RELAYS FOR VEHICLES

Product overview

E-T-A®
ENGINEERING TECHNOLOGY

ESR10, ESR20, ESR30
SOLID STATE RELAYS
Fast and wear-free switching

Solid state relays feature a long typical life, noiseless switching and are extremely resistant against environmental influences.

The solid state relay portfolio is used in all applications where mechanical relays reach their limits. They combine high-end power semi-conductors with comprehensive know how in heat management, EMC-compliant design and overcurrent protection. The solid state relay's electronic circuitry ensures wear-free, noiseless and extremely fast operation and thus full operational readiness over the vehicle's entire typical life.

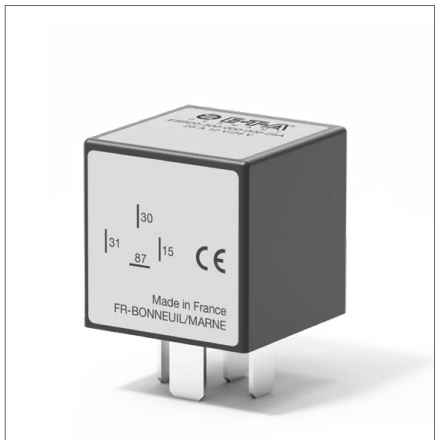
E-T-A solid state relays are available for DC 12 V and DC 24 V applications and are ideal for applications in buses and trucks, agricultural and construction machinery, specialty vehicles and passenger cars.

Your benefits when using E-T-A solid state relays:

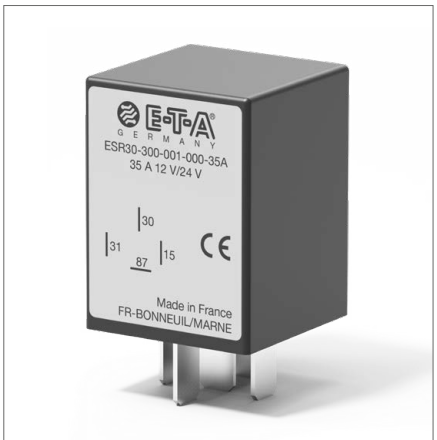
- **Full operational readiness** over the vehicle's entire typical life due to wear-free switching
- **Flexible use** of the units due to an enormous resistance against environmental influences, such as dust, humidity and vibration
- **Maximum driver comfort** due to noiseless switching

Durable, robust, noiseless – Solid state relays by E-T-A

ESR10 Solid state relay in micro design



ESR20 Solid state relay in mini design with high side/low side switch



ESR30 Solid state relay in mini design for high continuous currents

Applications in the following industries

- Passenger cars
- Trucks
- Buses
- Construction machinery
- Agricultural vehicles and forestry equipment
- Specialty vehicles
- Boats

Scan the QR code to configure the possible hardware functions and relay functions for the solid state relays.

SPECIAL RELAYS
EDX10, EDX20, EXR10, EXR20, EXR30, EXR40, EXR50

Robust all-rounders in utility vehicles

Electronic special relays have a long typical life, are very versatile and extremely robust against environmental influences.

The EDX devices feature relay enclosures with integral diodes (EDX10) or voltage monitors (EDX20).

The special relays of the EXR series are used in all applications where mechanical relays reach their limits. Their special functions are suitable for applications such as controlling electric motors, switching on and off powerful loads via momentary switch, up to controlling windscreen wipers or on-board voltages. These special relays are often used for vehicle retrofits or reworks.

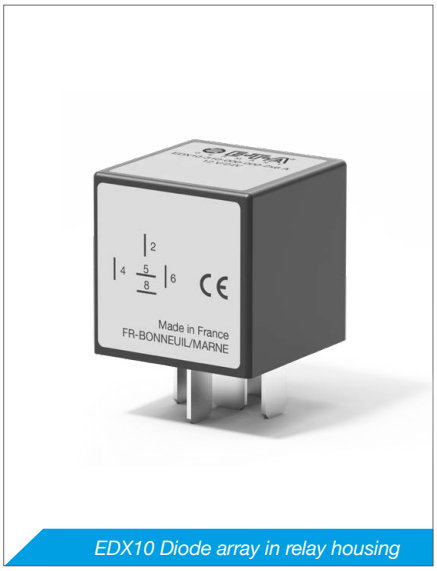
Your benefits when using E-T-A special relays:

