

Product Overview 2012

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Our Product is service.

In other words: your needs, your requirements, are the decisive factor in the service which we provide. Without detours, quick, flexibel and with an optimal cost/profit ratio.

Controlling devices, relays and microprocessor control units (CAN)

For commercial- and special-purpose vehicles as well as forestry-, agricultural- and construction machinery.

That is our strength. When small quantities and special requirements are necessary, standard products are often not suited. We develop the optimal solution and provide – together with our partners – a smooth production and delivery which meets your specific requirements.

Our Products:.

- Standard products
- Special relays
- Accessories
- Special solutions / Control devices

Our Branches/ Range of application

- Communal- / Forest industry
- Waste, Recycling and Energy
- Handicap- and Rehab vehicles
- Construction industry – Crane, Digger, Caterpillar
- Firefighting- and Rescue Vehicles
- Climate control units
- Municipal vehicles, Disposal- and Purifying (Cleaning) Vehicles
- Hydraulic platform / Hydraulic control units
- Commercial- und Special Vehicles
- Door- and Running-Board Control Units
- Winter service vehicles

Time Relays

For high requirements (10A, 30A, 50A, 100A)

Microprocessor controlled relay, directly programmable, fast, flexible, with an optimal cost-benefit ratio. Standard products are generally not suitable when small quantities or special functions are required. Our products are adaptable to all individual needs. The required time- and function parameters can be individually adjusted by means of a rotary switch.

Available versions:

Delay-on, delay-off or impulse relays. All versions with a nominal voltage of 12V und 24V (Relay type) or with a semi-conductor output of 9-30V.



Types

ZR, ZRP, ZRPS, ZRZ, IMP	10A	40x30x30	Changeover
ZRH, ZRHP	30A	40x30x30	Changeover
ZRI, ZRPI	50A	40x30x30	Changeover
ZRJ	100A	77x46x46	Closed contact

Application range

Delay-on:

switches on at the end of a set time:
 - Air conditioner, switch-on delay of motors, cockpit light delay, compressors

Delay-off:

switches off at the end of the set time:
 - Time delay control of blowers, lighting delay-off
 - Flood light cleaning systems
 - Rear window heating

Delay-on and Delay-off:

Switches on as per the preprogrammed time (t1) and switches off as per the second programmed time (t2)
 - delayed blower on and -off: heating, timer
 - delayed blower on and -off: heating, timer

Impulse relay:

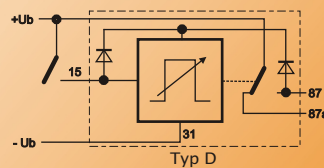
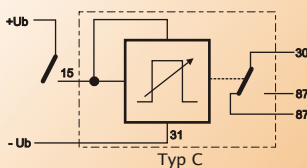
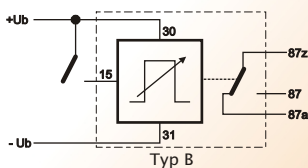
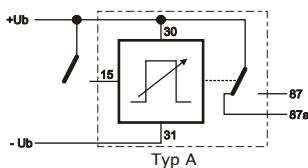
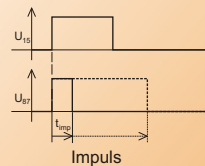
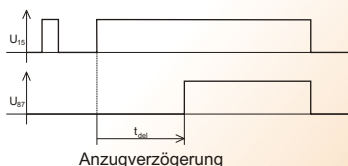
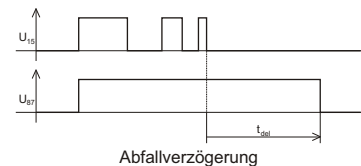
- produces a defined outgoing impulse independent of the length of the triggering.

Technical Data

Nominal Voltage:	12V / 24V / 9-30V
Power input:	ca.10mA / ca. 100mA
Input voltage:	0 ... 15V (0 ... 30 V)
max. Power output:	see chart above
Time domain:	per customer requirement
Time tolerance:	± 5%
Protection (Degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Baseplate:	5x A6,3x0,8 bzw. 2x9,5x1,2 4x2,8x0,8 DIN 46 244 CuZn 37 F37



Function diagram



MULTIFUNKTIONS RELAY

Mini SPC

Microprocessor controlled relay, directly programmable, fast, flexible, with an optimal cost-benefit ratio. Standard products are generally not suitable when small quantities or special functions are required. This relay (mini SPC) is especially suited for such cases as it is adjustable to most individual needs. The functions and time periods can be individually adjusted by means of a rotary switch and a potentiometer. Up to 4 analog digital inputs are possible. For instance: for sensor query, voltage metering and frequency metering. In each case a nominal voltage of 12V und 24V (Relay) or with a semiconductor output (2xHSD, 9–30V) is possible.

Application Range

- Frequency monitoring and analysis
- Door lock while driving
- Frequency comparison
- Start / interlock relay with various options
- Time relay: delay-on / delay-off with load
- Motor overrun control
- Swivel-headlights – triggered via blinker
- Switch lock
- Door control
- Gearbox control
- Daylight running light with dimmerfunction
- Impulse generator
- Fog lamp switch with headlight scan
- Temperatur metering relays
- Sprinkler control
- Impulse with repeat blockage
- Velocity measurement
- Impulse generator
- Seatbelt lock monitoring
- Universal flasher
- LED (channel) running light control
- Proportional controller with end switch
- Voltage monitor with / without hysteresis
- Impulse generator
- Interval relay
- Speed monitor
- Fan controller

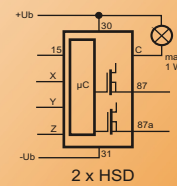
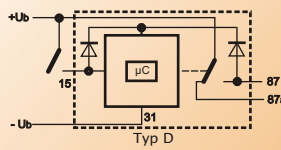
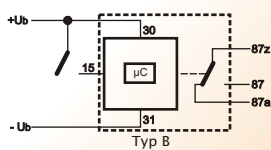
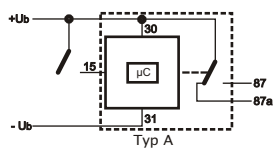


Types

MFR.1xx	12V 10A	40x30x30	Change over
MFR.2xx	24 V 10A	40x30x30	Change over
MFR.3xx	9–30V 2x10A	40x30x30	2xHSD
MFRV.3xx	9–30V 2x5A	40x30x30	2xHSD

Technical Data

Nominal Voltage:	12V / 24V / 9–30V
max. output current:	ca.10mA / ca. 100mA
Time domain:	0 ... 15V (0 ... 30 V)
Operating temp.:	see above
Protection (Degree):	as per customer requirement
Disturbance voltage stability:	-40°C – 85°C
Baseplate:	Ip54
	2006/28/EG DIN 40839
	5xA6,3x0,8 und 4xA2,8x0,8
	DIN 46 244 CuZn 37 F37



Motor Pole Reverse Control

Pole Reverse Relay

Microprocessor controlled relay, directly programmable, fast, flexible, with an optimal cost-benefit ratio.

