

Float Switches with Permanent Magnet For Horizontal Installation Model HIF

WIKA Data Sheet LM 30.02

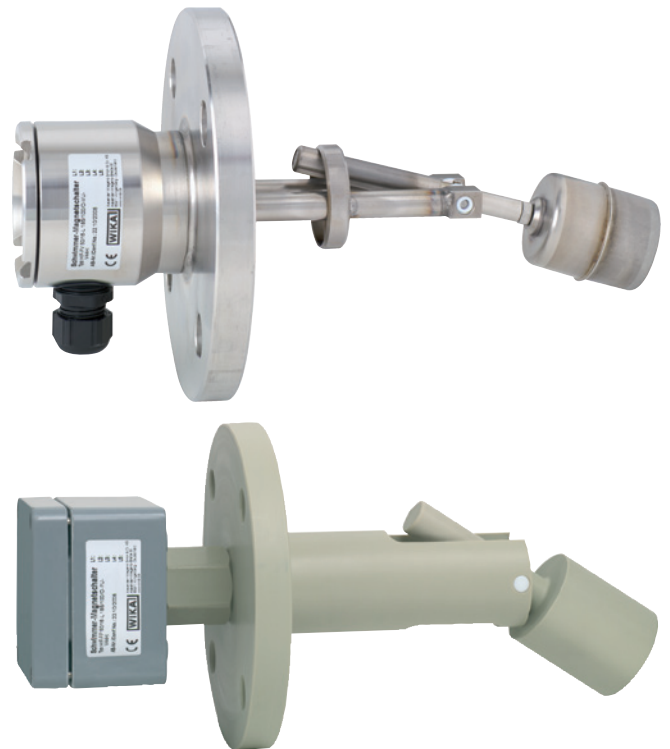


Applications

- Level measurement for almost all liquid media
- Pump/level control
- Chemical industry, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power stations
- Process water and drinking water treatment, food and beverage industry

Special Features

- Large scope of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits:
 - Operating temperature: $T = -196 \dots +300 \text{ }^{\circ}\text{C}$
 - Working pressure: $P = \text{vacuum to } 100 \text{ bar}$
 - Limit S. G.: $\rho \geq 400 \text{ kg/m}^3$
- Wide variety of different electrical connections and materials
- Explosion-protected versions



**Float Switches with Permanent Magnet,
for horizontal installation, Model HIF**
Fig. top: Stainless steel version
Fig. bottom: Plastic version

Description

In addition to the various applications for WIKA's float switches for vertical installation, the horizontal WIKA float switches likewise offer innumerable possibilities to monitor and/or switch levels in order to indicate minimum/maximum levels.

The float is attached to a supported, swivelling lever and moves with the level of the medium being measured. By means of a permanent magnet, fixed to the other end of the lever, when a preset switch point is reached, a reed contact (inert gas contact) within the contact pipe is energised.

By using a magnet and reed contact the switching operation is non-contact, free from wear and needs no power supply.

The float switch is simple to mount and maintenance-free, so the costs of mounting, commissioning and operation are low.

