MAGNETIC FLOAT SWITCH
MNR7...

SAFETY INSTRUCTIONS

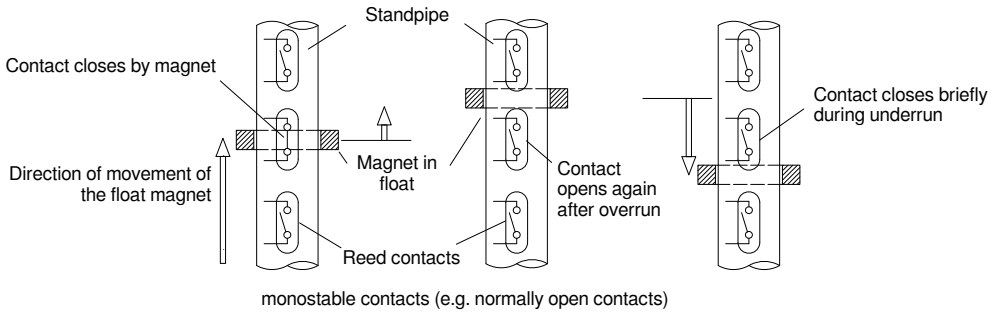
- Installation, commissioning and maintenance may only be performed by qualified personnel!
- Only connect the device to the voltage specified in the technical data and on the type label!
- Disconnect the device from the power supply during installation/maintenance work!
- Only operate the device under the conditions defined in the operating instructions!

DESCRIPTION

Magnetic float switches are used to control and monitor levels in a wide variety of applications.
They operate on the principle of a magnet-carrying float guided on a riser tube.
Level changes move the float in a vertical direction. The magnet switches reed contacts installed in the tube.
The media must be well liquid. Impurities such as lumps of grease, crystallization, deposits on sticky media, solids and magnetizable metal chips lead to malfunctions.
With such media, the use of magnetic float switches must be discouraged.
Vibrations and shocks influence the self-holding forces of bistable reed contacts.
In such systems, either monostable reed contacts or other measuring methods (conductive, capacitive) should be used.

SWITCHING BEHAVIOR

Monostable reed contact:
A monostable contact behaves like a pushbutton. It is only actuated as long as the magnetic field acts on it.
If the float leaves the contact, it returns to its initial position. An adjusting ring can be used to prevent the monostable contact from being driven over or under.



monostable contacts (e.g. normally open contacts)

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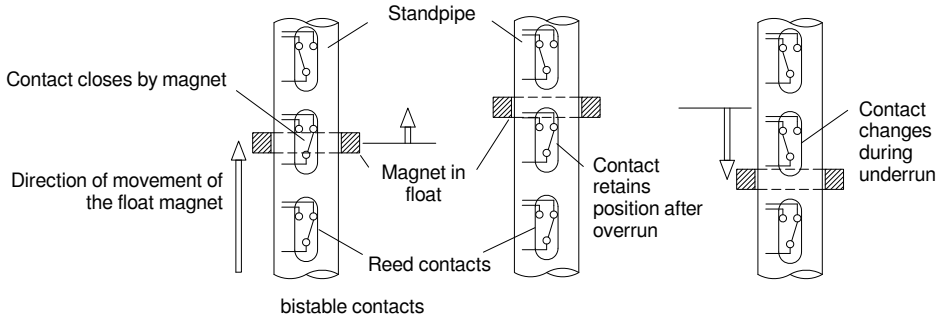
SWITCHING BEHAVIOR (continuation)

Bistable reed contact:
A bistable contact behaves like a switch. It switches when the magnetic field acts on it.
It retains this switching position when the float continues to run in the same direction. It returns to its initial position when it is overrun in the opposite direction.



TECHNICAL DATA

Type	**MNR7 / 5**	**MNR7 / 10**	**MNR7 / K4**
Material of the parts in contact with the medium	Stainless steel 1.4571 PP	Stainless steel 1.4571	PVC PP
Connection cable	PVC / silicone rubber cable 0.5mm²	-	PVC cable 0.5mm²
Connection head	IP65 PBT Aluminum (option)	IP65 PBT Aluminum (option)	IP65 PBT
Connection plug*)	3-pole valve plug according to DIN EN 175301-803-A additional protective earth connection (PE)		
Process connection	G⅜" or G2“ Flange DN65	G1“ or G2" Flange DN65 / DN100	G½"/ locknut G1¼“ Flange DN40
Length	100...1000mm	200...3000mm	100...500mm
Minimum density of the medium	0.85kg/dm³	0.75kg/dm³	0.85kg/dm³
Operating temperature **Contact type:** **Type S, O, W** **Type B**	PP: 0 ...+80 °C Stainless steel -20...+150 °C -10...+100 °C	 Stainless steel -20...+150 °C -10...+100 °C	PVC: 0...+60 °C PP: 0...+80 °C
Max. Operating overpressure	25bar	25bar	0,5bar
Number of contacts	1...3	1...6	1...3 (monostable)
Smallest contact distance	50mm	50mm	35mm
Electrical data	see table "Electrical data of the contacts"		

*) Max. 1 changeover contact or 2 pieces NC/NO contacts

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TECHNICAL DATA (continuation)