- High operational readiness of vehicles through wear-free switching
- Versatile use of the devices thanks to the comprehensive selection of special functions
- Extremely robust and highly resistant against environmental influences

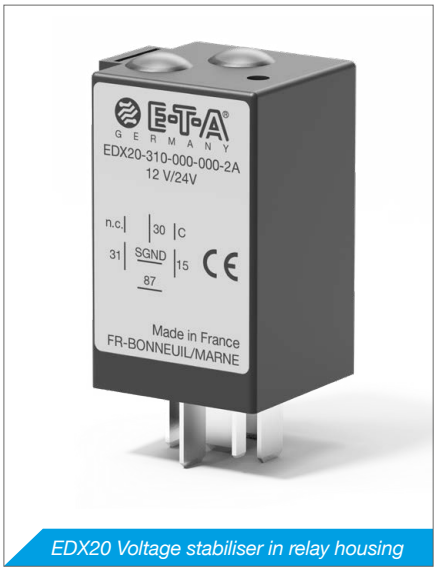
Applications in the following industries

- Trucks
- Buses
- Construction machinery
- Agricultural vehicles and forestry equipment
- Specialty vehicles
- Boats

Scan the QR code to configure the possible hardware functions and relay functions for the solid special relays.



EDX10 Diode array in relay housing



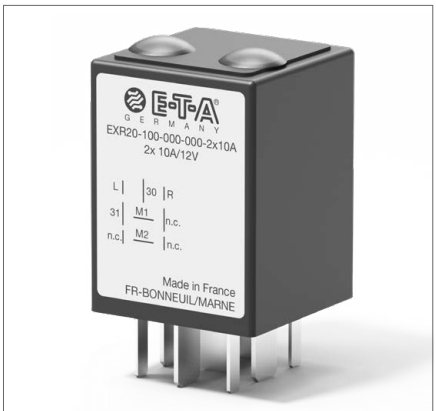
EDX20 Voltage stabiliser in relay housing

EXR10 Electronic special relay with diagnostic and overcurrent protection

EXR20 Electronic special relay for electric motor control

EXR30 Electronic special relay with momentary switch for on and off switching

EXR40 Electronic special relay for windscreen wiper applications



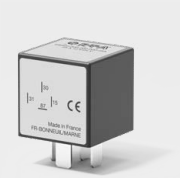
EXR50 Electronic special relay as voltage monitor

Long typical life, versatile, robust – E-T-A's special relays

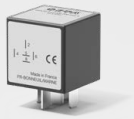
TECHNICAL DATA

Solid state and special relays

ESR10, ESR20, ESR30 **SOLID STATE RELAYS**

Series	ESR10	ESR20	ESR30
			
Rated voltage	12 V/24 V	12 V/24 V	24 V
Continuous current	10 A, 17 A, 30 A	4 A, 10 A, 15 A, 25 A, 35 A	50 A
Contact system	electronic	electronic	electronic
Terminal design	ISO 7588 MICRO	ISO 7588 MINI	ISO 7588 MINI
Design	Cubic enclosure 22.8 x 15.4 x 26 mm (without latching lugs)	Cubic enclosure 30 x 30 x 30 mm	Cubic enclosure 30 x 30 x 40 mm
Features	Solid state relay in MICRO design	Solid state relay with high and low side switch	Solid state relay for high continuous currents

EDX10, EDX20, EXR10, EXR20, EXR30, EXR40, EXR50 **SPECIAL RELAYS**

Series	EDX10	EDX20	EXR10	EXR20	EXR30	EXR40	EXR50
							
Rated voltage	12 V/24 V	12 V/24 V	12 V/24 V	12 V/24 V	12 V/24 V	12 V/24 V	12 V/24 V
Continuous current	4 A	2 A	1 A, 2 A, 3 A, 5 A, 7.5 A,10 A, 15 A, 20 A, 25 A, 30 A	10 A	15 A, 20 A, 30 A, 40 A	15 A, 17 A	10 A, 30 A, 40 A
Contact system	not applicable	not applicable	electronic	electronic	mechanical	electronic, mechanical	mechanical
Terminal design	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI
Design	Cubic enclosure 30 x 30 x 30 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm
Features	Diode combination in a functional relay enclosure	Voltage stabiliser in a functional relay enclosure	Electronic special relay with diagnostic functionalities and overcurrent protection	Electronic special relay for electric motor control	Electronic special relay with momentary switch for on and off switching	Electronic special relay for windscreen wiper applications	Electronic special relay as voltage monitor

MFR10, MFR20 AND MFR30 MULTIFUNCTIONAL RELAYS

With software for additional functions

Multifunctional relays with customer-specific software are particularly suitable for demanding applications that are specially adapted to customer requirements.

