Plug” included - allowing a fast start-up and system extension



Schematic diagram *ControlPlex*® with IO-link

The IO-Link-technology is a system-independent communication standard on the field level. An IO-Link is internationally specified according to IEC61131.9 and implemented into all field bus systems used in the market including: PROFIBUS, Profinet, Ethercat and Ethernet/IP. Until now, this technology was used with sensors and actuators in machine construction. Now the IO-Link-connection of the new SVS201-CP **ControlPlex**® power distribution board offers a continuous data channel, for all cyclical status and measuring data of the DC 24 V load circuits and for the non-cyclical data for parameterising and diagnosis of the entire system. This is important for all future requirements regarding condition monitoring and power management in machine construction.

### Optimal overcurrent protection with compact power distribution

The **ControlPlex**® system consists of the SVS201-PWR power board with max. 40 A rated current for 8 to 16 load circuits, the ESX50D-S electronic circuit protector, and the CPC10IO module for the IO-Link-communication. The ESX50D-S electronic circuit protectors are designed with integral current limitation and a unique trip curve for all types of loads. This ensures a stable DC 24 V control voltage without voltage dips in the event of short circuit or overload. The current rating can be adjusted via software or with an "OFFLINE" current rating adjustment directly on the protector via a 1 A...10 A selector switch. This allows purchasing departments to buy a single device that can protect loads requiring 1...10 A protection.

### Only one port is required on the IO-Link-master

The included description file (IODD) contains all information of the CPC10IO. The IO-Link-master engineering tool allows complete configuration of up to 16 ESX50D-S circuit protectors. Status indication and all measuring data for the DC 24 V system voltage, load current and load voltage directly go to the CPC10IO IO-Link-controller via the internal bus **ELBus**®.

Parameterisable DC 24 V power distribution with diagnostic functions

## ControlPlex® Board including IO-Link



Complete system **ControlPlex**® Board SVS201-CP with IO-link

The IO-Link-master of the PLC receives the multiplexed cyclical measuring values and status information via a single port. As easy and cost-effective as it could be.

### Power management included

Remote controllability of the individual DC 24 V load circuits and the adjustment of a switch-on delay and disconnection sequences via software are vital. The power supply will not be overloaded as resetting the DC 24 V loads is current-limited and is done sequentially. For service, maintenance, and power management of machinery and systems, it is possible to intentionally disconnect unnecessary loads and system parts. This helps to raise energy efficiency and to cut costs.

### A machine should run permanently

"Condition monitoring" allows continuous analysis of load currents and load voltage on the DC 24 V level. Deviations from normal duty, with regard to motor-driven loads, are detected early on and

can be handled on basis of just-in-time maintenance.

**Industry 4.0 at its best.**



For demonstration on site: our demo kit »**ControlPlex**® mit IO-Link«

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Individual applications with the subtle distinction

# Göttinger Sonderfahrzeugbau relies on **PowerPlex®**



Thomas Anhalt,  
Project Manager Design  
at GSF

The Göttinger Sonderfahrzeugbau GmbH & Co. KG (GSFB) specialises in enhancing and retrofitting vehicles for speciality applications. In close co-operation with their customers GSF develops innovative vehicle concepts - perfectly matched to the

application. Current talked to Thomas Anhalt of GSF about the use of **PowerPlex®** in their vehicles.



For many years, Göttinger Sonderfahrzeugbau has been manufacturing vehicles for emergency services. In more and more vehicles they rely on **PowerPlex®**.

**Current:** **PowerPlex®** is an intelligent bus system for power distribution, management and protection. What is the significance of such systems for you and your industry?

**Thomas Anhalt:** Smart power distribution is becoming a more and more relevant subject where electrical installations are required. Today it is "standard procedure" that an "intelligent" vehicle responds appropriately in various situations. This increasingly includes the electrical systems of conversions and retrofits.

**Current:** The integration of electrical/electronic systems is a core competence of GSF. What are the challenges you see?

**Thomas Anhalt:** Our product range is versatile. We offer service and repair vehicles, test and exhibitions vehicles as well as special vehicles for emergency services and organisations. We manufacture vehicles, almost exclusively, according to our customers' needs. Depending on the various set-up requirements, the complexity of the necessary control tasks will be different.

