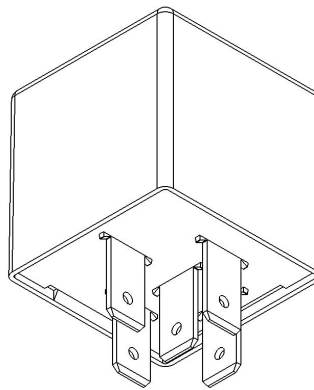


mounting direction



view of plug

This data sheet applies to revision A (see sticker on the control unit). Please contact us for data sheets for other revisions (e.g. A).

DESCRIPTION

Solid State Relays are suitable for switching lamp loads, ohmic and inductive loads. They switch silent and are absolutely wear-free. They are compatible with conventional ISO mini-relays in terms of size and connector design

TECHNICAL DATA

Housing	PA66GF30
Connector	Base plate 5 pin
Weight	40 g
Temperature range (according to ISO 16750-4)	-40 °C to +85 °C (at +85°C not full load)
Environmental protection	IP 6K8 with correct mounting direction and use of the waterproof plug-in socket, otherwise IP53
Current consumption	< 20 µA
Over-current Protection	1A + load
Total inputs and outputs	3 (1 digital inputs, 2 outputs)
Inputs	1 digital input for switching the load (positive or negative)
Outputs	1 digital input for load 1 current sense, proportional to load current
Operating voltage	9-32 V
Starting voltage	6 V
Overvoltage protection	≥ 33 V
Undervoltage cut-off	≤ 6 V
Turn-on time	Max. 400 µs
Turn-off time	Max. 100 µs
Quiescent current	< 20 µA
Reverse polarity protection	Yes
CAN interfaces	No

REGULATORY APPROVALS AND TESTING

E1 approval	05 8639
Electrical tests	According to ISO 16750-2: Short circuit protection Reverse polarity protection Interruption pin and connector Overvoltage
	According to ISO 7637-2:2004: Automotive-Pulse 1 to 3b
	According to ISO 11452-4: BCI: 100 mA According to ISO 11452-2: Antenna: 100 V/m

INPUT FEATURES - SUMMARY

Pin 4	Digital input	Temperature	Turn-on threshold	Turn-off threshold
		- 40 °C	4.8 ± 0.2 V	4.6 ± 0.2 V
Digital input positive	Turn-on threshold ¹ Turn-off threshold ¹	+ 25 °C	3.8 ± 0.2 V	3.6 ± 0.2 V
	> 5.5 ± 0.2 V < 2 ± 0.2 V	+ 85 °C	2.9 ± 0.2 V	2.7 ± 0.2 V
Digital input negative	Turn-on threshold Turn-off threshold	threshold depends on temperature, measured with UB = 14 V ¹ guaranteed temperature-independent thresholds		
	0 V Operating voltage			

OUTPUT FEATURES - SUMMARY

Pin 8	Protective circuit for inductive loads	No catch diode available
	Wire fault diagnostics	Possible via current sense
	Short circuit diagnostics	Possible via current sense
Digital, positive switching	Switching current	Acc. to assembly option
Short circuit resistance against GND and VS	Shutdown of the output due to overtemperature shutdown of the output driver	
Pin 5	Current sense proportional to the load on pin 8 - Dependent on the supply voltage, indication of reference values	

Voltage values of the current sense output 25 A variant, measured at RT= 20°C

Load current	V _s = 8 V	V _s = 12...32 V
1 A	0.2 V	0.2 V
5 A	1.0 V	1.0 V
10 A	2.2 V	2.3 V
15 A	3.4 V	3.5 V
20 A	4.6 V	4.8 V
25 A	5.8 V	6.1 V

Voltage values of the current sense output 15 A variant, measured at RT= 20°C

Load current	V _s = 8 V	V _s = 12...32 V
1 A	0.36 V	0.35 V
5 A	2.1 V	2.1 V
10 A	4.2 V	4.3 V
15 A	6.6 V	6.6 V