The multifunctional relays can be used as an alternative to standard automotive relays, as the software allows many customer-specific adjustments, e.g. frequency and voltage monitoring, pulse output or off and on switching of loads. In addition, these relays can perform functions that would otherwise haveto be performed by a control unit.

Software and requirement specifications are set up in direct co-operation with our customers. The MFR10 and the MFR20 are characterised by a mechanical contact system. The MFR30 features a fully electronic contact system which is ideal for applications that require a high number of switching cycles.

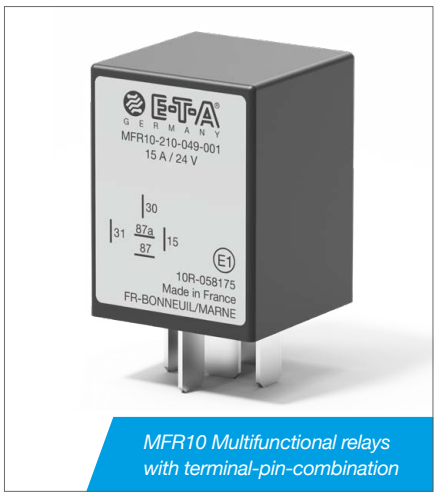
Your benefits when using E-T-A multifunctional relays:

- Reduced complexity through customer-specific software that can specially be adjusted to customer applications
- Direct replacement of standard relays by intelligent relays including additional functions
- Long typical life due to a fully electronic contact system in the MFR10

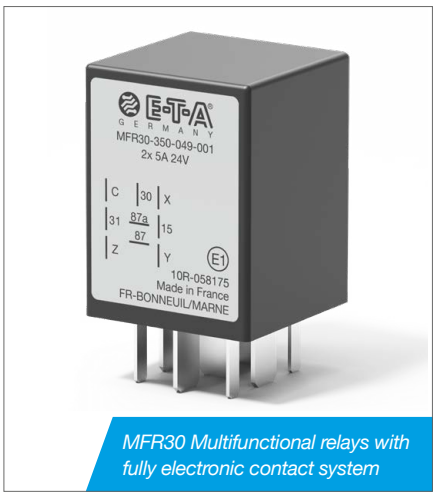
Applications in the following industries

- Passenger cars
- Trucks
- Buses
- Construction machinery
- Agricultural vehicles and forestry equipment
- Specialty vehicles

MFR20 Multifunctional relays with high continuous current



MFR10 Multifunctional relays with terminal-pin-combination



MFR30 Multifunctional relays with fully electronic contact system

Customised, easily replaceable, long typical life – E-T-A's multifunctional relays

TIMER RELAYS
MTR10, MTR20, MTR30 AND ETR10

Flexible time adjustment depending on the application

E-T-A's mechanical and electronic timer relays can very flexibly be adjusted to customer-specific applications.

The portfolio of mechanical timer relays covers exact time settings (MTR10), adjustable versions (MTR20), and also units with position switch including flexible time adjustment (MTR30). The ETR10 electronic version also has a protective function. Timer relays control pumps, valves or motors, which are meant to run on or stay open for a defined period of time.

You can easily integrate an ON or OFF delay without having to change the software of the control units.

