



Safety Precautions:

- Installation, initial start-up and maintenance may only be performed by trained personnel! All applicable European and national regulations regarding installation of electrical equipment must be adhered to.
- The device may only be connected to supply power which complies with the specifications included in the technical data and on the serial plate!
- The device must be disconnected from all sources of power during installation and maintenance work!
- The device may only be operated under the conditions specified in the operating instructions!

Functions Description:

Magnetic float switches are used to control and monitor liquid levels in a wide variety of applications. They consist of a float containing a magnet which is guided by a vertically installed pipe. Changes in liquid level cause the float to move either up or down. The magnet activates reed contacts which are integrated into the pipe.

Applications:

Media must be of low viscosity.

Contamination such as clots of fat, crystallised materials, the formation of deposits with sticky media, solid particulates and magnetic metal chips result in interference. The use of magnetic float switches is not advisable for media of this type.

Vibration and impact influence the detent torques in bistable reed contacts. Monostable reed contacts or other measuring methods (conductive or capacitive) are used for applications which are subject to vibration and impact.

Technical Data:

Type	MNR7 / 5	MNR7 / 10	MNR7 / K4	MNR7 / K8	MINIMAX
Material for parts which come into contact with the process	stainless steel 1.4571 PP	stainless steel 1.4571	PVC PP	PE-HD PVC PP PVDF	stainless steel 1.4571 PP
Connector cable:	PVC / silicon rubber cable, 0.5 mm ²	-	PVC cable 0.5 mm ²	-	PVC / silicon rubber cable, 0.5 mm ²
Terminal housing	IP65 PBTB Alu (optional)	IP65 PBTB Alu (optional)	IP65 PBTB	IP 65 PBTB	PVC cable 0.5 mm ² IP65 PBTB
Connector plug	die-cast device plug connector DIN 43650	die-cast device plug connector DIN 43650	die-cast device plug connector DIN 43650	die-cast device plug connector DIN 43650	-
Process connector	G3/8" or G2" flange DN 65	G1", DN 100 flange	G1/2" / retaining nut G1 1/4", flange DN 40	G1", DN 80 flange	G1/8", G1",
Length	100 to 1000 mm	200 to 3000 mm	100 to 500 mm	130 to 1500 mm (option: to 5000 mm)	60 to 300 mm
Minimum media density	0.85 g/cm ³	0.75 g/cm ³	0.85 g/cm ³	0.8 g/cm ³	0.85 g/cm ³
Operating temperature	PP: 0 to +80°C		PVC: 0 to +60°C PP: 0 to +80°C	PE-HD: 0 to +60°C PVC: 0 to +60°C PP: 0 to +80°C PVDF: 10 to +130°C	cable: -10 to +70°C terminal housing: -10 to +120°C
Contact type: Type S, O, W Type B	stainless steel -20 to +150°C -10 to +100°C	stainless steel -20 to +150°C -10 to +100°C			
Max. operating pressure	25 bar	25 bar	0.5 bar	1 bar	15 bar
No. of contacts	1 to 3	1 to 6	1 to 3 (monostable)	1 to 6	1 to 3 (monostable)
Smallest contact gap	50 mm	50 mm	35 mm	50 mm	35 mm
Electrical data	see table 1 on page 1	see table 1 on page 1	see table 1 on page 1	see table 1 on page 1	see table 1 on page 1

Electrical Data, Contacts:

The magnetic float switches are equipped with up to 6 contacts each depending upon model.

The following switching contacts are available:

Type	Contact Type	Switching Capacity	Nominal Voltage
S	monostable, NC	10 VA / 10 W	24 V AC/DC
O	monostable, NO	10 VA / 10 W	24 V AC/DC
W	monostable, changeover	10 VA / 10 W	24 V AC/DC
B	bistable, changeover	60 VA / 40 W/1 A	230 V AC

