



A strong duo

Extensions in the REX portfolio:
REX22 and CPC12

We are there for you

E-T-A keeps you up-to-date - even in times without tradeshows

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Intelligent systems made easy

The SCS[®] Smart Control Systems product group

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Imprint

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

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E-T-A, cover: © Brian Jackson/stock.adobe.com

■ We are there for you

E-T-A keeps you up-to-date - even in times without tradeshows

Currently, a lot of things are no longer what they used to be. The crisis over the past few months made us change many points in our lives and we had to get used to new things. This is very true for tradeshows. Hardly any tradeshows that were planned for the past few months took place as planned. Most of the exhibitions and fairs were postponed until next year.

As a result, how people gather information also changed. It was no longer possible to learn about industry news during a relaxed meeting at a professional tradeshow. Therefore, E-T-A is using many other ways to share our overcurrent protection and power distribution expertise with you. One of these ways is right in front of you. Our customer magazine has become even more popular over the past few months. We receive many responses and registration for the online version continues to increase.

Do you need more detailed information? Our recently redesigned website helps you find it. It offers data sheets, CAD models, videos, a wealth of background information on our products and our company in a clearly structured style. Sometimes, however, a personal meeting is necessary. In these cases, our regional sales force is at your disposal. Our colleagues are pleased to meet you for a visit even on short notice. Together, you will certainly find the best solution for any protection requirements in your application. We can talk on the phone, over video conference or meet you personally in your office.

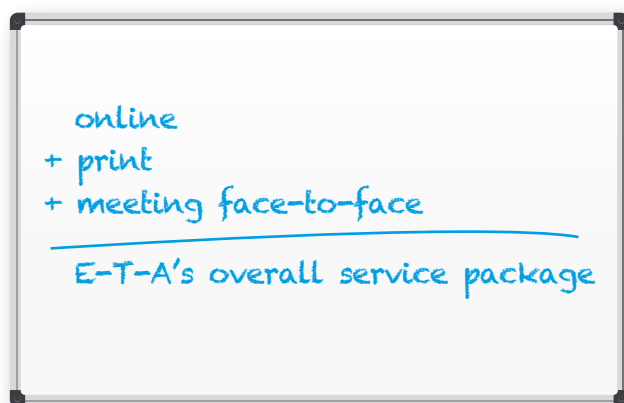
There is a wide range of options. What can we do for you and your products? Please get in touch. Or do you have a certain project you wish to discuss with us? **We look forward to speaking with you.**



Dr. Clifford Sell

Director of

E-T-A Elektrotechnische Apparate GmbH



The **SCS®** Smart Control Systems product group

Intelligent systems made easy

New technologies and forward thinking systems are crucial when designing on-board electrical systems. The growing number of electrical vehicle components and the need for data transmission between single devices quickly increases complexity. The CAN-bus as standard field bus is the ideal technology in the automotive industry, to facilitate fast and simple data transmission and reduce wiring.

E-T-A's **SCS® Smart Control Systems** products combine intelligent systems, power distribution systems and components that can communicate via CAN. Our products help digitise the on-board electrical system and the intelligent power distribution installation.

The **SCS portfolio** combines standardised hardware with flexible and adjustable software for effortless vehicle modernisation and system integration. The **SCS products** allow a centralised and decentralised system architecture and I/O-extensions.

SCS10/SCS20/SCS30

The **SCS10/20/30** CAN mini control units can easily be integrated into existing CAN structures because of their compact

design and customised software and are the best choice for many vehicle options.

The **SCS10** in the ISO mini relay socket makes standard relays CAN-capable. Sensors can be connected to the bus without adjusting the vehicle distribution box. The **SCS20**, with its extremely compact design, provides additional H-bridge outputs rated up to 10 A and CAN-connection at the same time. The **SCS30** is ideal for signalling and control due to its many I/Os and its H-bridge functionality. This module allows setup of basic networks and I/O extensions.

SCS200

The **SCS200** intelligent power distribution module with CAN-connection is brand-new to the market. The **SCS200**

modules are plug-and-play solutions which help you reduce space and wiring time. Its major application is the decentralised power distribution for higher loads downstream of the ECU. The **SCS200** has comprehensive diagnostic capabilities (load current and voltage measurement, integral load protection) and the CAN-connection sends data to the ECU to implement load management and predictive maintenance. This avoids consequential damages, vehicle breakdowns and downtimes and increases vehicle availability and productivity.