Your benefits when using E-T-A timer relays:

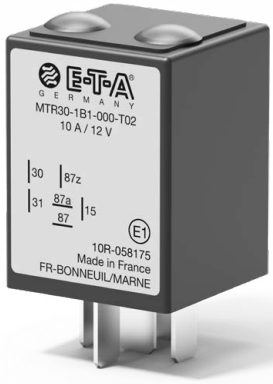
- Reduced complexity by a smart selection of the time window – several relays can be replaced with a single device
- Time savings and failure reduction are provided by reverse polarity protected design and preset time settings
- Easy replacement of standard relays in order to include an ON or OFF delay

Applications in the following industries

- Passenger cars
- Trucks
- Buses
- Construction machinery
- Agricultural vehicles and forestry equipment
- Specialty vehicles

MTR10 Mechanical timer relay with exact time setting

MTR20 Mechanical timer relay with adjustable time setting



MTR30 Mechanical timer relay with position switch and adjustable time setting

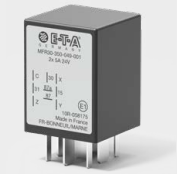
ETR10 Electronic timer relay with overcurrent protection

Flexible, time-saving, cost-saving – E-T-A's timer relays

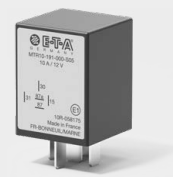
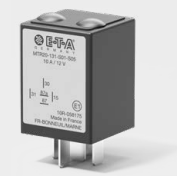
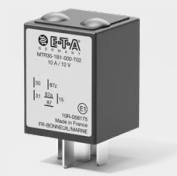
TECHNICAL DATA

Multifunctional and timer relays

MFR10, MFR20 AND MFR30 **MULTIFUNCTIONAL RELAYS**

Series	MFR10	MFR20	MFR30
			
Rated voltage	12 V, 24 V	12 V, 24 V	12 V/24 V
Continuous current	10 A, 30 A	50 A	4 A
Contact system	mechanical	mechanical	electronic
Terminal design	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI
Design	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm
Features	Mechanical multifunctional relay with customer-specific software	Mechanical multifunctional relay with customer-specific software for high continuous currents	Solid state multifunctional relay with customer-specific software

ETR10, MTR10, MTR20 AND MTR30 **TIMER RELAYS**

Series	ETR10	MTR10	MTR20	MTR30
				
Rated voltage	12 V/24 V	12 V, 24 V	12 V, 24 V	12 V, 24 V
Continuous current	1 A, 2 A, 3 A, 5 A, 7.5 A, 10 A, 15 A, 20 A, 25 A, 30 A	10 A, 30 A	10 A, 30 A	10 A, 30 A
Contact system	electronic	mechanical	mechanical	mechanical
Terminal design	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI	ISO 7588 MINI
Design	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm	Cubic enclosure 30 x 30 x 40 mm
Features	Solid state relay with customer-specific configuration	Mechanical timer relay with fixed time setting	Mechanical timer relay with time setting adjustable on site	Mechanical timer relay with position switch (10 positions) and adjustable time setting

SCS10, SCS20 AND SCS30 CAN MINI CONTROL UNITS

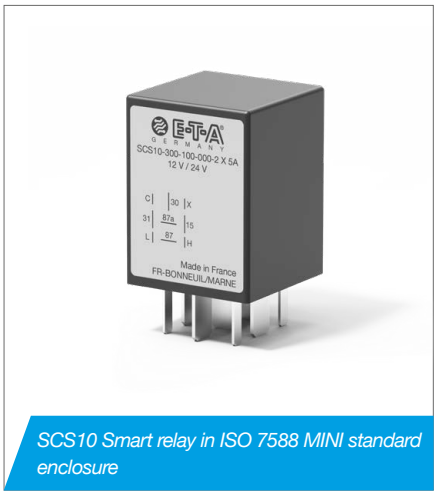
Flexible mini control units with customer-specific software

Modern semi-conductors in combination with a customer-specific software and communication via CAN are special features of the SCS product group.

The SCS product group unites intelligent distribution systems, power distribution systems and components with communication capabilities, e.g. via CAN. Thanks to the customer-specific software, they can easily be installed in existing CAN structures. This is a major benefit especially for many vehicle options. The SCS20 and SCS30 CAN mini control units are particularly characterised by their many interfaces.

Your benefits when using E-T-A CAN mini control units:

- Reduced complexity through adjustable software
- Digitisation of the on-board electrical system through CAN interfaces
- Versatile use through easy integration into existing CAN networks



SCS10 Smart relay in ISO 7588 MINI standard enclosure

SCS200 Smart module in a modular housing with blade terminals, 6 IO ports, 4 outputs à 10 A

Applications in the following industries

- Trucks
- Buses
- Construction machinery
- Specialty vehicles
- Agricultural vehicles and forestry equipment

SCS30 Smart module in a modular housing with terminal block, 6 IO ports, 4 outputs à 1 A

Smart, versatile, customised – E-T-A's CAN mini control units

POWER RELAYS
MPR10, MPR20, HPR10 AND EPR10
Switching high currents

E-T-A power relays are especially suitable for utility and specialty vehicles, where safety and operational reliability are of major importance.

