

# Pulse Controlled Multifunctional Relay

**MSR**

For limit switches with direct (electromechanical) contacts  
With additional DC voltage output

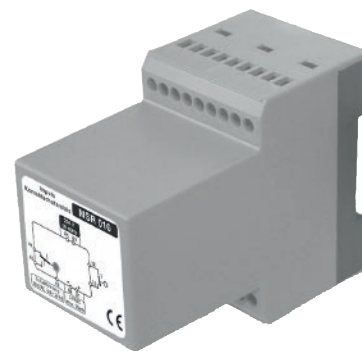
## Application

The multifunctional relays of the type series MSR are contact protection relays for the connection of electromechanical limit switches with low-action contacts (type S) or magnetic contacts (type M) with 1 and 2 limit values.

Pulse controlled multifunctional relays MSR

- increase the switching safety and allow a higher switching frequency, which is affected by external influences such as aggressive atmospheres, contamination or oxidation of the contact pins.
- decrease the contact load.
- reduce unintentional switchings due to shock/vibrations (see below).
- should be used for devices with case filling. They reduce the risk of oil contamination caused by the electric arc.

The relays are provided with an additional DC voltage output. All devices have an LED switching status indicator.



## Operating Principle

The multifunctional relays of the type series MSR have been specially designed to counter the aforementioned problems.

In particular, this is achieved with the following measures:

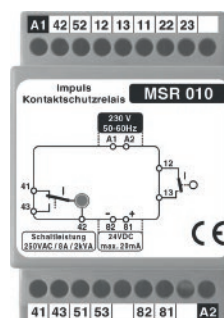
- almost load-free switching by pulse-shaped control signals with a pulse / pause ratio of 1:100
- overcoming of depletion layers by pulse voltages with 35...40 V DC
- reduction of uncontrollable switching errors of the contacts, caused by contact bounces or other vibrations, by a release delay of 450 ms
- increasing the breaking capacity of the contacts by downstream relays with potential-free changeover contact in the output

## Regulations

MSR multifunctional relays meet the following requirements:

DIN EN 50178	Electrical Safety
DIN EN IEC 61000-6-2	Stability
EN 61000-6-3	Interference Emission
DIN EN 60947-5-1	Low-voltage Switchgear

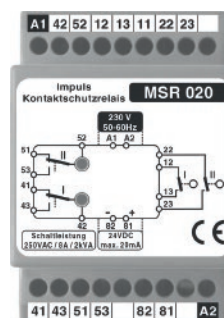
## Standard Versions



### MSR 010

monostable version for 1 limit value

S1, S2 or M1, M2

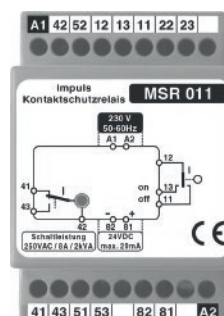


### MSR 020

monostable version for 2 limit values

S11, S22 or M11, M22

or two 1-fold limit values



### MSR 011

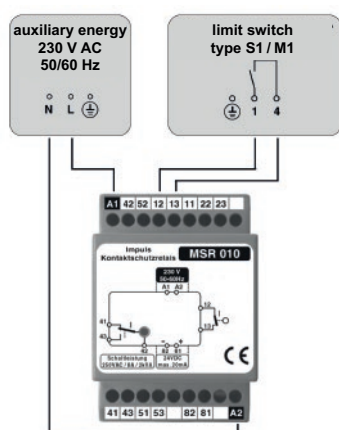
bistable version for 2 limit values in interval operation

S21 or M21

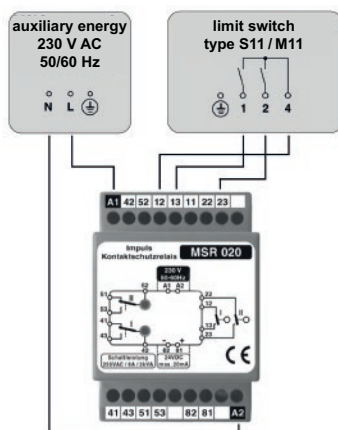
the switching status of one limit value is temporarily stored until the other limit value is actuated (interval operation, no permanent storage)

## Connection Examples

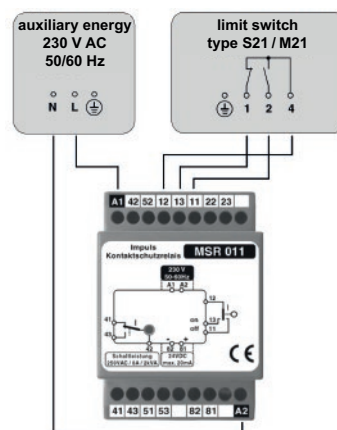
### for MSR 010



### for MSR 020



### for MSR 011



## Technical Data

<b>Auxiliary energy</b>	230 V AC, +6...-10 %, 50 – 60 Hz
special version	auxiliary energy 24 V DC, others upon request
power consumption	typ. 6 VA

<b>Control signals</b>	pulse control voltage	35...40 V DC
	pulse / pause ration (1:100)	0.5 ms / 50 ms

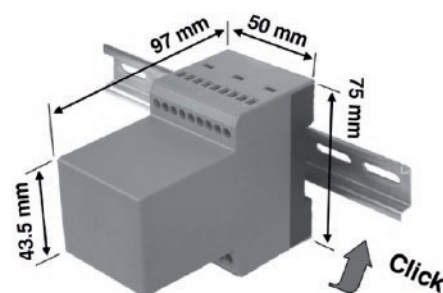
<b>Outputs</b>	<b>relay outputs</b>	potential-free changeover contact / output
	on-delay	10 ms
	release delay	450 ms
	contact material	AgCdO or AgNi+Au
	rated operational current $I_e$	AC1: 250 V / 8 A
	acc. to utilisation category	DC1: 250 V / 0.3 A
		AC13: 250 V / 3 A
		DC13: 250 V / 0.1 A
	breaking capacity	max. 250 V AC / 8 A
		min. 24 V / V DC; 100 mA
	short circuit device	F 10 A (max. short circuit current < 100 A)
	electrical endurance for $I_e$	$10^6$ switching cycles at 6 switches / min.
	mechanical endurance	$10^7$ switching cycles without load
	<b>voltage output</b>	for external devices, e.g. transmitters, LED displays
		24 V DC $\pm 10\%$
		$I_{max}$ 20 mA
		limited short-circuit protection

<b>LED switching status indicator</b>	red LED
---------------------------------------	---------

## Application range

rated insulation voltage	250 V AC
overvoltage category	III
degree of contamination	2 / EN 50178
degree of protection	IP20 / DIN EN IEC 60529
temperature range	0 – 70 °C
case material	polyamide 6.6, colour red / black
mounting suitable for	standard rail DIN EN 60715, 35x7.5 mm and 35x15 mm
connection cross-sections	0.5 – 2.5 mm <sup>2</sup>

## Dimensional Drawing



**Weight:** approx. 0.22 kg (0.49 lb)