**Current:** What are the criteria for installing **PowerPlex®**?

**Thomas Anhalt:** **PowerPlex®** is a highly flexible system. The modular concept allows us to take specific customer requirements into account at any stage of the project. All **PowerPlex®** components fit seamlessly and can be installed flexibly in the vehicle. The operating options create more scope for development. **PowerPlex®** even offers our customers to control the on-board electrical system via a mobile device in addition to switches and touch panels.

**Current:** Were you able to improve any projects thanks to **PowerPlex®**?

**Thomas Anhalt:** When using **PowerPlex®** less cables and interfaces are required so the time and installation efforts are reduced as well. One very important aspect is that we must be able to respond flexibly to any problems arising during the design work and during the integration process of the various systems. Any control jobs, or rather sophisticated logics, are easier to configure

with **PowerPlex®** than our previous method. This is even more important with complex projects.

**Current:** You do not yet use **PowerPlex®** in all products. Do you intend to change this in the future?

**Thomas Anhalt:** At this point, it still strongly depends of the specific customer requirements. User-friendliness is of the essence on this topic. **PowerPlex®** allows the implementation of a consistently intuitive operation tailored to the specific system functionality.

**Current:** Thank you for your time.



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## Robert Eimer



In June 2014, Robert Eimer joined the Industry, Energy & Equipment (IEE) Division as an Application Specialist for process control and automation technology.

He has many years of experience working with PLC programming, system tests of automation solutions as well as with the visualisation of functional components for sophisticated control tasks in the industrial sector. His professional focus will now be on the **ControlPlex**<sup>®</sup> Board with SVS201-CP intelligent power distribution systems type which can be connected to various bus systems such as PROFIBUS, Profinet etc.

He also supports E-T-A's customers and sales partners with technical and commercial requirements of using **ControlPlex**<sup>®</sup> systems in all areas of mechanical engineering.

## Damien Cheong



In August 2014, Damien Cheong (37) started as the General Manager APAC. He is responsible for E-T-A's sales activities in Asia-Pacific. The sales territory is comprised

of Australia, Indonesia, Singapore, Malaysia, Thailand, Vietnam, Korea and the Philippines. Damien Cheong graduated from Singapore Polytechnics with a Diploma in Engineering and a bachelor degree in mathematics. He has extensive experience in sales and previously worked for Schischek Explosionproof as a Sales Director APAC which provided him with valuable experience in sales management of high-end sophisticated products in Asia-Pacific.

He is managing E-T-A's sales offices and sales partners. He also plans to grow E-T-A's local presence in Asia. This will enable E-T-A to better serve its customers in Asia-Pacific with products and the corresponding services.



Our FAQ pages are meant to intensify the dialogue between manufacturer and customers. We discuss topical subjects from practice as briefly and yet as detailed as possible to support you in your daily work. Do you have any questions you need answer to? Send it to us - we are looking forward to hearing from you.

**E-T-A Elektrotechnische Apparate GmbH**

**Stichwort: Current FAQ**

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**E-Mail: [faq@e-t-a.de](mailto:faq@e-t-a.de)**

# The relay - or what's a change of horses got to do with high-tech electronics?

## Where does the term “relay” come from?

In the past this meant changing horses. Today, it is a remotely controllable electrical contact invented in the 19th century for radio telegraphy. A relay was used every 30 km of the line to freshen up weak signals, or to change to “a fresh horse”. In 1941 Konrad Zuse built his first digital computer Z3 including more than 2000 relays.

## What kinds of relays are there?

The scope ranges from electro-mechanical and solid state relays to small relays, bistable and monostable relays, double coil relays, AC or DC relays, bimetal relays, Reed relays and hybrid relays.

## What is the difference between a contactor and a relay?

A contactor is a monostable relay for rupture capacities more than 500 W. Most contactors have arc quenching chambers and use a double-break contact system. In relay magnetic circuits, tilting or revolving armatures are used. The higher contact force in the contactor requires a tie-rod system.

## What is a monostable relay?

Monostable relays need a permanent current flow through the excitation coil to keep the contacts closed. If the current flow is interrupted, the armature falls back into the rest position and the contacts open automatically. For many applications this changing over into a safe condition is important in the event of a supply voltage failure.