SCS1000/SCS3000

Soon the **SCS1000/3000** will complete E-T-A's SCS product group. These are extremely compact power distribution systems with integral logic. The all-in-one



modules offer a wealth of functions together with high performance in a very small package.

The **SCS3000 modules** are ideal for a centralised system approach. Power

distribution and control functions, as well as logic links, PWM and soft start are combined in a single module. Multiple individual components can be replaced by a single one. The **SCS1000** is the ideal entry-level solution for small and

decentralised system architectures and is the first step to vehicle digitisation. The **SCS3000** and the **SCS1000 modules** can easily be configured via a graphic user interface.



SCS10

SCS20

SCS30



SCS200

SCS200

SCS3000

SCS1000

The **SCS product group** includes intelligent power distribution systems and components with CAN-connection

At a glance:

- On-board electrical system digitisation and reduced wiring efforts through CAN interfaces
- Space-saving and robust through efficient semi-conductor technology
- Reduced complexity with customised software configuration
- Provision of relevant data to help implement load management and predictive maintenance
- Flexible mounting through compact IP67 housing



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Extensions in the **REX portfolio: REX22 and CPC12**

■ A strong duo

The E-T-A **REX portfolio** offers a solution for nearly every DC 24 V application. The system consists of different supply and power distribution modules, the **REX12** one- and two-channel electronic circuit protectors up to 10 A, which can be mounted side by side modularly and the newly developed electronic circuit protector **REX22**. These additional types are available in fixed and adjustable current ratings up to 20 A. The system is completed with a variety of **ControlPlex®** communication interfaces.

In mechanical engineering, primary pulsed switch mode power supplies and the corresponding DC 24 V-load circuits are mainly protected by electronic fuses today. Thus, reliable operation, simple trouble-shooting and a maximum of machine and system availability are paramount.

The new system consists of the **EM12** and **PM12** supply and power distribution modules, the **REX22** one- and two-channel electronic circuit protectors, which can be mounted side by side modularly, and the new **CPC12 ControlPlex® Controller**. The new **CPC12** also extends the **ControlPlex®** product group. It allows the intelligent connection of the circuit protectors to the PROFINET and EtherCAT fieldbuses. The

REX22 trip curve with linear current limitation is specifically designed for the DC 24 V switch mode power supply with low overload capacity and DC 24 V-drive engineering. Current ratings can be adjusted via control level or via slide - even in dead-voltage condition.

REX22 protects all DC 24 V load circuits selectively and restricts the current output linearly during switching on or before tripping. In case of a short circuit, the restriction leads to a current limitation of a defined value within a set time period. The device, also called »I²t-Limiter«, effectively protects switch mode power supplies with low power reserve. To switch on powerful load circuits without any effort, the limited current is made available for a longer time period. The

electronic trip curve, comparable to a C- or D-characteristic curve, therefore, offers an additional solution for protecting drive engineering, control technology for frequency converters, multiphase motors and also sensitive relay contacts in the »SAFETY« area. For further load types the **REX12** with its B- or C-characteristic curve is the perfect protection solution.

The **REX-system** is completed by a variety of communication interfaces. The **EM12D ControlPlex®** supply modules for IO link and modbus RTU allow an extremely fast connection and data exchange to the control unit. The **CPC12 ControlPlex® Controller** provides the connection to the PROFINET and EtherCAT fieldbuses. The bus controllers also have a webserver. Therefore, the



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data exchange and the parameterisation are possible at the fieldbus level, IP address or JSON format. Further solutions for Ethernet/IP and modbus-TCP and OPC-UA are already in development. The **CPC12 ControlPlex® Controller** allows a quick overview of the total system and transfers a lot of diagnostic information to

the superordinate control unit. The total system allows complete transparency of the DC 24 V power supply - providing the required information to maintain machine and system uptime - Predictive Maintenance and Conditional Monitoring at its best.