The Motor Pole Reverse Control, either with a relay or with an electronic H-bridge, adjusts to the individual requirements and surrounding conditions.

The motor pole reverse controller is freely programmable in many of its functions by means of a potentiometer.

In the relay version, up to 4 analog digital ports are available for control functions. In the Can-Bus version, 2 Ports are available. Some available functions: right-hand or left-hand rotation, reset, emergency stop.

Additional port "C" (OC) max 1W.

Internal current measurement and overload shut-down.

Optional: Internal/external buzzer.

Negative gate input

Execution Type :

Relay, with voltages of 12V and 24V.

H-Fullbridge, electronic with semiconductor gate 9-30V, with pulse width modulation gate.

H-Fullbridge 9-30V with CAN-Bus and pulse width modulation gate.

Electronic version individually programmable with the CARSIG CarsGraf© Tool programming device.

Beispiele:

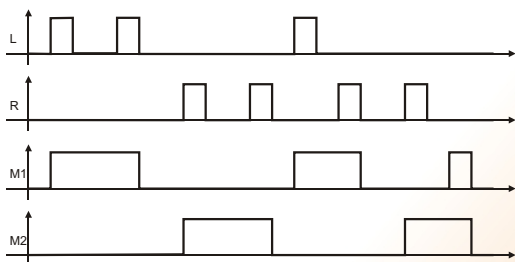


Ausgang: Relais H-Brücke H-Brücke & CAN-Bus

Application Range

- Motor control and reverse in vehicles, machines and other motorized equipment
- Motor control with current measurement
- Control of sliding windows and doors
- Fan control (also with pulsemodulation)
- Motor soft start and soft stop
- Running board control
- Control extendable steps
- Tailboard control
- Roller blind control unit
- Electrically controlled trailer module
- Motor control in the modelbuilding sector
- Mirror adjustment/regulation (folding side mirror)

Function Diagram (Example)

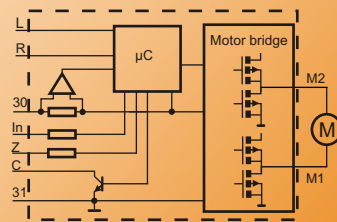
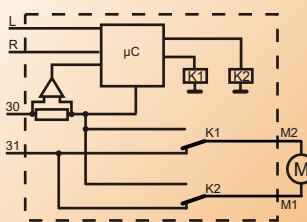


Types

MPR.1xx	12V 10A	40x30x30	Changeover
MPR.2xx	24 V 10A	40x30x30	Changeover
MPR.3xx	9-30V 4A	40x30x30	Bridge
MPR.6xx	9-30V 4A	40x30x30	Bridge, CAN

Technical Data

Nominal Voltage:	12V / 24V / 9-30V
Own power entry:	ca.10mA / ca. 100mA
Current input range:	0 ... 15V (0 ... 30 V)
Operating temp:	-40°C - 85°C
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5xA6,3x0,8 and 4xA2,8x0,8 DIN 46 244 CuZn 37 F37



PROPORTIONAL CONTROLLER

Proportional Controller CAN

The proportional controller serves to control the flow volume of valves and is used in hydraulic applications. Current regulation: a constant output current is regulated by way of a preset value of 0 – 10 Volt or by CAN-Bus. This insures a constant current and prevents the valves from clogging. Further functions such as current regulation range, chute time, etc. as per customer requirements are possible. The optimal CAN-Bus enables a data flow between CAN modules. CAN High- oder Low-Speed (RS232 or SAE J1939 optional) ensures an easy Integration into existing CAN-Systems. Triggering and readout of all data per CAN-Bus possible. Further functions (IOs) are freely programmable. The customer can program by way of programming interface CarsGraf©.

Further options:

- Negativ gate input
- Frequency access
- Current gate-input
- inverse input function

Versions:

Standard version mit PWM-Ausgang 9–30V,
Version mit PWM und CAN-Bus 9–30V.

Accessories:

The CARSIG CarsGraf© Tool with programming interface.



Standard

mit CAN-Bus

Application Range

- Hydraulic applications
- Valve control
- Fan control (with pulse width modulation)
- Current controlled units
- Motor soft start und soft stop
- decentralized application
- as an add-on for existing CAN equipment
- Speed control

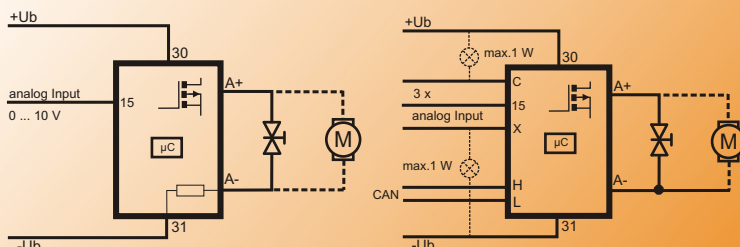
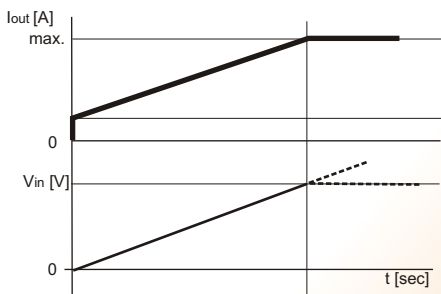
Types

PCR.300.x	9–30V 7A	40x30x30	CAN-Bus
PCR.301.x	9–30V 5A	40x30x30	CAN-Bus
PCR.302.x	9–30V 2A	40x30x30	Standard

Technical Data

Nominal Voltage:	12V / 24V / 9–30V
Own power entry:	ca.10mA / ca. 100mA
Current input range:	0 ... 15V (0 ... 30 V)
Operating temp:	-40°C – 85°C
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5x A6,3x0,8 and 4x A2,8x0,8 DIN 46 244 CuZn 37 F37

Function Diagram (Example)



NANO CAN Control

Nano CAN SPC

Multifunktion-/ Mini control unit with 3 in- /output ports and 2 FET-Output ports, as well as CAN-Bus. Suitable for Automotive as well as other applications. The functions between the in- and output ports are freely programmable. Further functions as per customer requirements. Separate triggering of the two power outputs is possible. The CAN-Bus according to ISO 11898 allows for the exchange of data between the CAN-Modules. CAN High- oder Low-Speed (RS232 oder SAE J1939 optional) insures a simple integration in existing CAN system fields und equipment. Triggering and upload of all data per CAN-Bus is possible. The functions of all input ports are individually programmable (2x analog input or putput). Customer individualized programming possible through the use of programming interface CarsGraf©.