## What is a bistable relay?

A bistable relay only requires a current pulse to change from the ON to the OFF position or vice versa. The retention force is established by permanent magnets (polarised relay, DC) or by a mechanical lock-out feature (latching, AC and DC). The relay stays in the current state in the event of a power failure, but does not require any power supply in the ON condition.

## Why solid state relays?

In a solid state relay SSR<sup>1</sup> the mechanical parts are replaced by electronic circuitry. MOSFET<sup>2</sup> and IGBT<sup>3</sup> (DC) or thyristors and TRIAC<sup>4</sup> (AC) are used for switching. SSRs<sup>1</sup> can switch as often and as quickly as required, they feature active, silent, chatter-free and wear-free operation. They work without arcing and are therefore also suitable for use in explosion-proof areas. Optocouplers or contacts connected in series are used to ensure physical isolation. A switching contact in parallel with the semi-conductor creates a very low ON resistance (hybrid relay).

## What is a free-wheeling diode?

If the relay coil is activated electronically, a diode must be connected in parallel to the coil in the reverse direction. This prevents destruction of the electronic circuitry by voltage spikes when disconnecting the inductance.

## What is a protective relay?

The following distinctions can be made about relays with overcurrent protection function:

- Overcurrent limitation – a pre-determined maximum value will not be exceeded (ESS20)
- Overcurrent trip – each current value has a corresponding trip time without current limitation (all E-T-A SSRs<sup>1</sup>)

## What is meant by “reverse polarity protection, reverse polarity conductive”?

If the plus and minus terminals of an SSR<sup>1</sup> with MOSFET<sup>2</sup> are connected reversely, the transistor will be destroyed because a diode, which would be fitted for technological reasons, is then switched in conducting direction and will immediately burn out. To prevent this, the MOSFET<sup>2</sup> will immediately be turned conductive. It will then only be possible to de-energize it by switching off the power supply.



Electronic relay with protective function **EXR10**, bistable mechanical relay **MPR10**, relay with electronic circuitry and circuit breaker function **4930**

- |                     |   |
|---------------------|---|
| <sup>1</sup> SSR    | solid state relay                                 |
| <sup>2</sup> MOSFET | metal oxide semiconductor field-effect transistor |
| <sup>3</sup> IGBT   | insulated-gate bipolar transistor                 |
| <sup>4</sup> TRIAC  | triode for alternating current                    |

The E-T-A DC 24 V-System

# Supply and protection from one source



Tobias Prem,  
Product Manager  
Industry, Energy &  
Equipment at E-T-A

A fully functional set-up of the DC 24 V control voltage in control cabinets or on the field level of factory automation requires the correct rating of the necessary components. Primary AC protection, power supply unit and the secondary DC

protection are the core of each automation solution and ensure trouble-free operation of the production system.

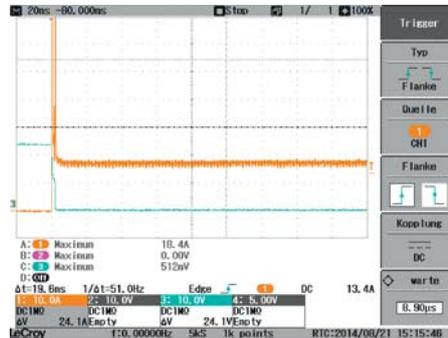


Fig. 1 shows the regulation behaviour of a switched mode power supply rated 10 A in the event of a short circuit at the DC 24 V output. The current (ORANGE) rises, the voltage at the output SMP (BLUE) is disconnected or turned down. All loads at the output of the power supply are not supplied.