*Extension of the REX portfolio as a strong duo:
REX22 and ControlPlex® Controller CPC12 circuit protectors*

Your benefits

REX22

- Transparency and flexibility through adjustable current ratings via slide
- Increase uptime through calculatable limited max. current
- Increase availability - also load circuits with higher power demand can be protected, without unwanted tripping

CPC12:

- Increase of the machine and system uptime through clear trouble-shooting
- High transparency and remote diagnostics via PROFINET, EtherCAT, Ethernet/IP and modbus-TCP
- Saves time and costs through easy SPS-integration - from the electrical design to the first operation





Michael Bindner,
Product Manager
Communications Systems
at E-T-A

Internet Service Provider relies on E-T-A's power distribution systems

Always ON thanks to E-T-A

Data and switching centers for communication technology have played a critical role in the infrastructure even before Corona. In case of a failure, this will considerably affect both public and private life. With E-T-A's **Power-D-Box®** systems E-T-A offers a comprehensive portfolio for power distribution and protection. We are talking to Michael Bindner, a product manager for E-T-A's Communication Systems about strategies to efficiently protect these systems.

Current: What are the main challenges when developing network infrastructure?

Michael Bindner: The internet backbone is the spine of fast data traffic. Modern life without a functioning internet connection is no longer acceptable. Therefore, the focus lies on the necessary systems being as available as possible.

Current: Many providers rely on E-T-A's **High Power-D-Box®** IT-Rack power distribution systems. Why?

Michael Bindner: The **High Power-D-Box®** with 8345 hydraulic-magnetic circuit breaker guarantees reliable power distribution and protection. The temperature independent trip curve of the 8345 is a reliable solution even during an air conditioning failure. This is very important for communication technology.

Current: Frequently, there are different system cabinet and switchboard sizes. How does E-T-A help customers design economical solutions?

Michael Bindner: E-T-A's modular power distribution systems can easily be expanded. If additional equipment is required, it is possible to plug in a circuit breaker for the additional load.

Current: Do customers always use standard solutions in their applications?

Michael Bindner: No. Whenever an individual power distribution system is required for a project, we develop it in partnership with the customer. From the first

sketch to the maturity phase. E-T-A's modular systems offer short development times and cost effective products. We save additional time by testing according to our standards in E-T-A's test laboratory.

Current: Thanks a lot for the interview.

High Power-D-Box®
with hydraulic-magnetic
circuit breakers 8345



P E R S O N N E L

»People are
at the very
centre of our
daily work«

*Therefore we are excited to
introduce new colleagues,
new jobs, new contact people
at E-T-A on this page.*



Witali Juferow

Since mid 2015, Witali Juferow has been part of the German E-T-A sales force in various roles. The state-certified electrical engineer for power electronics has many years of experience in the technical field service for products requiring explanation. By focusing on key customers, he assumes an important role as Key Account Manager for Automotive Production. Witali is looking forward to providing custom protection and distribution solutions to his key customers in automotive production, from the press to final assembly.



Thorsten Ravagni

Thorsten Ravagni joined E-T-A in December 2019 as the DACH sales manager in addition to key account manager for selected major customers. As Dipl.-Ing. of physical engineering, he has profound knowledge in sales management. He completes this with his experience in product management and managing product managers. Thorsten Ravagni is focusing on implementing strategic goals, optimizing the sales processes and interdisciplinary co-operation.



Sebastian Joseph

In early December 2019, Sebastian Joseph started as Strategic Account Manager in E-T-A's equipment sector. After studying electrical engineering at the University of Applied Sciences in Düsseldorf, he worked in the German sales department for several years. In his new role, Sebastian Joseph supervises strategic accounts in medical equipment, machine and tool construction. It is his goal to develop solutions with customers in corporation with the EQU division.



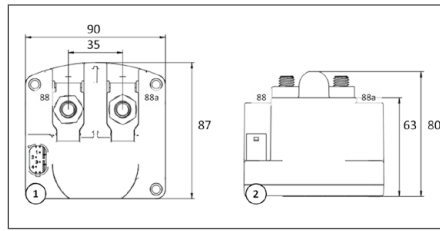
FAQ

»HVR10 high voltage relay control input«



Our FAQ column discusses topical and practical subjects 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-Mail: faq@e-t-a.de**

E-T-A manufactures high voltage relays (HVR) for fully electrical networks in passenger cars and utility vehicles. These relays are appropriate for electrical networks with a system voltage up to **1000 V** and current ratings up to **300 A**. The relay contact system and the drive are certified for non-destructive guiding and switching at currents of up to **1000 A**.