From the MPR10 and MPR20 electro-mechanical power relays to the HPR10 hybrid power relay and to the EPR10 electronic power relay - the power relay portfolio for the utility and specialty vehicle industry includes all of these. These innovative products with true benefit are used whenever high current loads have to be switched or batteries have to be disconnected from the on-board electrical system.

E-T-A's power relays are practice-oriented and highly economic solutions for a wide range of demanding tasks in the protecting, switching and controlling areas.

Your benefits when using E-T-A power relays:

- Improved CO_2 emission values through reduced holding power
- High operational readiness over the entire typical life due to compact, robust, water- and dust-protected design
- High space saving due to a particularly compact design

Applications in the following industries

- Buses
- Trucks
- Construction machinery
- Agricultural vehicles and forestry equipment
- Specialty vehicles

Environmentally conscious, robust, compact – E-T-A's power relays

MPR10 with HDSCS connector

MPR10 Bistable power relay

MPR20 Monostable power relay

HPR10 Hybrid power relay

EPR10 Electronic power relay

HVR10 HIGH VOLTAGE RELAY

For the electrified power train

The HVR10 is based on a hybrid switching concept and unites the advantages of physical isolation with the performance of semi-conductors.

E-T-A's HVR10 high voltage relay combines physical isolation of an electro-mechanical contact with powerful state-of-the-art semi-conductor technology. Even in the event of overload, the hybrid, low-arc switching system allows multiple and safe disconnection of up to 2 megawatts - 2,000 A/1,000 V.

The device can handle higher short-circuit currents of up to 5,000 A until the fast-acting HV fuse trips. The fist-sized device can switch and permanently process 300 A up to 100,000 times, arc-free and wear-free. An innovative self-monitoring system immediately signals critical operating conditions to the control unit.

Your benefits when using the E-T-A high voltage relay:

- Reliable disconnection also in critical cases up to 2,000 A at 1,000 V
- High protection of the on-board electrical system through integral troubleshooting and error signalling.
- Long typical life through low arc switching

Applications in the following industries

- Buses, trucks, construction machinery and specialty vehicles with electrical power train
- Charging stations, power storage and main relays in the vehicle

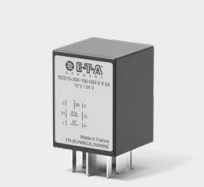
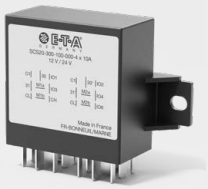
HVR10 Powerful and compact high voltage relay with arc suppression