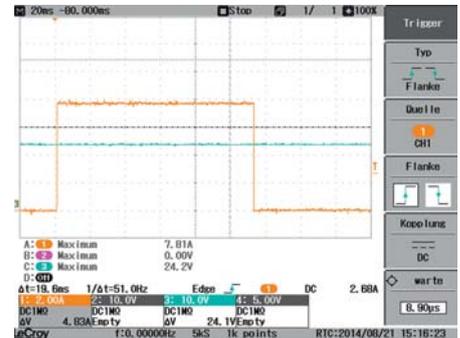


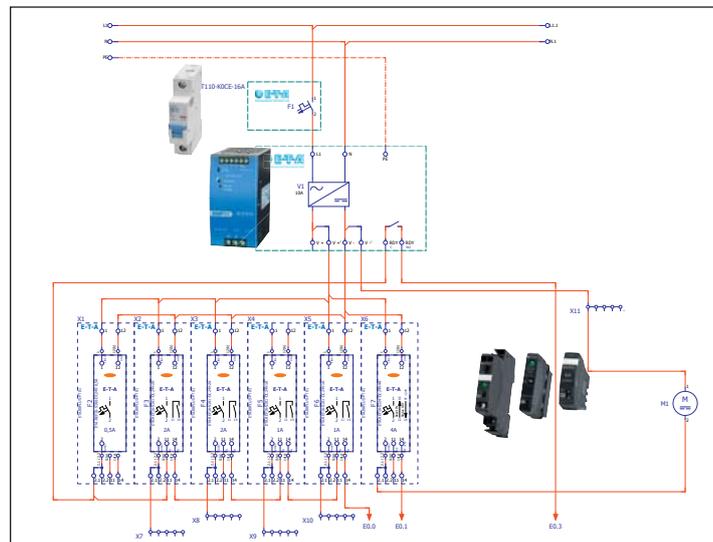
Fig. 2 shows the current-voltage-curve when using an electronic circuit protector rated 6 A at the output of the switched mode power supply DC 24 V. The current (ORANGE) rises and will be limited by the active linear current limitation to the value indicated in the data sheet ( $I_{max} = I_N \times \text{current limitation factor}$ ) and will be disconnected in accordance with the technical data. The output voltage of the SMP (BLUE) remains unchanged. All loads at the output of the power supply are not affected and will continue to be supplied.

E-T-A offers a complete, powerful and ideal package to users for the DC 24 V level, featuring technical certification. (Schematic diagram 1) It consists of the AC primary circuit protection provided by E-T-A's 4230-T MCB, SMP switch mode power supply, and electronic circuit breakers or protectors for the selective protection of DC 24 V load circuits.

### How does the combination of SMP and overcurrent protection work?

The 4230-T thermal-magnetic MCB protects the primary AC protection of the power supply unit and/or for its supply lines. Single pole and three pole versions are available, depending on the power supply.

The secondary part of the selective load protection is provided by an electronic overcurrent protection device with active linear current limitation. The overcurrent protection devices are available with and without physical isolation and can be individually adjusted to the application. An electronic protection device is required because only limited power is available in the event of an overload when using switch



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Schematic diagram 1

mode power supplies. The max. power factor is only 1.5 times rated current. In theory, this would be exceeded in the event of an overload. The power supply turns down the output voltage for self-protection.

In this case, selective load protection means that the electronic overcurrent protection device responds quicker to the overload condition than the power supply. This means: Before the voltage of the power supply unit can drop, the electronic circuit

protector limits the max. current flow via active linear current limitation and prevents the entire supply from overloading.

This solution is technically superior, offers functional reliability and helps to save time during electrical design. In addition, there are logistic benefits when purchasing the entire DC 24 V supply system from a single supplier.

## E-T-A solutions for many products

*E-T-A offers tailor-made solutions for a wide range of industries and products. Here are some interesting examples.*