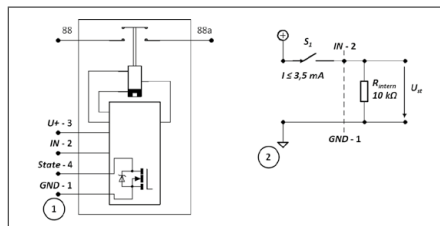
Pin denomination as per DIN 72552:

88: Input make contact 88a: 1 output make contact

The HVR10 high voltage relay is equipped with an energy efficient bistable drive. This drive typically generates a power loss of 0.2 W in ON condition. During the switching operations intermittent peak currents of up to 14 A flow for periods of ≤ 30 ms. The HVR is controlled via an internal control unit. The switching status of the HVR is controlled by the user via a digital **Input-PIN**. In this way, the HVR10 receives a monostable character. In addition, the low power loss control input allows the use of conventional control units, microcontrollers or logic-groups. The following briefly describes the function of an external configuration of the HVR10 drive by the user.

Control via a digital Input-PIN

The **Input-PIN 2** of the HVR10 is a digital **Input-PIN** of the internal control unit. The following schematic diagram shows the simplified HVR10 pin assignment.



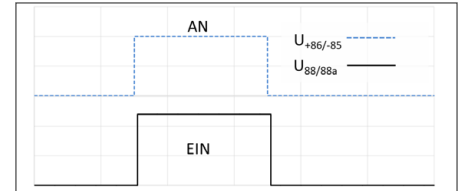
HVR10 pin assignment

Electronic symbol to IEC 60617- 7

Terminal denomination to IEC 60947- 1

PIN 1 serves as reference mass GND-1 for the HVR10 drive. The operating voltage is connected to **PIN 3** of the drive or U₊-3. **PIN 4** helps read the HVR drive condition. It can only have two stable conditions: »Open« or »Closed«. The HVR drive is controlled with the digital **Input-PIN 2** or **IN-2**. Here the input of **IN-2** is connected to a 10 kΩ resistor R_{internal} with pull-down configuration. It can easily be switched

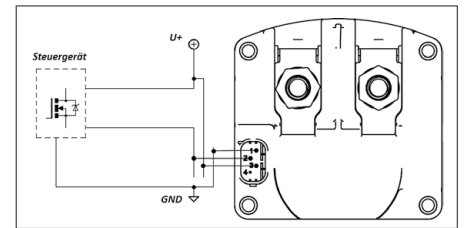
ON or OFF with an S1 switch. It is used to continuously switch or interrupt the operating voltage. The following diagram shows this process in a simplified way.



Control process cycle

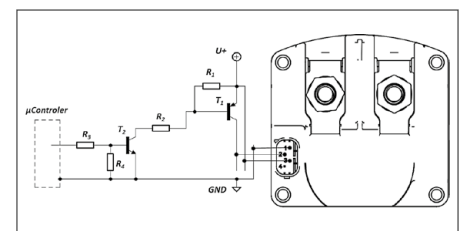
How to configure the HVR10 drive?

There are several possibilities to control the HVR. The control at the digital **Input-PIN 2** is always made with a current of only 3.5 mA. If a control unit or microcontroller is to take over the HVR10 control, the following configurations are recommended:



Configuration of the relay drive – Control unit

Electronic symbol to IEC 60617- 7



Configuration of the relay drive – µController

Electronic symbol to IEC 60617-7

Transistors take over the task to switch the **Input-PIN HIGH** or **LOW**.



Hannes Büttner
Business Development Manager
Marine & Recreational Vehicles Division