Powerful, reliable, durable – E-T-A's high voltage relays

TECHNICAL DATA

Power and high voltage relays,
CAN mini control units

SCS10, SCS20 AND SCS30 **CAN MINI CONTROL UNITS**

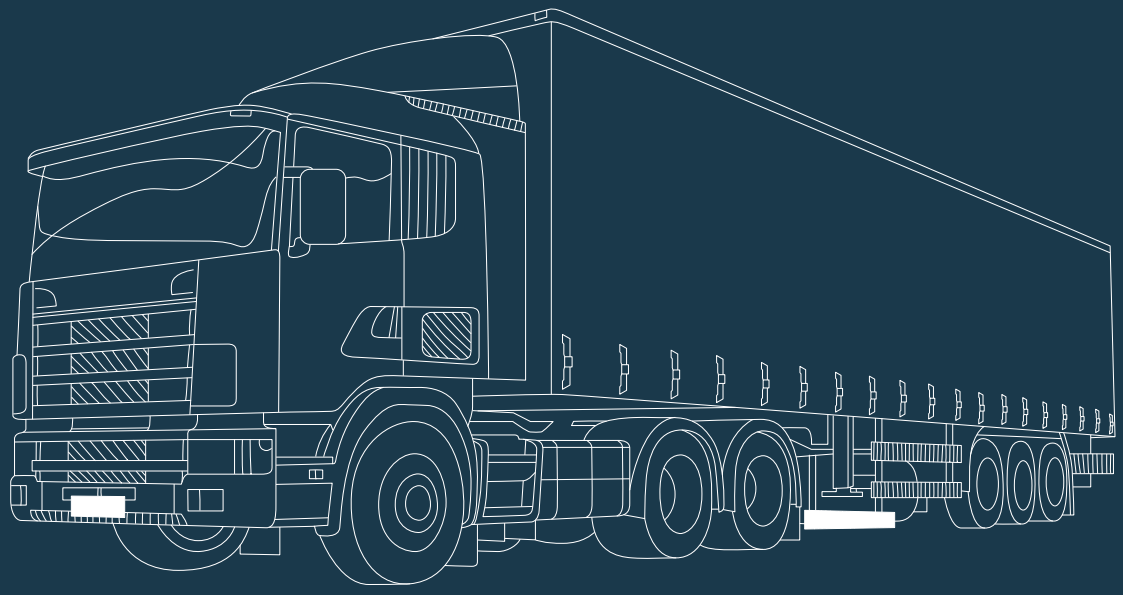
Series	SCS10	SCS20	SCS30
			
Rated voltage	12 V/24 V	12 V/24 V	12 V/24 V
Continuous current	2 A, 5 A	10 A	1 A, 2 A
Contact system	electronic	electronic	electronic
Terminal design	ISO 7588 MINI	Blade terminals	Multipole plug
Design	Cubic enclosure 30 x 30 x 40 mm	Module enclosure 60 x 95 x 35 mm	Module enclosure 60 x 95 x 35 mm
Features	CAN mini control unit with customer-specific software	Smart module with 6 JO ports and 4 outputs á 10 A	Smart module with 6 JO ports and 4 outputs á 1 A

HPR10, MPR10 AND MPR20 **POWER RELAYS,** HVR10 **HIGH VOLTAGE RELAY**

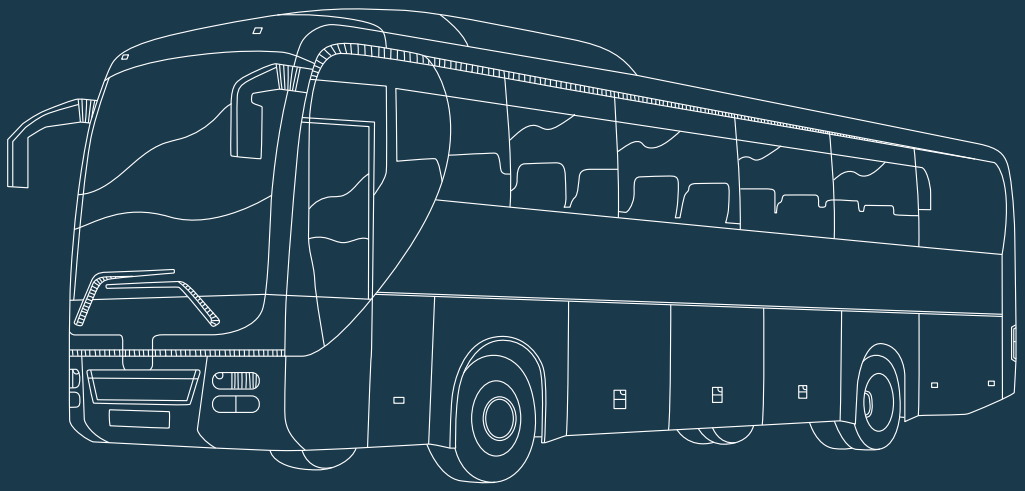
Series	EPR10	HPR10	MPR10	MPR20	HVR10
					
Rated voltage	12 V/24 V	12 V, 24 V, 48 V	12 V, 24 V, 48 V	12 V, 24 V, 48 V	900 V
Continuous current	50 A, 75 A, 100 A, 125 A, 150 A, 175 A, 200 A	100 A, 200 A, 300 A	100 A, 200 A, 300 A	100 A, 200 A, 300 A	300 A
Contact system	electronic	mechanical	mechanical	mechanical	hybrid
Terminal design	Terminal studs	Terminal studs HDSCS connector	Terminal studs HDSCS connector	Terminal studs HDSCS connectorr	Terminal studs
Design	Flat module enclosure	Cylindrical enclosure	Cylindrical enclosure	Cylindrical enclosure	Cubic enclosure
Features	Electronic power relay with optional overcurrent detection and disconnection	Electronic power relay with customer-specific software for harsh operating conditions	Bistable, mechanical power relays for harsh operating conditions	Monostable, mechanical power relay for harsh operating conditions	Powerful and compact 900 V high-voltage relay with arc suppression