Further options:

- Negativ gate input (negativ active)
- Channel- and current entry
- Inverse output gate
- Input gate as voltage monitor
- OC control exit

Accessories:

CARSIG CarsGraf© Tool and Programming interface.



Application Range

- Temperatur control
- Over-run control
- Fan control (with pulse width modulation)
- Door control
- Motor soft start and -stop (pulse width modulation)
- Local specific application possible
- Expansion of existing CAN equipment
- Roller blind control
- Downtime measurement
- Logic functions
- Control applications (SPC)

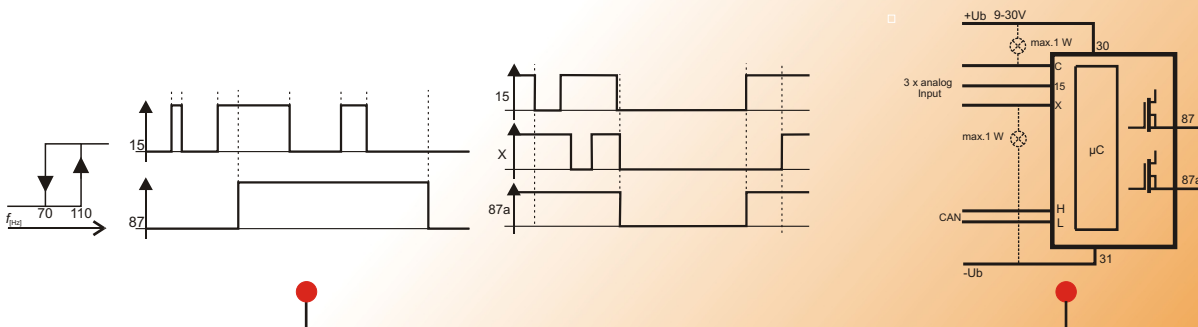
Types

NCS.300.x	9-30V	2x 10A	40x30x30	CAN-Bus
NCS.302.x	9-30V	2x 5A	40x30x30	CAN-Bus

Technical Data

Nominal Voltage:	12V / 24V / 9-30V
Own power entry:	ca.10mA / ca. 100mA
Current input range:	0 ... 15V (0 ... 30 V)
Operating temp:	-40°C - 85°C
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5xA6,3x0,8 and 4xA2,8x0,8 DIN 46 244 CuZn 37 F37

Funktion Diagram (Example)



Flip/Flop/Relay

Flip-Flop-Relay

Flip-Flop Relays, also called stepping relay, current pulse relay, or current switches, are used wherever one or more switches are needed to control the in- or output of current. This takes place with a minimal output (remote control). The relay can be placed directly on the voltage supply source. Many further customer-specific functions are possible.

Further options:

- Solid state format (HSD out)
- Bistable circuit
- Negativ current input (negativ aktiv)
- Automatic time shut-down
- Reset-input
- Isolated contact
- Several switch inbound ports
- Various base wirings
- Solid state outboug port

Accessories:

Sockets and snap-/crimp contact 6,3 mm.



Standard



negativ getriggert



potentialfreie Kontakte

Application Range

- Flood lamps
- Low capacity remote keying
- Fan control
- Door control
- Roller blind control
- Several switches parallel possible

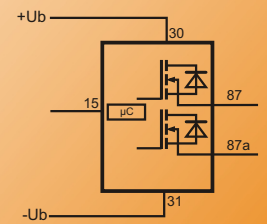
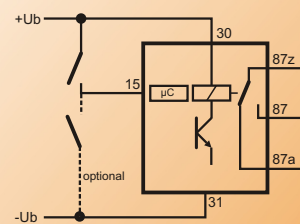
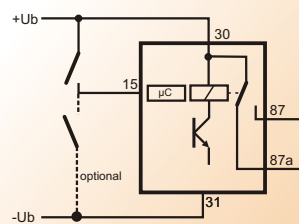
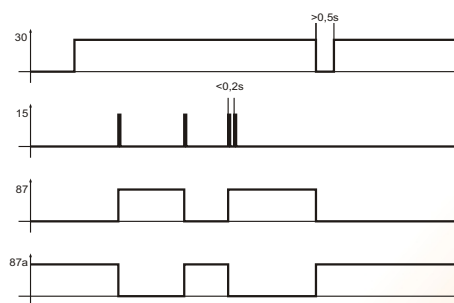
Types

SHR.1x	12V 20/10A	40x30x30	Changeover
SHR.2x	24V 10A	40x30x30	Changeover
SHR.3x	9-30V 4A	40x30x30	HSD

Technical Data

Nominal Voltage:	12V / 24V / 9-30V
Own power entry:	ca.10mA / ca. 100mA
Current input range:	0 ... 15V (0 ... 30 V)
Operating temp:	-40°C - 85°C
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5xA6,3x0,8 and 4xA2,8x0,8 DIN 46 244 CuZn 37 F37

Function Diagram (Example)



Solid State Relay

Solid State Relay

Solid state relays are used where ever inductive loads are switched on or off. Because of the solid state technic, extremely high operating cycles are possible. Solid state relays are silent and unsusceptible to vibration. They have a short switch-off delay in order to compensate voltage drops. Soft starts (PWM) are possible. This is takes place with a low input signal. The relay can be placed directly on the voltage supply source. Many further customer-specific funtions are possible.