PowerPlex® on-board management system

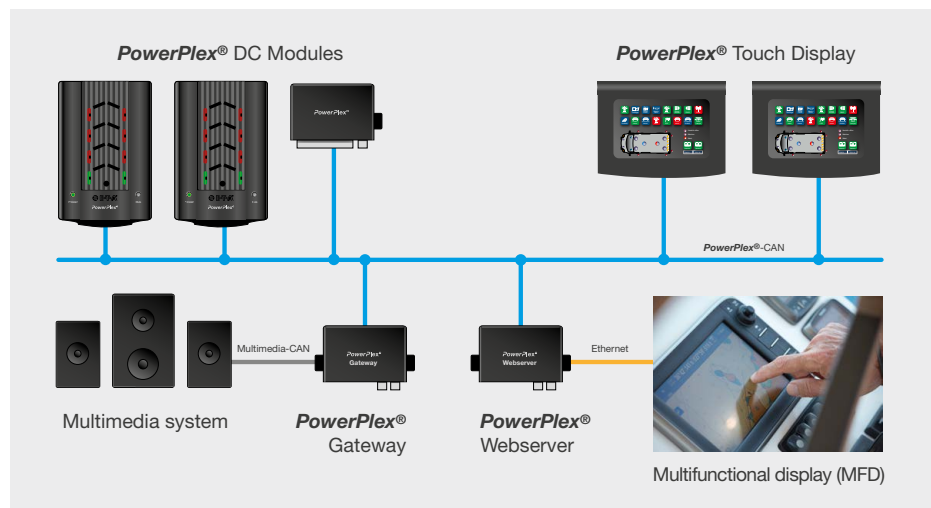
Communication without limits

Various devices are installed in caravans and yachts, and are controlled via an on-board management system, like **PowerPlex®**. In addition to lighting, battery charging and tank levels, integrating air conditioning, heating and multimedia systems is becoming more important. This can easily and safely be accomplished via gateways.

The simple operation and central control of all components in caravans and yachts is becoming increasingly important. Especially on large yachts, many systems quickly come together that need to be controlled from anywhere. Components, such as air conditioning and multimedia systems, often have their own demands and rarely use standardised protocols such as NMEA2000 or CI bus. Integrating these components into the entire on-board system is possible via one gateway.

At a customer's request, the **PowerPlex®** was to control a comprehensive multimedia system on a yacht including radio, TV, USB and Bluetooth. The music settings needed to be individually adjusted via displays in the owner and guest cabins. Simultaneously these settings also needed to be controlled via a multifunctional display (MFD) in the cockpit - individually for each cabin and synchronously on all music devices on board.

The necessary functionality was provided with two multimedia amplifiers, which are controlled via CAN bus. The **PowerPlex®** gateway facilitates the mutual information



PowerPlex® system structure with multimedia system that can be operated via display and MFD

transfer and serves as »translator« between the multimedia CAN and the **PowerPlex®** CAN. The **PowerPlex®** webservice allows control via the MFD, and provides the graphical user interface for the MFD and is directly connected to the **PowerPlex®** system. In this way, not only the multimedia system is controlled and monitored via the MFD, but also all other load circuits connected to the **PowerPlex®**.

E-T-A solutions for many products

E-T-A offers tailor-made developments for all industries and products.

Here are some interesting examples.

E-T-A type: 1170

Efficiency flawlessly established

The **KAMAG Transporttechnik** company from Ulm provides transportation solutions for the industry sector. Their key focus is manufacturing industrial vehicles, modular transporters and vehicles for terminal logistics. Whether slag or scrap management, in shipbuilding or in the aerospace industry - KAMAG emphasises the importance of efficiency and reliability in all its products..

The KAMAG specialty vehicles must be available at any time. After all, everything must function smoothly when transporting slag buckets weighing tons or moving entire assembly parts for manufacturing aircraft. To increase efficiency KAMAG relies on E-T-A circuit protectors for on-board electrical systems.

and does not trip without reason, even under highest shock and vibration conditions. The driver immediately sees which circuit was separated and can activate the circuit again via the reset button. This avoids expensive downtimes during heavy load transports.

All electrical load circuits are protected with resettable **1170** circuit breakers. This circuit breaker is extremely robust