Further special features

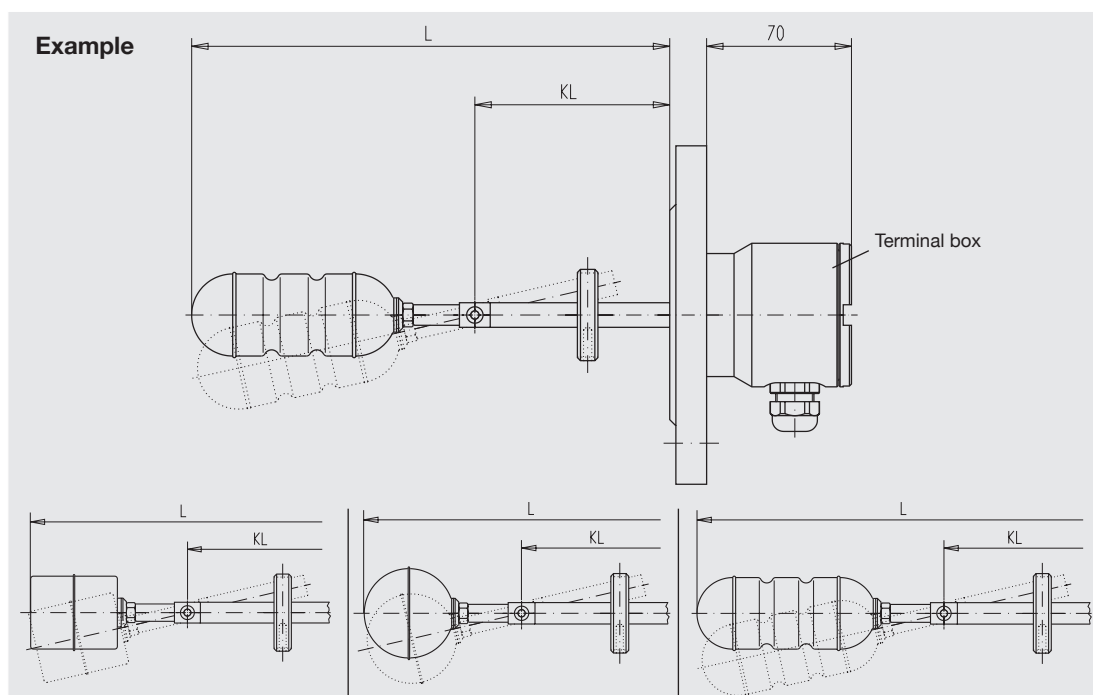
- Process connection, contact tube and float made of stainless steel 1.4571 or plastic
- Universal signal processing:
connection direct to a PLC is possible, NAMUR connection, signal amplification / contact protection relays
- Works independently of foaming, conductivity, dielectricity, pressure, vacuum, temperature, steam, condensation, blistering, boiling effects and vibrations
- Exact repeatability of the switch points
- Float switches with permanent magnets qualify as passive electrical equipment in accordance with DIN IEC 60 079-11 and can be installed in 'Zone 1' hazardous areas without certification, so long as the equipment is operated in a certified intrinsically safe circuit with a minimum explosion protection of EEx ib

Options

- Customer-specific solutions
- Process connection, contact tube material and float made of titanium or Hastelloy (other materials on request)

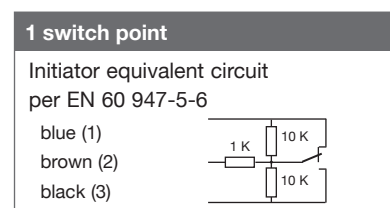
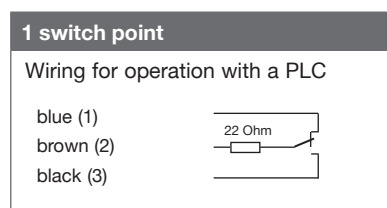
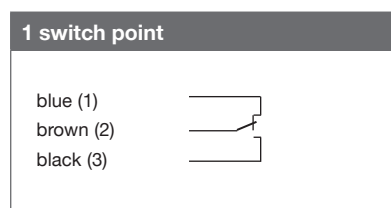
Standard version