Further options:

- Negativ gate input (negativ active)
- Negativ switching gate exit (Low Side)
- Grounding shut-down
- HighSide- or LowSide-exit
- 125°C version
- various socket circuits
- LEDs for Function control

Accessories:

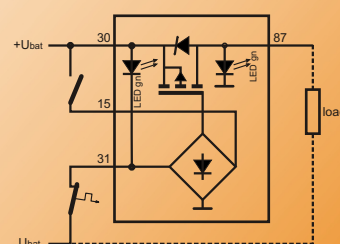
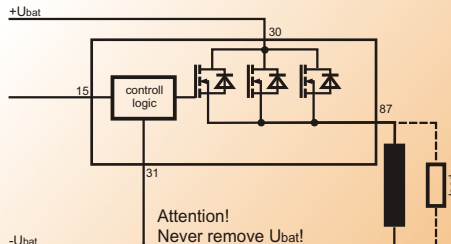
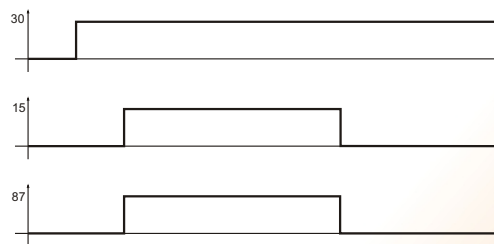
- Sockets and snap- /crimp contact 6,3 mm
- Bracket for mounting.



Application Range

- Control - lamps
- Control - fan
- Control - blower
- Control - motor
- Several input ports possible
- Used where high switching cycles are necessary
- Silent when in use
- Used in strongly vibrating equipment

Function Diagram (Example)



Types (Example)

SSR.2x	24V	50A	40x30x30
SSR.300.x	12/24/30V	4A	30x30x30
SSR.301.x	12/24/30V	10A	40x30x30
SSR.302.x	12/24/30V	15A	40x30x30
SSR.303.x	12/24/30V	25A	40x30x30
SSR.304.x	12/24/30V	35A	40x30x30

Technical Data

Nominal voltage:	12V / 24V / 9-30V
Operating temp.:	-40°C - 85°C
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5xA6,3x0,8 and 4xA2,8x0,8 DIN 46 244 CuZn 37 F37

STEP-UP/ STEP-DOWN CONVERTER

Step-Up or Step-Down Converters are used wherever operational voltage higher or lower than that which is on-site is needed. This Converter increases or reduces the input voltage to a higher or lower output voltage. It is used, for example, in order to operate 12V equipment on a 24V net. The efficiency of the Step-up / Step-down Converter must be adjusted to the operational conditions.

One field of application is that, in which the operational voltage of vehicles and machinery fluctuates strongly, causing the failure of connected electronics systems (Pc's, radio systems, etc).

Step-Up Converter -

increases the input voltage to a preset voltage value. Used where ever 24 Volt equipment is used in a 12 Volt vehicle.

Step-Down Converter -

reduces the input voltage to a preset voltage value.

Used where ever 12 V equipment is to be used in a 24 V environment (i.e. Trucks)

Further special features are possible.

Customer specific options are possible

Accessories:

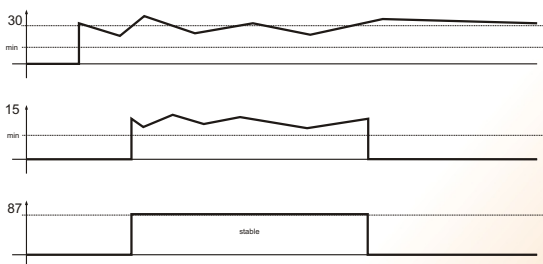
Sockets and snap- / crimp contacts, as well as matching brackets.



Application Range

- Radio systems in Vehicles
- Metering equipment
- Computer functions in Vehicles
- 12V Trailer operation on Truck (24V)
- Truck trailers (24V) on 12V drawing vehicle
- Video- / Camera vehicles

Function Diagram (Example)

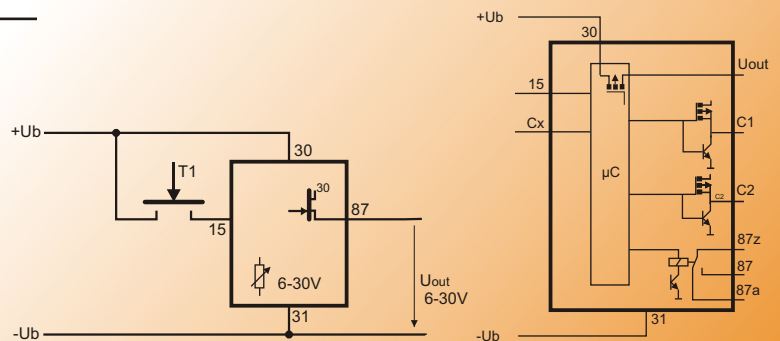


Types

STP.300.x	6-30V 2A	40x30x30	StepUp/Down
STP.350.0x	6-30V 5A	60x60x30	StepUp
STP.350.1x	6-30V 5A	60x60x30	StepDown

Technical Data

Nominal voltage:	6-30V
Operating temp.:	-40°C - 85°C
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5pol DIN 46 244 bzw. 10 pol



Flasher

Flasher

The flasher controls the flash function in vehicles. It switches the blinkers and control lamps on and off. For vehicles which are equipped with a trailer hitch, the flasher also controls the additional lamps. It controls directional flashing and hazard flasher.

Various types and operational voltage available.

Constructed to fill the different needs regarding the number and capacity of bulbs or LEDs. Also available with bulb / LED fail identification and /or fail identification für the blinker on a connected trailer.

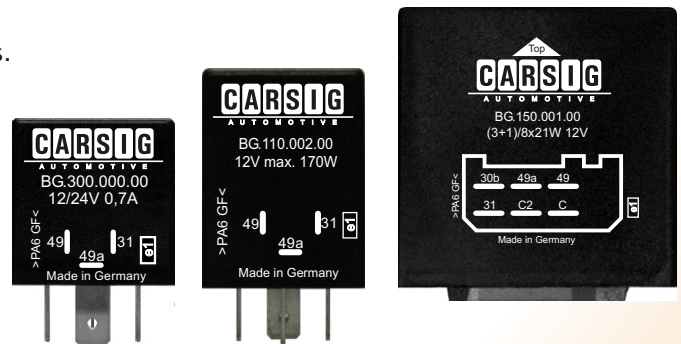
Further special functions are possible as per customer needs.