E-T-A type: 1170



E-T-A types: **ControlPlex® Rack/RCI10**

Intelligent and smart

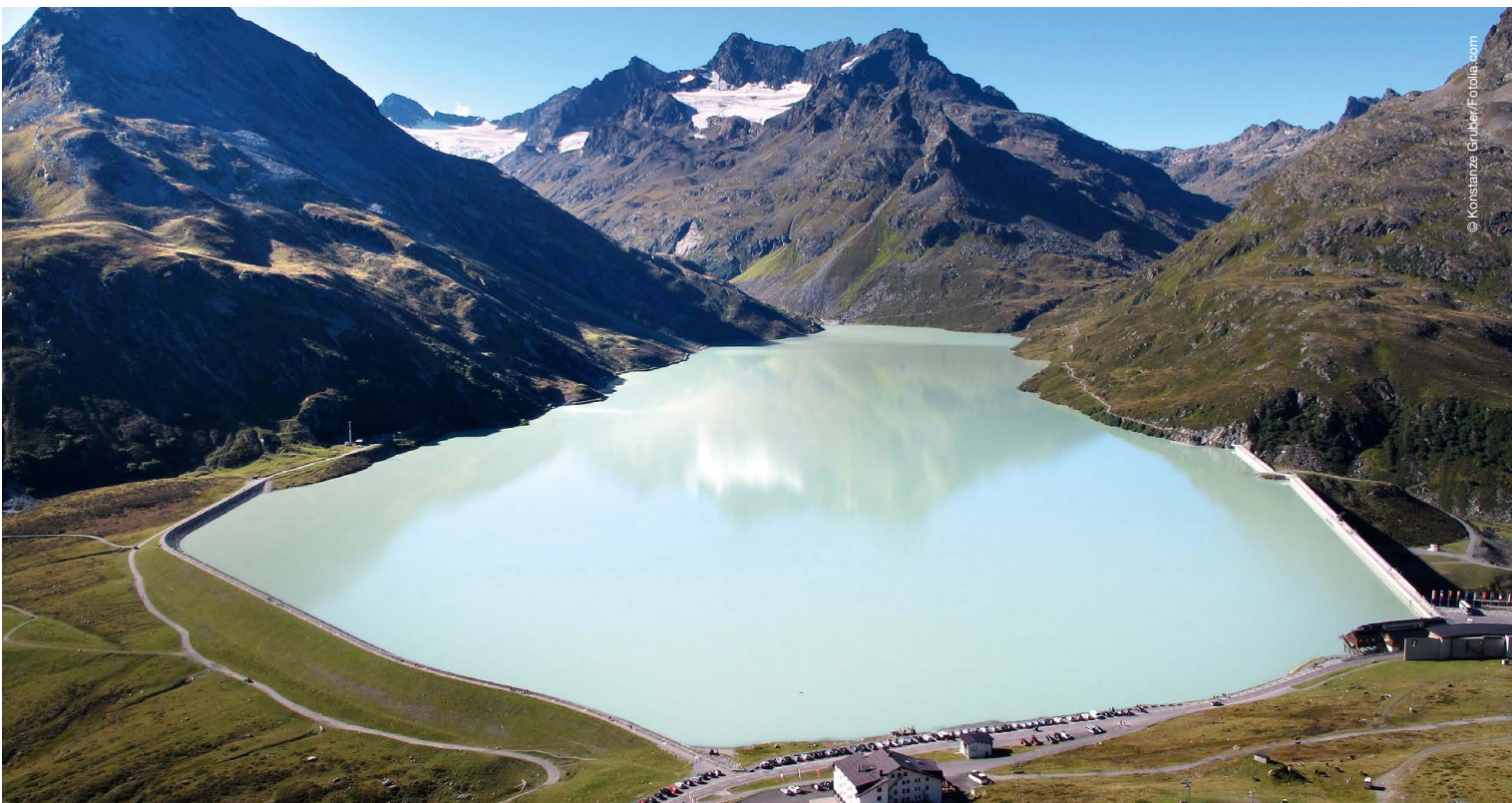
The **Kraftwerksgruppe Obere Ill-Lünersee of the Illwerke vkw AG** focuses on generating peak and control energy. The power plants and systems are used for keeping the balance between consuming and generating electrical energy.

To do this, storage and pump storage power plants are particularly suitable. The water from the Silvretta-, Vermunt-, Kops- and Lüner lakes is processed in several power plant stages. The operational management for the entire power plant group is carried out by EnBW. The power plants are connected by several communication networks. The consistent protection solution for 19"-technology is the E-T-A **ControlPlex® Rack** system. It is a modular design for redundant and

non-redundant power distribution with **ESX300-S** electronic circuit breakers, which are expandable under voltage. Despite its slim design, it has an integrated overcurrent limiter, which enables safe and precise protection. With the optional **RCI10** control interface all locations are integrated in a system and even loads in remote locations can be monitored and switched on or off. According to requirement, this can be done manually, completely automated or depending on available measuring values.



E-T-A type: **ControlPlex® Rack**
populated with **ESX300-S** and **RCI10**



ESX10-T electronic circuit protector in the oil and gas industry

Safety is guaranteed

Our subsidiary in Singapore successfully sold the **ESX10-T** electronic circuit protector to Safety Systems Engineering company (SSE).



