

# Impulse-controlled Multifunctional Relays

MSR

For limit switch contact assemblies with direct (electromechanical) contacts with additional direct voltage output

## Application

Multifunctional relays model MSR are contact protecting relays for the connection of electromechanical limit switch contact assemblies with standard contacts (model S) resp. magnetic contacts (model M) with 1 and 2 limit values.

Impulse-controlled multifunctional relays model MSR

- increase the switching safety and allow a higher switching frequency of operation that is endangered by external influences like for example aggressive atmosphere, contamination or oxidation of the contact stems
- reduce the contact load
- reduce the accidental switching of the vibration / pulsation (see below)
- **should be used for instruments with case filling. They reduce the risk of oil contamination by the electric arc.**

The relays are provided with an additional direct voltage output. All instruments have an LED-switching status display.

## Function

Multifunctional relays model MSR have particularly been developed to come up against the named problems:

This is being reached by the following actions:

- Almost load-free switching by impulse-shaped control signals with a pulse-pause rate 1:100.
- Overcoming of barrier layers by impulse voltages with 35-40 V DC
- Reduction of the uncontrollable switching error of the contacts that are caused by chattering or other vibrations of the contacts, by application of a delayed release of 450 ms.
- Increase of the breaking capacity of the contacts by down-streamed relays with potential-free change-over contact in the output.

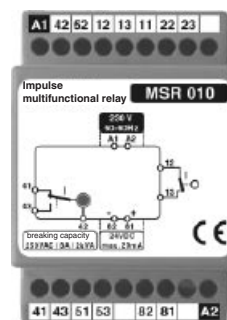
## Regulations

MSR multifunctional relays meet the following requirements:

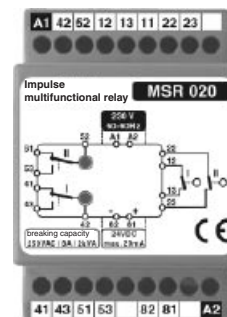
EN 50178	- Electrical safety
EN 61000-6-2	- Stability
EN 61000-6-3	- Interference emission
EN 60947-5-1	- Low voltage switchgear



## Standard Version

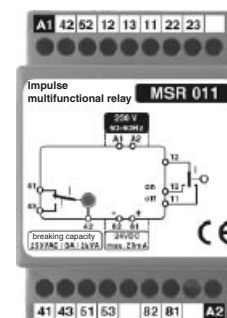


**MSR 010**  
Monostable version for 1 limit value  
S1, S2 or  
M1, M2.



**MSR 020**  
Monostable version for 2 limit values, e.g.  
S11, S22 or  
M11, M22.

or two 1-fold limit values

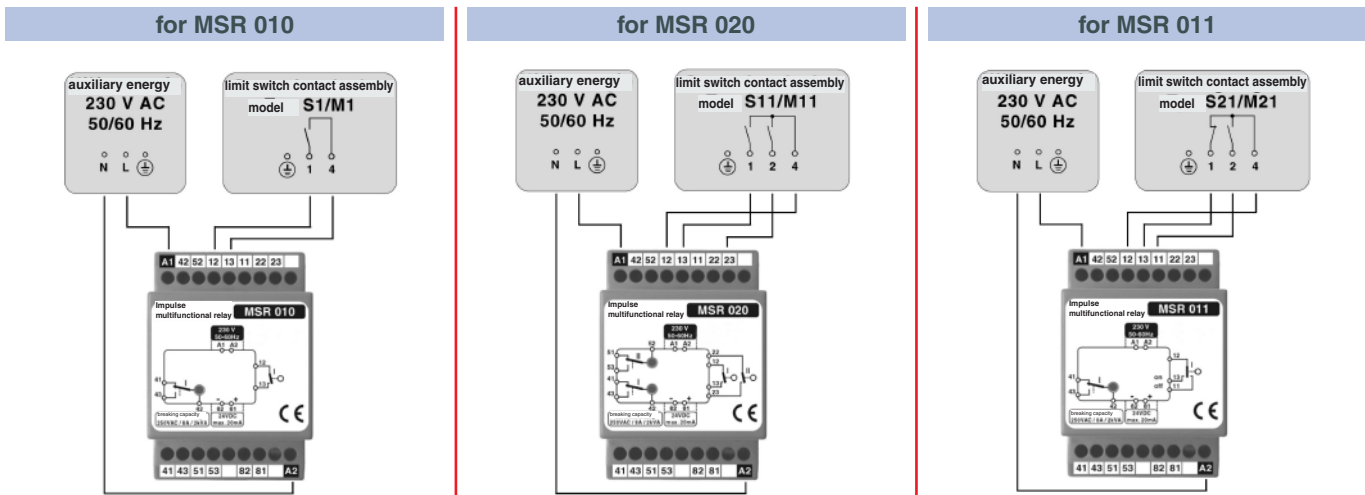


**MSR 011**  
Bistable version for 2 limit values in interval-operation  
S21 or  
M21

The switching status of the limit value is being buffered up to the confirmation of the other limit value (interval operation, no permanent storage)

# Connecting Example, Technical Data, Drawing and Weight

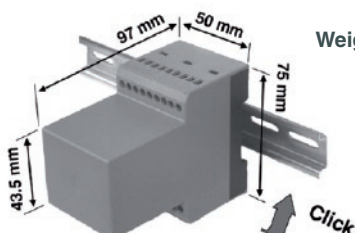
## Connecting Example



## Technical Data

<b>Auxiliary energy</b>	Auxiliary energy:	230 VAC, + 6...-10%, 50 – 60 Hz
	Special version:	auxiliary energy 24 V DC others upon request
	Power consumption:	typ. 6 VA
<b>Control signal</b>	Impulse-control voltage:	35 – 40 VDC
	Pulse-pause rate (1:100):	0.5 ms / 50 ms
<b>Outputs</b>	<b>Relay outputs</b>	potential-free change over contact / output
	On-delay:	10 ms
	Delayed release:	450 ms
	Contact material:	AgCdO resp. AgNi+Au
	Rated operational current $I_e$ according to utilisation category:	AC 1: 250 V/8A DC 1: 250 V/0,3A AC13: 250 V/3A DC13: 250 V/0.1A
	Breaking capacity:	max. 250 VAC/8A min. 24 V/ VDC; 100 mA
	Short circuit device:	F10A (max. short circuit current < 100 A)
	Electrical durability for $I_e$ :	$10^5$ switching cycles for 6 switches/ min.
	Mechanical durability:	$10^7$ switching cycles (without load)
	<b>Voltage output</b>	for external instruments e.g. transmitter, LED-display
		24 VDC $\pm$ 10%
		$I_{max}$ 20 mA
		conditionally short circuit proof
<b>LED-switching status display</b>		LED red
<b>Application field</b>	Rated insulation voltage:	250 VAC
	Overvoltage category:	III
	Pollution degree:	2 / EN 50 178
	Protection type:	IP 20 / EN 60 529
	Temperature range:	0 – 70 °C
	Case material:	polyamide 6.6, colour red/black
	Mouting suitable for :	standard mounting bar DIN EN 60 715, 35 x 7.5 mm und 35x15 mm
	Connection cross section:	0.5 - 2.5 mm <sup>2</sup>

## Drawing



Weight (kg): approx. 0.220kg