Further options:

- with C-Function
- with C2-Function
- output port for control lamps
- Universal flasher

Accessories :

Sockets and snap- / crimp contact 6,3 mm



Application Range

- Directional blinking in Vehicles of all kinds
- used for bulbs, LEDs and all additional lamps
- Tailgate - lift / Hydraulic Platforms
- Warning lights
- marker buoy
- malfunction message

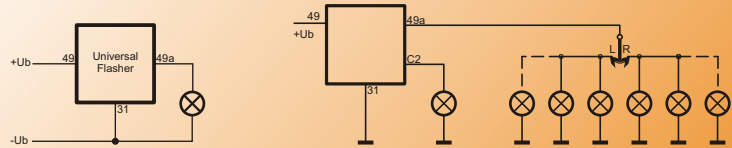
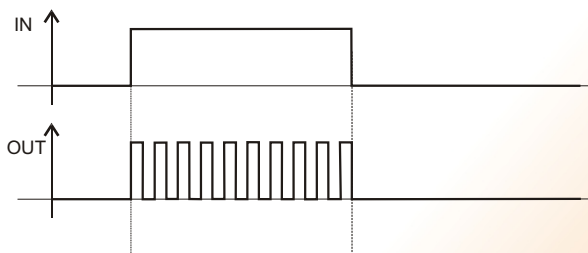
Types

- diverse socket / connector pin assignments
- various additional functions
- varied output power
- for LED utilization
- with trailer control

Technical Data

Nominal voltage:	12V / 24 V / 9V-30V
Own power entry:	ca. 10 mA
Blinkfrequece:	90 ± 5%
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	3(5) x A6,3x0,8 DIN 46 244 CuZn 37 F37

Function Diagram (Example)



Preheating Relays

Preheating Relays

The preheating relay controls the preheating unit for a diesel motor. The preheating relay controls the power for glow plugs by means of time and temperature.

A temperature sensor measures the present temperature and determines the necessary preheating time.

The preheating control lamp signalizes the ability of the motor to start. The relay can also control a possible afterglow of the engine. If the engine is not started, the relay shuts down automatically.

Further special features as per customer requirements.

Further options:

- Various socket configurations
- Additional output port for additional cylinders

Accessories:

Sockets, Crimp contacts



Application Range

- Diesel motor start
- Excavator and construction machinery
- Generator units
- Compressor units
- Crawler

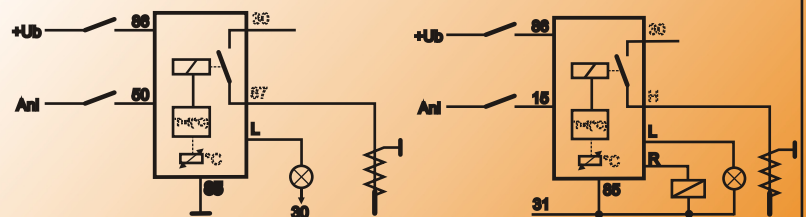
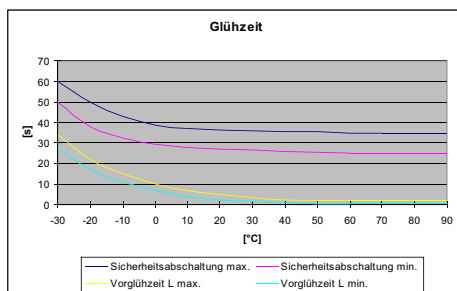
Types

- various sockets/ socket-configurations
- various time and output levels
- Preheating run as per customer requirements

Technical Data

Nominal voltage:	12V / 24V
max. output voltage :	50A (4 Glühkerzen)
Operating temperature:	-40°C - 85°C
Protection (degree)::	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	3xA6,3x0,8 und 2xA9,5x1,2 DIN 46 244 CuZn 37 F37

Input voltage range



WIPER-WASHER-INTERVAL RELAY

The Wiper-Washer-Interval Relay controls the front and back wipers as well as the washing system, depending on the vehicle manufacturer. In particular, the interval-function of the wipers is controlled by this relay. Normally, Wiper-Washer-Interval Relays are used with a relay output port.

The electronic wiper-washer-interval relay is new. It is used where ever there is a high risk of wipers freezing on the windows. An internal current measurement insures that the wipers are shut down automatically when they are blocked. Furthermore, the current flow is then automatically reduced. The function of the normally closed contact is replaced by a semiconductor which reduces induction peaks. The switching threshold is adjusted according to the wiper motor.

Special functions are possible as per customer needs.

Further Options: :

- various socket configurations
- Relay version
- fully electronic version
- with/without adjustable time interval
- electronic time program

Accessories:

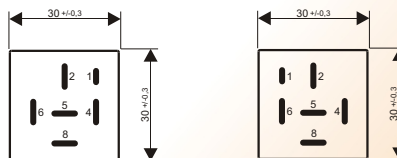
Socket and Crimp contact



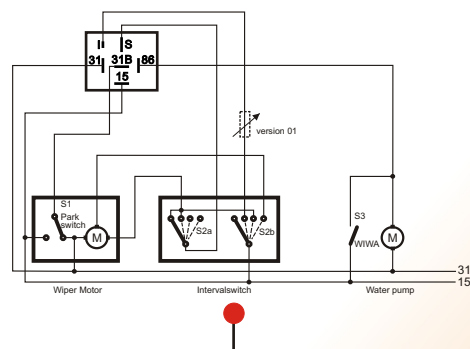
Technical Data

Nominal voltage:	12V / 24V / 9V-30V
Input voltage :	ca. 10 mA
max. output voltage:	10A
Time tolerance:	± 5%
Protection (degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5x A6,3x0,8 1x A2,8x0,8 DIN 46 244 CuZn 37 F37

Types

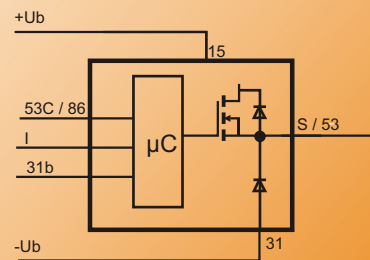
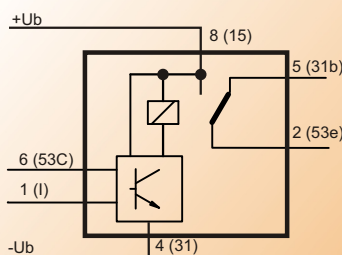


Connection Diagram (example)



Application range

- Vehicles of all kinds
- Excavators and construction machinery
- Busses and Trucks
- Snowcats / crawler
- Fire trucks and rescue vehicles
- Municipal vehicles



Mini CAN Controller

Mini CAN Controller

Universally applicable Mini control module which can be used as a power cluster or metering device. It is applicable in vehicles of all types: machines, cranes, agricultural- and forestry machinery as well as construction machinery. All input and output ports are freely programmable. Reference output voltage for sensors. CAN-Bus high- or low-speed (other serial interfaces such as CAN open, SAE J1939, RS232 are optional). Can be used as Master-Slave-Module or expansion (I/O). The input ports are programmable as output ports. If one of the 4 HSD output ports is not used, it can be programmed as an input port. Further special functions possible as per customer requirements.