Type	MNR7 / K8	MINIMAX
Material of the media-contacting parts	PE-HD PVC PP PVDF	Stainless steel 316L (1.4571) PP
Connection cable	-	PVC / silicone rubber cable 0.5mm²
Connection head	IP65 PBT	PVC cable 0.5mm² IP65 PBT
Connection plug*)	3-pole valve connector according to DIN EN 175301-803-A additional protective conductor connection (PE)	-
Process connection	G1“ G2“ Flange DN65 / DN80	G⅛“ G1“ / G1¼"
Length	130...1500mm (...5000mm option)	60...300mm
Minimum density of the medium	0.8kg/dm³	0.85kg/dm³
Operating temperature	PE-HD: 0...+60°C PVC: 0...+60°C PP: 0...+80°C PVDF: 10...+130°C	Kabel: -10...+70°C A-Kopf:-10...+120°C
Max. Operating overpressure	1bar	15bar
Number of contacts	1...6	1...3 (monostable)
Smallest contact distance	50mm	35mm
Electrical data	see table "Electrical data of the contacts"	

*) Max. 1 changeover contact or 2 pieces NC/NO contacts

ELECTRICAL DATA OF THE CONTACTS

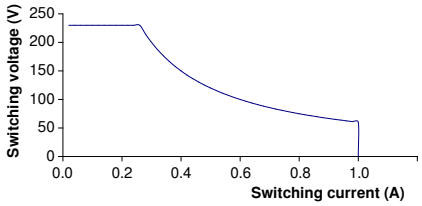
The magnetic float switches are equipped with up to 6 contacts depending on the version.
The following switching contacts are available:

Type	Contact type	Switching capacity	Rated voltage
S	monostable normally open contact	10VA / 10W	24V AC/DC
O	monostable normally closed contact	10VA / 10W	24V AC/DC
W	monostable changeover contact	10VA / 10W	24V AC/DC
B	bistable changeover contact	60VA / 40W/1A	230V AC
M	monostable changeover contact	60VA / 40W/1A	230V AC

ELECTRICAL LOAD

Reed contacts are extremely sensitive to overload.
Even briefly exceeding the specified maximum values leads to destruction. The diagram shows the permissible maximum switching current as a function of the applied voltage.

Switching power hyperbola



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CONTACT PROTECTION MEASURES

When switching inductive DC loads, such as contactors or relays, increased breaking currents occur which can lead to malfunctions or welding of the contacts. Therefore, a so-called free-wheeling diode must always be used in these cases.
RC circuitry must be used when switching inductive AC loads.
When switching incandescent lamps directly, the inrush current (5...10x IN) must be observed.
For further information on this topic, please contact us.
Devices with reed contacts type S, O and W may only be operated with our contact protection relay type KSR.... must be operated.

SAFETY INSTRUCTIONS

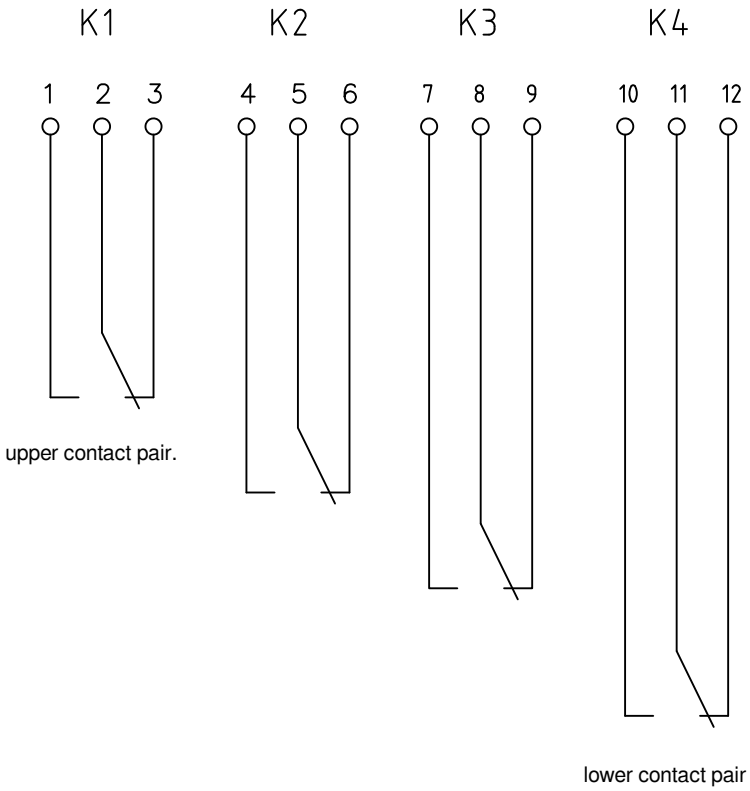
Magnetic float switches which are installed in containers and whose media or metal container wall can be touched by persons may only be operated with safety extra-low voltage according to VDE regulations.
In these cases, the KSR... contact protection relay should be used.
For magnetic float switches in stainless steel design, which are operated with a contact sensing voltage >50VAC (contact type B), the protective conductor/operating earth must always be connected properly.

MOUNTING

Magnetic float switches are only suitable for vertical installation.
The float can be removed for installation. To do this, remove the retaining nut and the stop washer at the bottom of the standpipe.
When assembling, make sure that the lettering "TOP" on the float always points upwards.
For the stainless steel float balls, the "TOP" label on the side must not be upside down.

ELECTRICAL CONNECTION

The magnetic float switches are supplied with free cable end or with connection head, depending on the version
The devices are equipped with the required contact types specific to the application
Due to the many possible combinations, a specific connection diagram is included with each device.



Example: Wiring diagram 4x changeover contact

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