**Application:** Core drilling machine  
**E-T-A type:** 3120-F

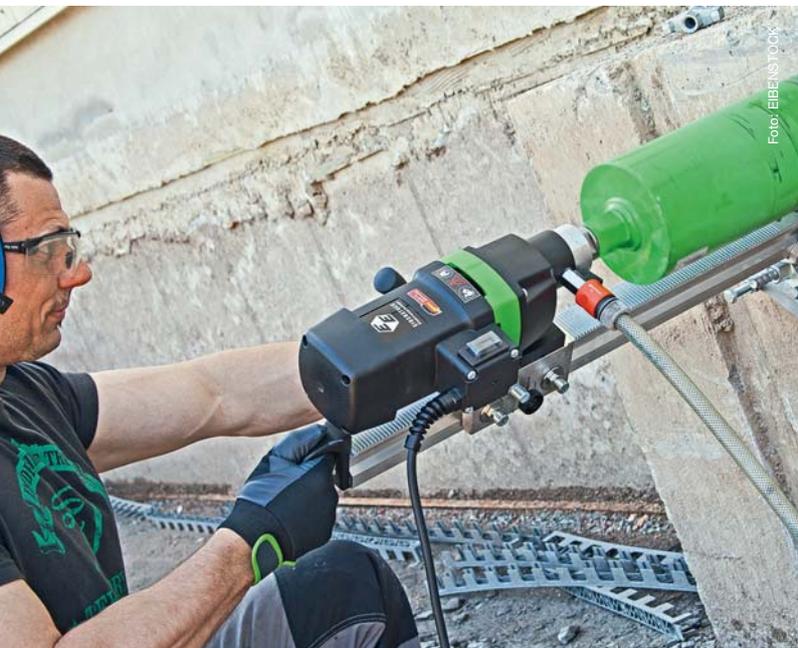
EIBENSTOCK, a major German manufacturer of electrical tools, produces innovative and high-quality products for use in the harshest conditions on construction sites and carry the “Made in Germany” seal of quality. EIBENSTOCK offers solutions for almost any user including: machinery for diamond core drilling, mixing and stirring, reconstructing and renovating. The electrical tools are sold in more than 60 countries on all continents. EIBENSTOCK does not only manufacture their own brand, they also produce machinery for other major suppliers in their facilities.

Diamond core drilling machines represent the biggest share of their range. They offer a drilling range from 12 to 450 mm in different versions such as hand-held and base-supported machines. EIBENSTOCK uses E-T-A's 3120-F circuit breaker/switch combination with translucent water and dust protection cover to protect high-end drive motors.

**Application:** Rotisseries  
**E-T-A type:** 106

UBERT GASTROTECHNIK GMBH is a major manufacturer of top quality food service equipment. The company was founded 1965 in the town Raesfeld in North Rhine-Westphalia and has 150 employees today. UBERT manufactures grill rotisseries and presentation cabinets which are used not only in Germany but also in more than 50 countries, e.g. in supermarkets, among other equipment. UBERT is a full service provider and offers anything

required by gastronomy, ranging from interior concept to bespoke engineering and equipment including installation on site, all coming from a single source. E-T-A's 106 thermal circuit breaker protects the drive motors in UBERT's TopLine rotisseries. After the 106 circuit breaker trips due to overcurrent, it is simply reset by pushing the button – eliminating the time consuming, and sometimes stressful, fuse replacement process.



# Applications

**Application:** PV Installation on a training and expert centre for organic farming  
**E-T-A type:** Firefighter Switch PVSEC-...

solar pur AG's PV system with a total of 82 kWp is installed on the roofs of the TEC Kringell test plant. The 3 types of modules (monocrystalline, polycrystalline, thin film) are installed on its buildings with exactly the same number of panels facing East, West and South. The results will provide information about the efficiency of the different technologies and installation conditions. This information will be used by approximately 1000 trained farmers and trainees when investing in their own PV system.

E-T-A's PVSEC firefighter switch was installed to ensure disconnection of the DC supply from the PV generator.

The entire system was designed and installed by solar pur AG, located in Saldenburg. solar-pur has 40 people on the payroll and offers an entire range of services and solutions for installing top-quality PV systems.



**Application:** Moulding presses for ceramics manufacture  
**E-T-A type:** ESX10-TD

The Italian System Group is a global leader in the ceramics industry and produces equipment used in ceramics factories. New technologies are constantly designed for decorating ceramic surfaces in the System Ceramics ultramodern laboratories. In the press equipment, i.e. Lamina technology, 40,000 tons of power ensures an absolutely even consolidation on the entire surface of the plate. In these facilities, System Ceramics relies on the protection provided by E-T-A's ESX10-TD electronic circuit protector, which has a compact design and is perfectly suited

for the electronic control system. The remote control capability offers direct control of the hydraulic tubes with very high switching frequency. Moreover, the large LED provides quick and clear visual indication of the general system status.