Process connection, contact tube and float made of stainless steel 1.4571



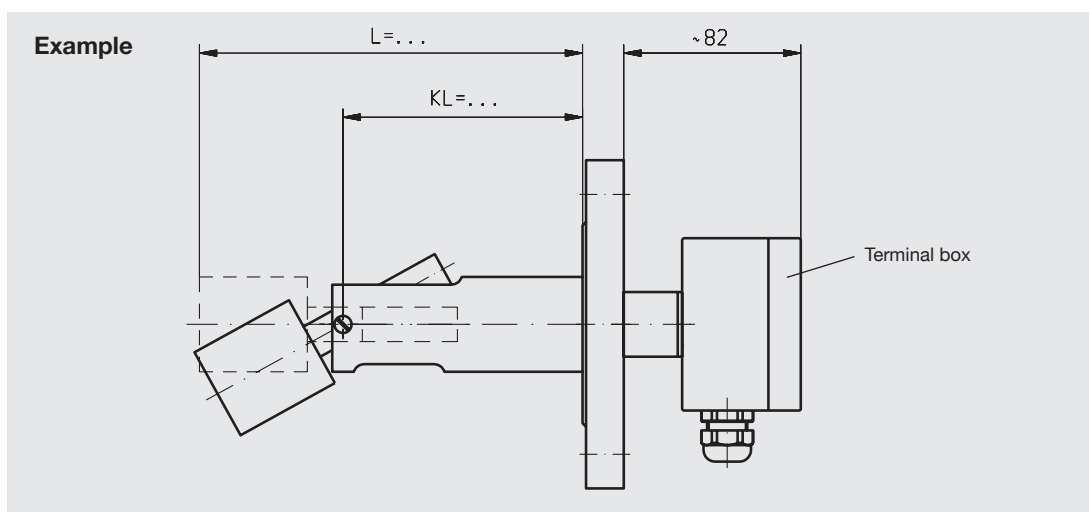
	Float Model V44HI	Float Model T52/1HI	Float Model ZVSS43/100HI
Electrical connection	Terminal box ■ Stainless steel Raised Terminal Box ■ without (60 mm with high temperature version)		
Process connection	Mounting flange ■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", Class 150 ... 600		
Contact tube			
Insertion length L	190 ... 1090 mm		250 ... 1150 mm
Contact tube length KL	100 ... 1000 mm		
Float material	Stainless steel 1.4571	Titanium 3.7035	Stainless steel 1.4571
Float			
Diameter	44 mm	52 mm	43 mm
Length	52 mm	52 mm	100 mm
Max. working pressure	16 bar	100 bar	20 bar
Min. specific gravity	600 kg/m ³		
Temperature range standard	-40 ... +200 °C Option: ■ High temperature version: +100 ... +350 °C Option: ■ Low temperature version: -196 ... +40 °C		
Switch function	Change-over U (initiator SJ 3.5-SN) - at increasing level		
Max. number of contacts	1 x U		
Contact rating	230 V AC; 40 VA; 1 A	230 V DC; 20 W; 0.5 A	Please observe contact protection measures (see page 6)!
	Attention: Versions without protective earth conductor - operation only at safety extra-low voltage e.g. WIKA contact protection relay or external earthing		
Mounting position	Horizontal ± 30°		
Ingress protection	IP 65 per EN 60 529 / IEC 529		

Connection diagrams



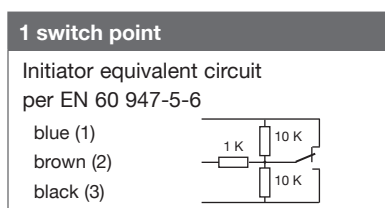
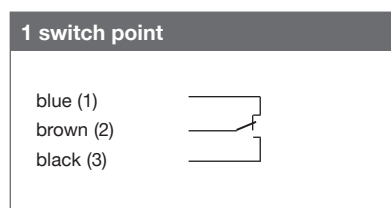
Plastic version

Process connection, contact tube and float made of polypropylene



Float Model PP44HI		
Electrical connection	Terminal box	■ Polypropylene 80 x 82 x 55 mm
Process connection	Mounting flange	■ DIN DN 50 ... DN 125, PN 10, form A ■ ANSI 2" ... 5", Class 150 FF
Contact tube		
Insertion length L	176 mm	
Contact tube length KL	111 mm	
Float material	■ Polypropylene	
Float		
Diameter	44 mm	
Length	52 mm	
Max. working pressure	3 bar	
Min. specific gravity	750 kg/m³	
Temperature range	-10 ... +80 °C	
Switch function	Change-over U (initiator SJ 3.5-SN) - at increasing level	
Max. number of contacts	1 x U	
Contact rating	230 V AC; 40 VA; 1 A	230 V DC; 20 W; 0.5 A
Attention: Versions without protective earth conductor - operation only at safety extra-low voltage e.g. WIKA contact protection relay or external earthing		
Mounting position	Horizontal ± 30°	
Ingress protection	IP 65 per EN 60 529 / IEC 529	