Further Options:

- CAN open
- SAE J1939
- RS232 serial interface
- internal buzzer
- Modified input resolution



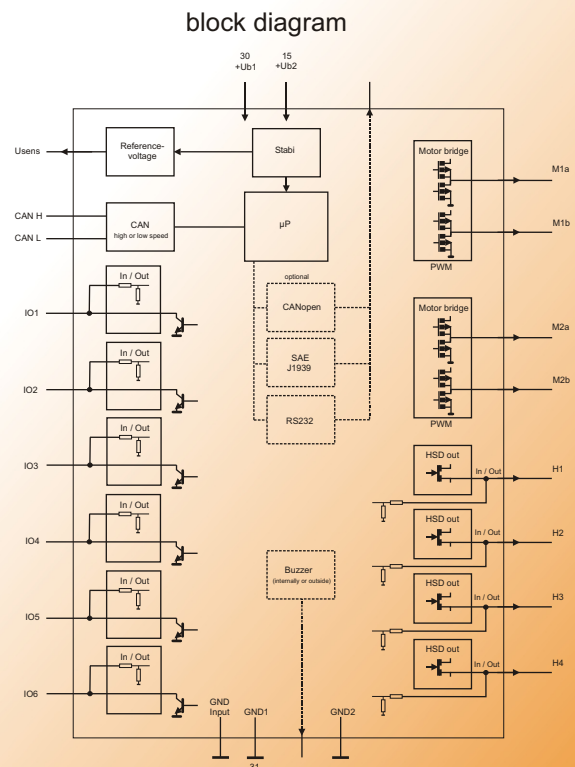
Technical Data

Nominal Voltage:	9V-30V
Own voltage input:	approx. 100 mA
max. Voltage output:	total approx. 30A
Input Ports:	max. 10
Output ports:	max. 10 + 2x motor bridge
Protection (Degree):	IP52 (higher on request)
Disturbance voltage stability:	2006/28/EG DIN 40839
Connector	24pol. Stecker Molex MiniFit

Application Range

- As Regulator / Controller in
- Diesel motors/ Vegetable oil
 - Machinery in general
 - Municipal und special vehicles
 - Diggers, crawlers and construction vehicles
 - Moveable steps and door systems
 - Temperatur control/ fans
 - Cranes and extendable props
 - Monitoring of sensors / liquid level
 - Assembly line control/ -part registration

I/O Diagram



LIGHTING MODULE

Lighting Simulation

This module enables the use of LED light fixtures. The module simulates the lamp load for the vehicle electronics. The module can be used for light bulbs when, for instance, not all bulbs should be used. The control function for the upper lights and the load simulation can be shut off externally, which means that it can be adjusted to the vehicle equipment version.

The module can be fitted with a current control for Min- and Max values.

The Lighting module is to be placed between the vehicle electronics and the rear lights.

Further Options:

- 1 - 7 channel versions available
- adjustable or fixed programmed
- with or without monitoring of the lighting
- partial supervision of the lighting
- with cable connection
- water-resistant housing possible
- higher IP Protection if required



Example: 1-Channel -Channel 5-Channel 7-Channel, water-resistant

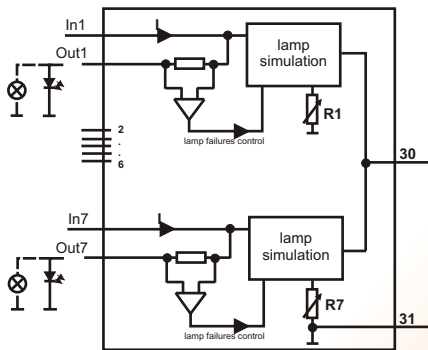
Application Range

- monitoring the blinker lights
- monitoring the LED lights
- monitoring rear-/brake lights
- monitoring of additional lights
- monitoring of beacon lights

Types

BEL.100.x	12V	40x30x30	1 Channel
BEL.120.x	12V	60x60x30	2 Channels
BEL.130.x	12V	95x85x30	5 Channels
BEL.160.x	12V	180x110x60	7 Channels
BEL.200.x	24V	40x30x30	1 Channel
BEL.220.x	24V	60x60x30	2 Channels
BEL.230.x	24V	95x85x30	5 Channels
BEL.260.x	24V	180x110x60	7 Channels

Connection Diagram (example)



Technical Data

Input voltage :	12V / 24V
max. Channels:	siehe Tabelle oben
Operating Temp.:	-40°C - 85°C
Protection (Degree):	IP54 / (IP64)
Disturbance voltage stability:	2006/28/EG DIN 40839
Plug / Base plate:	4pol / 8pol / 10pol flat connection 6,3mm, cable connection when 1-channel

Mini Controller

Mini Controller

Universally applicable mini controller to be used to record output, data or flow rate.

Can be used in vehicles and machines of all kinds: cranes, construction machinery, agricultural- and forest machinery.

Sequential- and conveyer belt control can be executed easily.

Digital and analog input ports are available for the connection of switches and sensor- or level gauges.

5 short-circuit protected HSD exit ports, each with 4A.

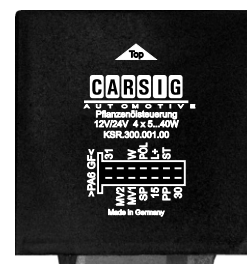
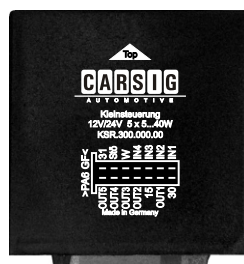
Special functions as per customer requirements.

Further Options:

- Software design
- Serial interface
- internal Buzzer
- modified Input resolution.