Voltage values of the current sense output 5 A variant, measured at RT= 20°C

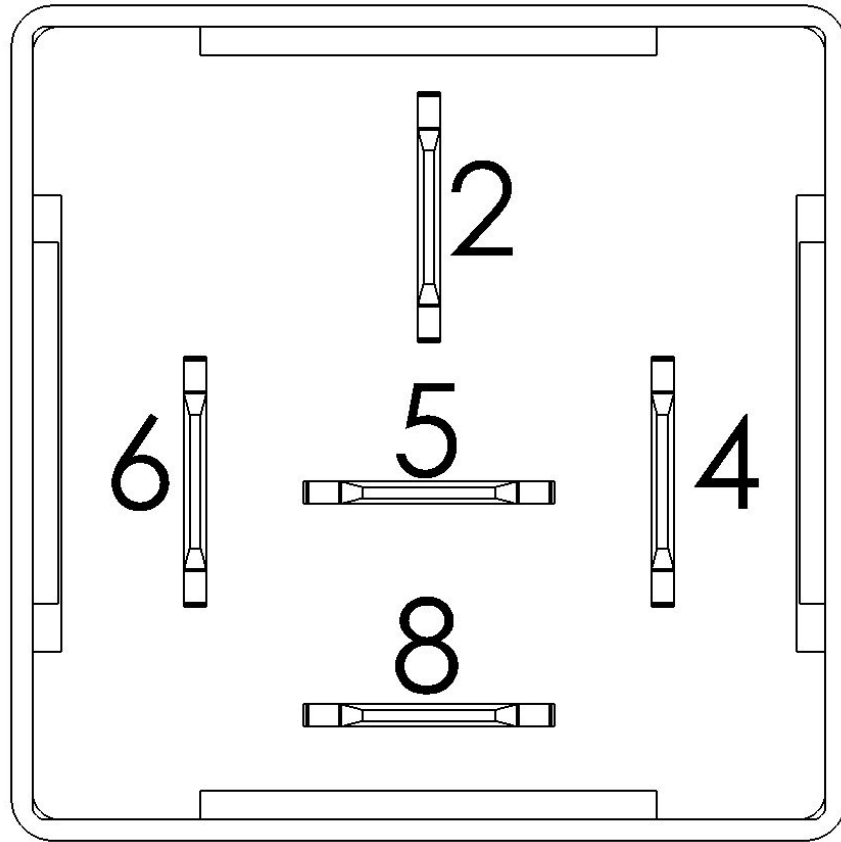
Load current	V _s = 8 V	V _s = 12...32 V
0,5 A	0.4 V	0.44 V
1 A	0.9 V	0.9 V
1,5 A	1.4 V	1.4 V
2 A	2.0 V	2.0 V
2,5 A	2.5 V	2.6 V
3 A	3.2 V	3.0 V
3,5 A	3.8 V	3.6 V
4 A	4.3 V	4.2 V
4,5 A	4.8 V	4.8 V
5 A	5.3 V	5.5 V



Attention! The parameters of the current sense of Rev. B have a significant deviation compared to Rev. A. If the current sense is used in the application, this must be necessarily taken into account.

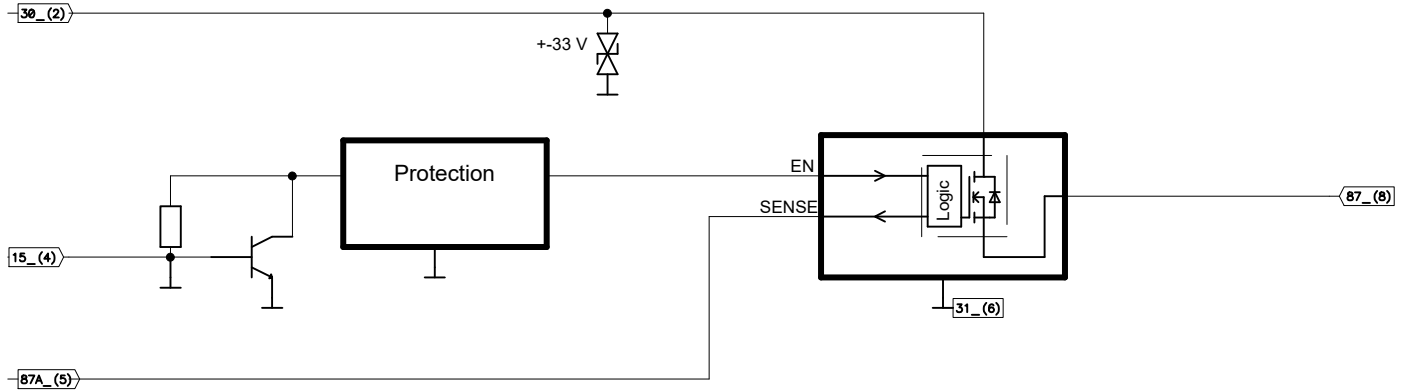
PIN ASSIGNMENT POWER SUPPLY AND INTERFACES

Pin	Description	Pin	Description
2	Supply voltage/KL30	6	Ground

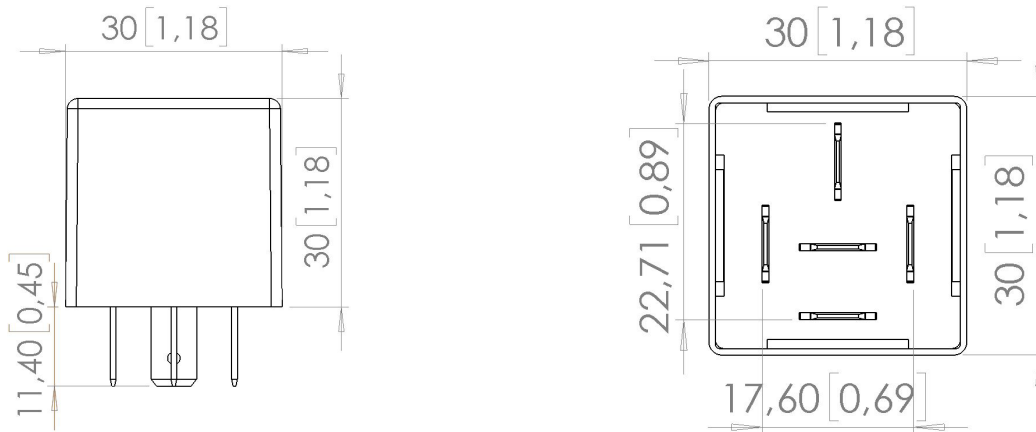


Pin assignment - bottom view

BLOCK FUNCTION DIAGRAM



TECHNICAL DRAWING (IN MM)