E-T-A RELAYS ARE VERSATILE IN USE

From power, special or solid state relays to CAN mini control units and to high voltage relays for electrical power trains

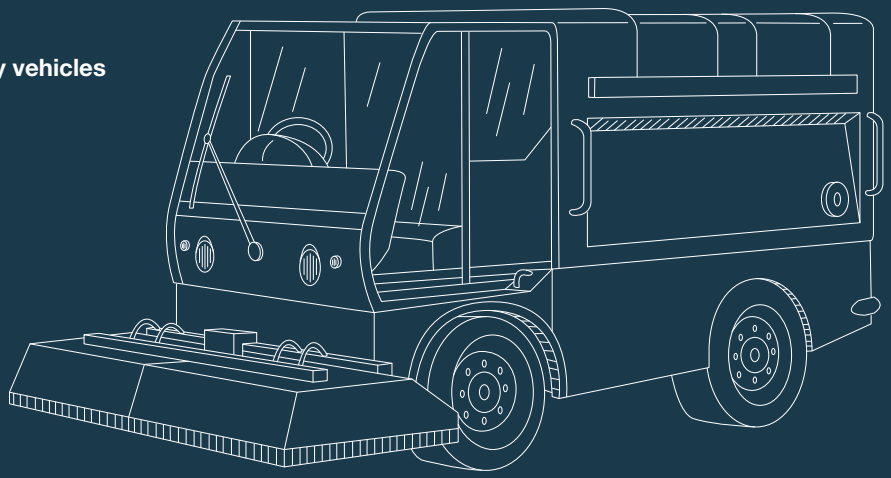


Trucks



Buses

Specialty vehicles



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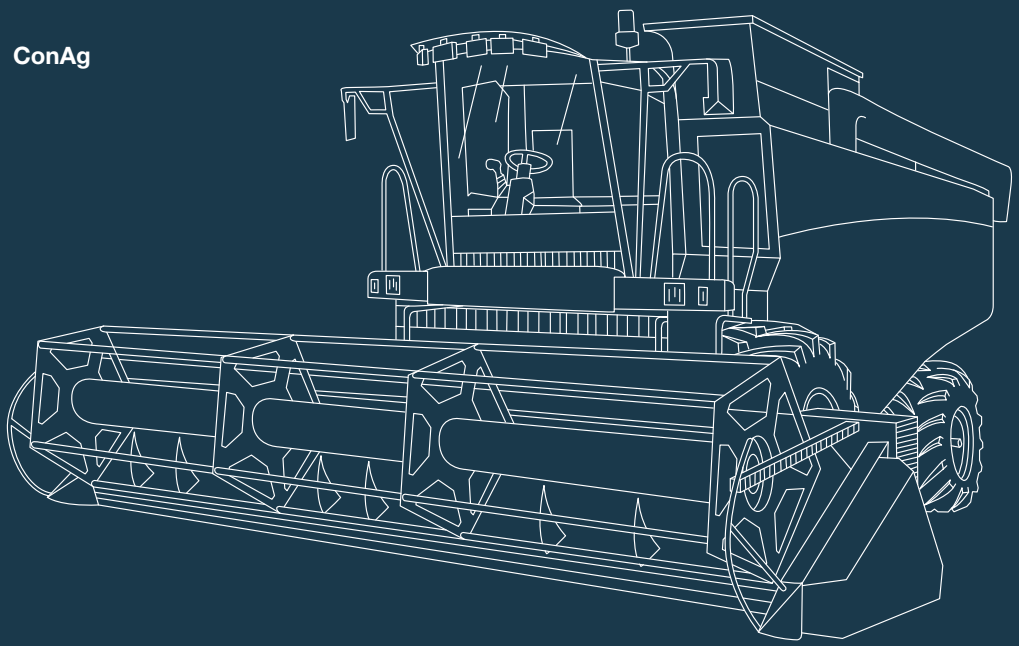

B_Relais-Produktübersicht_e_090821D

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