Foto: solar-pur AG



Foto: SYSTEM CERAMICS

# Interlinking power plants

*An intelligent protection concept for telecommunications plants supports a major Austrian power plant operator.*

The Illwerke AG, located in Vorarlberg in Austria, specialises in the production of peak load and control energy. Illwerke's power plants and facilities are used to maintain the balance between consumption and generation of electrical energy. The alpine storage power stations and pumped storage power stations, such as the Obere Ill - Lünensee plant group, are particularly suitable for this task. The amount of water coming from the Silvretta, Vermunt, Kops and Lünsee lakes is used in several power stations. EnBW (Energie Baden-Württemberg AG) executes the operation control of the entire power plant group and has for several decades. Illwerke's Dispatching Unit in Rodund co-ordinates the operation of the power plant group based on the requirements of the EnBW.



**ControlPlex®** Rack System with electronic circuit protector ESX300-S.

The power plants are connected with various communication networks and the control cabinets are designed in 19" technology. The communication engineering units are redundantly supplied with 48 V DC and the plus pole is grounded.

The DC 220 V supply voltage level is becoming more and more standard with battery buffering and a downstream DC/DC converter to minus 48 V DC. Therefore, Illwerke had a vested interest in protection adjusted to the limited power of the DC/DC converters. It was their goal to have a service-friendly and flexible plug-in type system, allowing further adjustments to the requirements of the new converter systems.

The solution presented itself in the form of the E-T-A **ControlPlex®** Rack - which is a modular and redundant product with two separate, independent voltage supplies and rear-side plug-in type load terminals. The ESX300-S hot-swappable electronic circuit protector provides the

system protection. Despite its compact width, it offers integral current limitation, allowing reliable and precise protection. The devices are plugged into a redundant **Power-D-Box®** with 2 x 9 load channels. This ensures selective protection of the PDH, the SDH and the data sets.

The control interface module RC110 will enhance the possibilities provided by the **ControlPlex®** Rack. Via a centralised control computer, RC110 control interface can switch loads on and off at remote locations. This can be done manually or automatically, just as required, subject to available measuring values. Current, voltage and temperature measurement for each connected load complete the available performance package. All of these functions allow the **ControlPlex®** Rack system to take over switching, measuring and control tasks and become a vital communication interface.



Electronic circuit protector ESX300-S



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# Typically Austrian: “Kaiserschmarrn with plum sauce”

“Kaiserschmarrn” is a typically Austrian sweet dish, consisting of cut-up pancakes and not only tourists love to eat it in summer and in winter. It is only one out of a wealth of sweet dishes created by the Austrian cuisine. A Kaiserschmarrn is perfectly supplemented by an only slightly sweet plum sauce, but also any other fruit sauce can be served as a side-dish.



You will love it too: Kaiserschmarrn with plum sauce

Separate eggs (yolk from the white) and beat the whites until stiff. For making the dough, mix egg yolks with flour, milk and melted butter and stir until smooth. Add raisins and rum to taste. Fold in the beaten egg-white.

Heat butter oil in a small non-stick frying pan, ladle in dough to have a batter layer of at least 1 cm thickness. The dough should get golden underneath and is then ready to turn. Then tear apart with two forks or wooden spoons. Leave briefly in the pan, possibly stir the pieces slightly around and then turn out into a warm large non-stick frying pan, which was wiped with butter oil, for keeping warm.

Repeat this process as often as required to use up the whole dough. Slightly stir the pieces in the large pan from time to time, add some sugar to taste.

Serve and sprinkle amply with icing sugar on the plates.

Wash the plums, dab dry and stone. Pour water into a pot, add sugar, cinnamon and lemon juice and bring to the boil. Add plums and simmer for 10 minutes with lid on. Let cool, remove cinnamon stick and serve with Kaiserschmarrn.

**Enjoy!**

### Ingredients (4 servings)

#### Kaiserschmarrn

- 250 g flour
- 6 eggs
- ¼ l milk
- 30 g butter, melted
- 30 g raisins
- 2 tbsp rum
- 1 pinch of salt
- icing sugar for dredging

#### Plum sauce

- 500 g plums
- 100 ml water
- 1 small cinnamon stick
- 100 g sugar
- lemon juice



 IO-Link