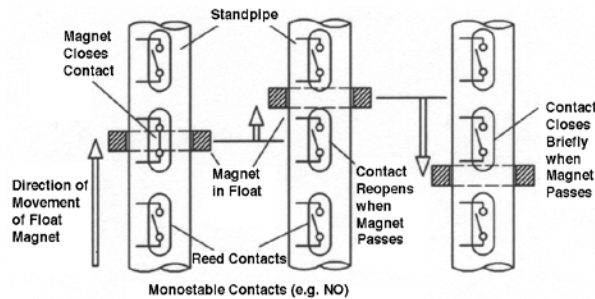
Table 1: Electrical Data

Technical Data (continuation):

Switching Capacity:

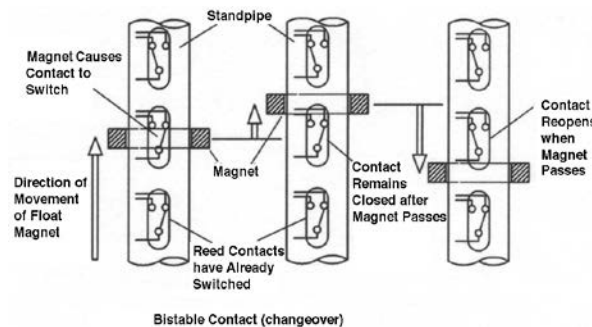
Monostable Reed Contact:

A **monostable** contact performs like a **momentary contact pushbutton**. It is only activated as long as it is under the influence of the magnetic field. If the float moves away from the contact, it returns to its normal position. A setting ring can be used to prevent overshooting or undershooting of the monostable contact.



Bistable Reed Contact:

A **bistable** contact performs like a **switch**. It is activated when subjected to the influence of the magnetic field. The switch position remains unchanged, even if the float continues on in the same direction. It returns to its original position when the float passes by in the other direction.



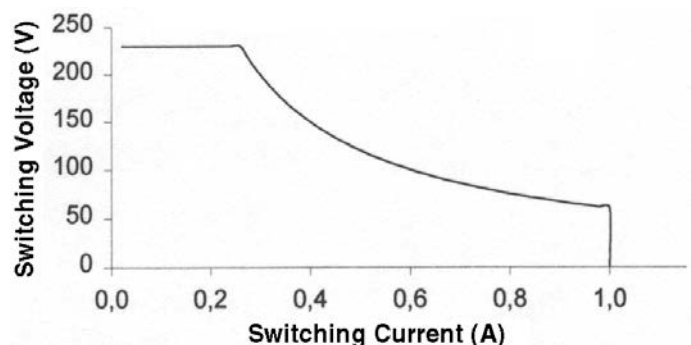
Electrical Load

Reed contacts are extremely sensitive to overload.

Even brief overloading beyond indicated maximum values results in destruction. The diagram shows allowable maximum switching current related to applied voltage:

Contact Protection Measures:

Switching Capacity Hyperbole



When inductive direct current loads are switched, e.g. with mechanical contractors or relays, increased breaking currents occur which result in interference such as welding of the contacts. For this reason, so-called freewheeling diodes must always be used in such cases.

RC circuits must be implemented for the switching of inductive, alternating current loads.

Inrush current (5 to 10 x I_{nom}) must be taken into consideration when incandescent lamps are switched.

Please call us for further information on this subject, or request our data sheet number SU3101.

Devices with type S, O and W reed contacts may only be operated with IER type KSR1S... Contact relay.

CE-Marks:

In accordance with low-voltage directive (2006/95/EC) and EMC directive (2004/108/EC)

Installation:

Magnetic float switches may only be installed vertically.

The float can be removed for installation.

The retaining nut and the limit stop disc at the bottom of the standpipe must be removed to this end.

Please observe that the word "TOP" must always appear at the top of the float during assembly.


The lettering "TOP", which appears on stainless steel float spheres, may not be upside-down.

Electrical Connections:

MNR7 magnetic float switches are shipped with an unfinished cable end or a terminal housing depending upon model.

MNR7 devices are equipped with the necessary contact types in an applications specific fashion.

Because there are so many possible combinations, an individual wiring plan is included with each device

 Stainless steel types (MNR7/5 or /10) with 230V/60VA-contacts must be connected to protective earth if the control voltage is higher than 50VAC.

Example: Wiring Plan with 4 NC / NO Contacts