ASSEMBLY OPTIONS AND ORDER INFORMATION

Order number	Inputs	Outputs	Remarks
	Selection of the outputs via pin 4	In A	
1.069.300.05	positive	5 A	
1.069.301.05	negative	5 A	
1.069.300.15	positive	15 A	
1.069.301.15	negative	15 A	
1.069.300.25	positive	25 A	
1.069.301.25	negative	25 A	

ACCESSORIES

Description	Order number
Socket ST FL 9-pin 5x 6.3 / 4 x 2.8	1.017.002.00
Tab receptacle for latching 6.3 mm 1.0 mm ²	102355
Tab receptacle for latching 6.3 mm 1.5-.2.5 mm ²	103064
Connector bundle watertight socket 30mm	1.017.010.30



MANUFACTURER

MRS Electronic, Inc.
6680 Poe Avenue Suite 100
Dayton OH, 45414

SAFETY AND INSTALLATION INFORMATION

It is essential to read the instructions in full thoroughly before working with the device.

Please note and comply with the instructions in the operating instructions and the information in the device data sheet, see www.mrs-electronic.com

Staff qualification: Only staff with the appropriate qualifications may work on this device or in its proximity.

SAFETY



WARNING! Danger as a result of a malfunction of the entire system.

Unforeseen reactions or malfunctions of the entire system may jeopardise the safety of people or the machine.

- Ensure that the device is equipped with the correct software and that the wiring and settings on the hardware are appropriate.



WARNING! Danger as a result of unprotected moving components.

Unforeseen dangers may occur from the entire system when putting the device into operation and maintaining it.

- Switch the entire system off before carrying out any work and prevent it from unintentionally switching back on.
- Before putting the device into operation, ensure that the entire system and parts of the system are safe.
- The device should never be connected or separated under load or voltage.



CAUTION! Risk of burns from the housing.

The temperature of the device housing may be elevated.

- Do not touch the housing and let all system components cool before working on the system.

PROPER USE

The device is used to control or switch one or more electrical systems or sub-systems in motor vehicles and machines and may only be used for this purpose. The device may only be used in an industrial setting.



WARNING! Danger caused by incorrect use.

The device is only intended for use in motor vehicles and machines.

- Use in safety-related system parts for personal protection is not permitted.
- Do not use the device in areas where there is a risk of explosion.

Correct use:

- operating the device within the operating areas specified and approved in the associated data sheet.
- strict compliance with these instructions and no other actions which may jeopardise the safety of individuals or the functionality of the device.

Obligations of the manufacturer of entire systems

It is necessary to ensure that only functional devices are used. If devices fail or malfunction, they must be replaced immediately.

System developments, installation and the putting into operation of electrical systems may only be carried out by trained and experienced staff who are sufficiently familiar with the handling of the components used and the entire system.

It is necessary to ensure that the wiring and programming of the device does not lead to safety-related malfunctions of the entire system in the event of a failure or a malfunction. System behaviour of this type can lead to a danger to life or high levels of material damage.

The manufacturer of the entire system is responsible for the correct connection of the entire periphery (e.g. cable cross sections, correct selection/connection of sensors/actuators).

Opening the device, making changes to the device and carrying out repairs are all prohibited. Changes or repairs made to the cabling can lead to dangerous malfunctions. Repairs may only be carried out by MRS.

Installation

The installation location must be selected so the device is exposed to as low a mechanical and thermal load as possible. The device may not be exposed to any chemical loads.

Install the device in such a manner that the plugs point downwards. This means condensation can flow off the device. Single seals on the cables/leads must be used to ensure that no water gets into the device.

Putting into operation

The device may only be put into operation by qualified staff. This may only occur when the status of the entire system corresponds to the applicable guidelines and regulations.

FAULT CORRECTION AND MAINTENANCE



NOTE The device is maintenance-free and may not be opened.

- If the device has damage to the housing, latches, seals or flat plugs, it must be taken out of operation.

Fault correction and cleaning work may only be carried out with the power turned off. Remove the device to correct faults and to clean it.

Check the integrity of the housing and all flat plugs, connections and pins for mechanical damage, damage caused by overheating, insulation damage and corrosion. In the event of faulty switching, check the software, switches and settings.

Do not clean the device with high pressure cleaners or steam jets. Do not use aggressive solvents or abrasive substances.