Accessories:

- Display with keypad
- Connecting plug and Crimp contacts



Technical Data

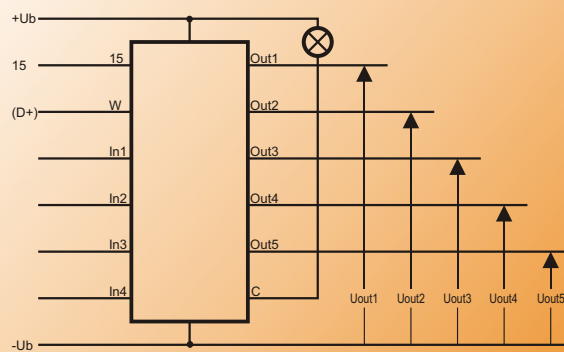
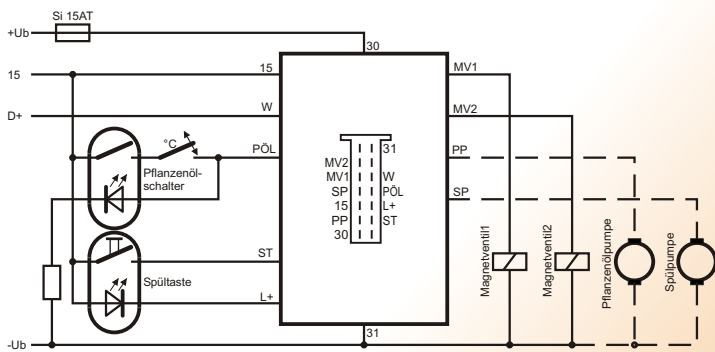
Nominal Voltage:	9V-30V
Own voltage input:	ca. 25 mA
Continuous current:	4 A
max. Switching current:	8 A
Input ports:	4x analog, 2x digital
Output ports:	5x HSD, 1x OC
Protection (Degree):	IP54
Operating temp.:	-40°C - 85°C
Disturbance voltage stability:	95/54/EG DIN 40839
Connector:	14pol. Stecker TE Junior Timer

Application Range

As a Regulator / Controller:

- Diesel motors / Vegetable oil
- Machinery in general
- Municipal und special vehicles
- Diggers, crawlers and construction vehicles
- Automatic sequence control
- Temperature control / blower
- Monitoring - sensors / liquid level
- Ventilator / climate control unit
- Assembly line control/ part registration

Example (use)



Voltage Controller

Voltage Controller

The Voltage controller is used to control voltage, monitor battery voltage, and is also used for analog monitoring (i.e. range sensor) or pressure monitoring.

If the programmed threshold (S1) is under- or overrun, the load will automatically be shut down.

It will be reactivated when the threshold (S2) is under- or overrun.

Various fields can be monitored. Simultaneous monitoring of several voltage ports is possible.

Nominal voltage of 12 and 24 V is possible per Relay port or with semiconductor port (2xHSD, 9-30V)

Options:

- With confirmation
- Output port for siren or optical signal



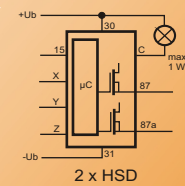
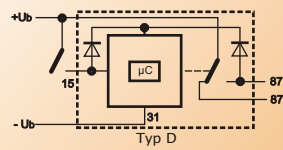
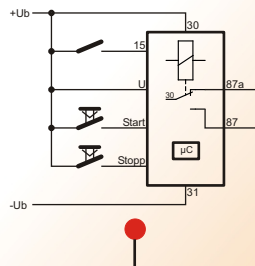
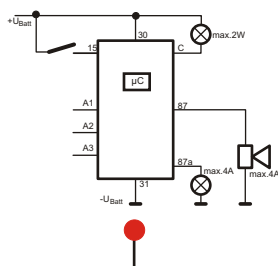
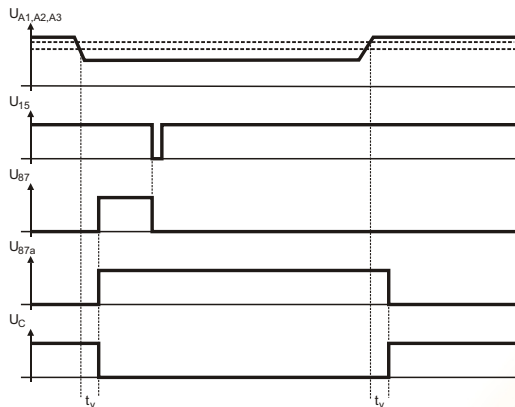
Application Range

- Battery monitoring for
 - Cooling systems - i.e. In trucks
 - Busses
 - Caravan
 - Rescue- and Fire vehicles
- Load shut-down in case of
 - Voltage underrun
 - Voltage overrun (destruction avoidance)

Versions

SPW.1xx	12V 10A	40x30x30	Change over
SPW.2xx	24 V 10A	40x30x30	Change over
SPW.3xx	9-30V 2x10A	40x30x30	2xHSD
SPW.3xx	9-30V 2x5A	40x30x30	2xHSD

Function Diagram (example)



Technical Data

Nominal voltage:	12V / 24V / 9-30V
Own voltage input:	ca.10mA / ca. 100mA
Input voltage range	0 ... 15V (0 ... 30 V)
Operating temp.:	-40°C - 85°C
Protection (Degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	5xA6,3x0,8 and 4xA2,8x0,8 DIN 46 244 CuZn 37 F37



Current Measurement Relay

Current Measurement Relay

Current measurement Relays are used to measure and monitor electrical loads. Various load sizes can be evaluated. The ports can be programmed individually: with a change over relay, with a HSD (High-Side-Driver) or with a driver for a LED-control lamp.

Any connected load will be monitored for over- or underload.

The Current Measurement Relays are available in 12V and 24V versions.

Accessories:

Relay sockets and crimp contacts



Design - example

Application Range:

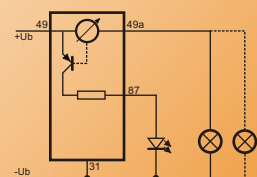
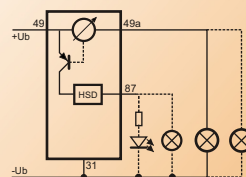
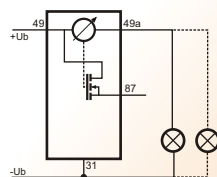
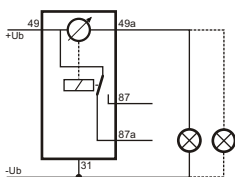
- Load monitoring
- Gate circuit
- Overcurrent documentation
- Alarm transmitter
- Bidirectional version
- Monitoring beacon lights
- Monitoring flashing lights
- Slave function/ automatic on of an additional load
- Notify and monitor of equipment
- Ventilation and climate control
- Hoisting- and transportation technology
- Assembly line control
- Ship building
- Elevators, escalators

Versions (Example)