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Oil and gas platforms require maximum safety systems in many areas

Safety Systems Engineering (SSE) was founded in 2003 and its headquarters is located in Singapore. SSE has three subsidiaries in China, located in Beijing, Tianjin and Shenzhen. With vast experiences and proven track record, SSE is recognised as a safety specialist in integrated fire and gas detection and releasing systems and industrial communication systems, safety systems engineering and equipment for hazardous and demanding environments and specialised valves.

SSE chose the **ESX10-T** circuit protector as a fuse replacement. The electronic circuit protector protects the emergency landing lights on a helicopter platform and reliably protects the programmable logic controllers for the oil and gas platform. The overall plant availability is considerably increased in the event of a failure.

In terms of pricing, the customer originally used a fuse solution. After many discussions with our colleagues from E-T-A Singapore and a close investigation into the cost-benefit ratio, SSE decided to use E-T-A's electronic circuit protectors. Trouble-shooting is much easier since installing the **ESX10-T** due to the selective load protection. In addition, it eliminates the need to stock replacement fuses.

We are very excited we managed to win this customer. SSE very much appreciates the efficient local support and the expert knowledge of our E-T-A Singapore colleagues.



*Ensures safety on oil and gas platforms:
ESX10-T electronic circuit protector*

CULINARY DELIGHTS

Typically Asian:

»Hainanese Chicken Rice«

A dish of poached chicken and seasoned rice, served with chili sauce and other sauces to taste. It was created in the South of China by Hainanese immigrants.

Prep

Rub chicken clean with salt, bring to boil in a large pot filled with water and boil for 5 minutes. Discard the water. Refill the pot with water to cover the chicken by approx. 2 cm. Add garlic, green onions and ginger. Bring to boil, reduce heat. Keep simmering for approx. 30 minutes (less if the chicken is smaller). Remove from heat and cool chicken in ice water. Dab dry with kitchen roll and rub with sesame oil. Discard garlic, ginger and green onions, season the soup with salt to taste.

Heat 2 tbsp of oil in a wok or pot. Add ginger, shallot and garlic and fry carefully. Add the washed rice and stir, fry for approx. 1 minute. Add sesame oil and stir well. Add 2 cups of chicken stock and bring to boil. Reduce heat, cover pot and cook for 15 minutes. Remove from oven, keep lid on the pot and let sit for another 5 - 10 minutes.

Chilisauce: Blend ingredients in a blender until smooth and bright red.

Ginger-garlic-sauce: Heat oil in a small saucepan until very hot. Turn off the heat when you see wisps of smoke. Add garlic and ginger and let sizzle for a few seconds. Stir in salt and vinegar. Carve the chicken and serve with rice and sauces.

Ingredients:

For the chicken

- 1 chicken, approx. 2 kg
- 1/4 cup of salt to exfoliate the chicken
- 1 piece of fresh ginger, peeled and cut into slices
- 4 garlic cloves
- 2 green onions, cut into 2 cm long pieces
- 1 tsp sesame oil

For the rice

- 2 tbsp cooking oil
- 2 garlic cloves, pressed through
- 1 shallot, finely chopped
- 1 piece of ginger, peeled, finely chopped or grated
- 2 cups of long grain rice
- 2 cups of chicken stock
- 1/2 tsp sesame oil

Chilisauce

- 1 tbsp lemon juice
- 2 tbsp of chicken stock
- 2 tsp sugar
- 4 tbsp Sriracha chili sauce
- 4 garlic cloves
- 1 piece of peeled ginger

Ginger-garlic-sauce

- 4 tbsp cooking oil
- 2 tbsp ginger, freshly grated
- 2 garlic cloves, pressed through
- 1/2 tsp salt
- 1 tsp white vinegar



Typically Asian:
Hainanese Chicken Rice



CPC20 ControlPlex® System Intelligent DC 24 V protection

Ready for industry 4.0

The intelligent **CPC20 ControlPlex®** System protects your DC 24 V power distribution against overload and short circuit.

- **Maximises your system availability** – through comprehensive diagnostic functions
- **Increases protection against voltage dips** – through selective protection of the loads
- **Enhances flexibility of your plant design** – through a modular terminal block system

Talk to us! We look forward to getting in touch.
www.e-t-a.de/cu_e3-20



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