SMR.100.x	12V 21W+21W	30x30x30	Change over
SMR.101.x	12V 50W+50W	30x30x30	Change over
SMR.150.x	12V 10...21W	30x30x30	Change over
SMR.202.x	24V 150+150W	40x30x30	HSD
SMR.203.x	24V 150+150W	40x30x30	LED

Technical Data

Nominal Voltage:	12V / 24V / 9-30V
Voltage drop:	< 0,7 V
Operating Temp:	-40°C - 85°C
Protection (Degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	A6,3x0,8 und A2,8x0,8 DIN 46 244 CuZn 37 F37



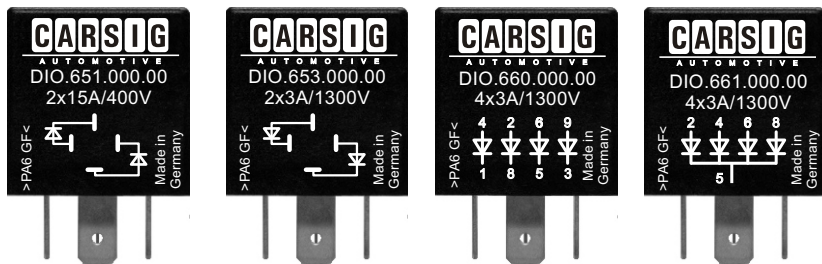
DIODE / Resistor/Combinations

Diode combinations are used to decouple electrical circuits and/or to consolidate signals and linkage. This way several processes can be consolidated on one buzzer without influencing the basic electrical circuit.

Diode combinations are available in various voltages and currents.

Accessories:

Sockets and Crimp contacts



Examples – Diode combinations

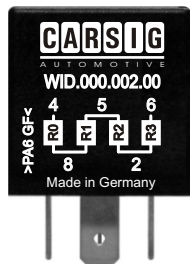
Application Range / Options:

- Circuit decoupling
- Circuit consolidation
- Logical interconnection
- as a free wheeling diode
- Decoupling of lamps
- Schottky barrier diode

Versions (Example)

DIO.622.x	30x30x30	4x shared Anode
DIO.632.x	30x30x30	4x shared Kathode
DIO.677.x	30x30x30	2x single diode
DIO.666.x	55x20x15	1x single diode
DIO.203.x	40x30x30	4x single diode

Resistor Combinations

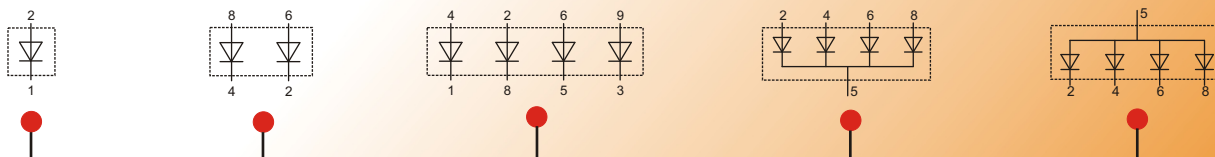


- Resistor combination for:
- inductance damping
 - Decoupling
 - Pull-UP in Bus-Systems
 - Pull-Down in Bus-Systems

Various resistor values and output ports available.

Technical Data

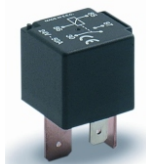
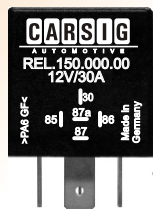
Nominal voltage:	bis 1300 V
Operating Temp:	-40°C – 85°C
Protection (Degree):	IP54
Disturbance voltage stability:	2006/28/EG DIN 40839
Base plate:	A6,3x0,8 DIN 46 244 CuZn 37 F37



RELAYS

Change Over – Closer – High Current

Relays switch large loads through the use of very low loads. Through the use of a small elektromagnet, a contact can be opened, closed or changed – depending on the function. The functions differentiate according to the Relay version.



Examples

Options

- Pluggable relay
- Screwed connection
- with and without clip
- Clip as accessory
- Inverse-polarity protection
- Free wheeling diode
- Inverse polarity protection diode
- Damping resistor
- Closing / Changeover Relay
- Double NOC Contact

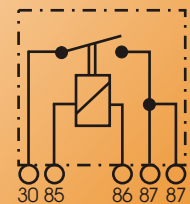
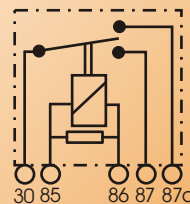
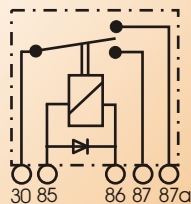
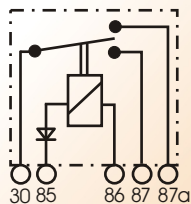
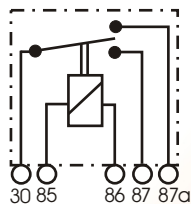
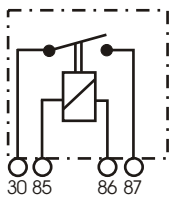
Versions (Example)

MIR – Serie	Micro Relays	10–25A 12/24V
STR – Serie	Standard Relays	10–40A 12/24V
HSR – Serie	High Current Relays	50–600A 12/24V
DOR – Serie	Double Relais	12/24V
REL– Serie	Special Relais	12/24V

Technische Daten

Material Socket PA6GF

Contacts: CuSn



Accessories

Sockets are available with and without brackets for the fast replacement of a relay.
The various crimp contacts needed are available in a variety of gauges.
The sockets are available for standard relays, high current relays and micro relays.



Socket examples

● Application Range:

- Pluggable Relays
- Fixation in switching cabinet
- Socket with additional safety switch
- Stackable version
- Narrow version
- High version

● Versions (Example)

- | | |
|--|--------|
| Socket for standard relay with clip | RM 2,5 |
| Socket for standard relay without clip | RM 1,0 |
| Socket for micro relays | |
| Socket for high current relays | |

● Bauformen Crimpkontakte mit Rastnase

- Flat Socket Connector RSR 6,3 – Wire 1,0 mm
- Flat Socket Connector RSR 6,3 – Wire 2,5 mm
- Flat Socket Connector RSR 2,8 – Wire 1,0 mm
- Flat Socket Connector RSR 4,8 – Wire 1,0 mm
- Flat Socket Connector RSR 4,8 – Wire 2,5 mm
- Flat Socket Connector RSR 9,5 – Wire 6,0 mm

● Technische Daten

- | | |
|------------------|----------------|
| Material Sockel: | PA6GF |
| Crimpkontakte: | CuSn, verzinkt |