Connection diagrams

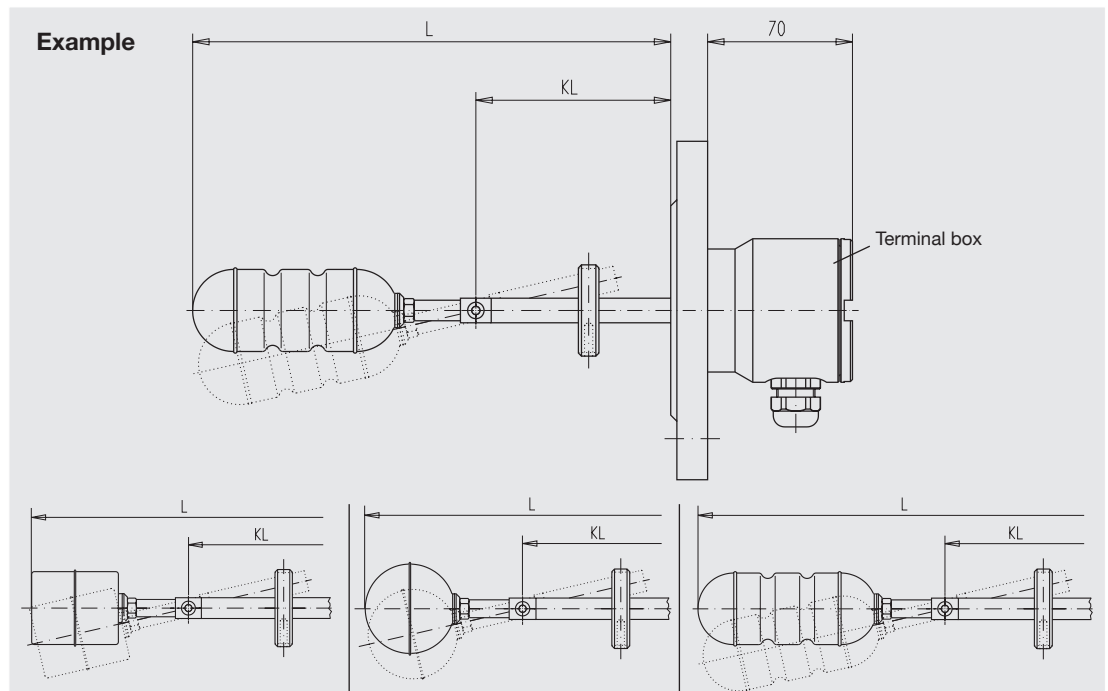


Explosion-protected version, intrinsically safe

II 1/2G EEx ia IIC T3-T6 KEMA 01 ATEX 1053X

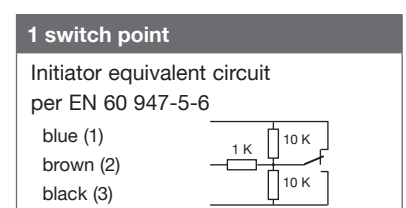
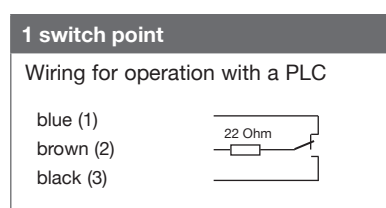
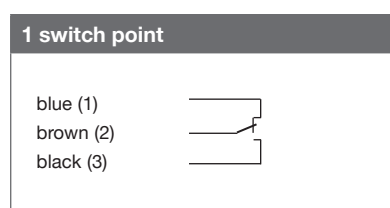
II 2D T80 °C IP6X

Process connection, contact tube and float made of stainless steel 1.4571



	Float Model V44HI	Float Model T52/1HI	Float Model ZVSS43/100HI
Electrical connection	Terminal box	■ Stainless steel	
Process connection	Mounting flange	■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", Class 150 ... 600	
Contact tube			
Insertion length L	190 ... 1090 mm		250 ... 1150 mm
Contact tube length KL	100 ... 1000 mm		
Float material	Stainless steel 1.4571	Titanium 3.7035	Stainless steel 1.4571
Float			
Diameter	44 mm	52 mm	43 mm
Length	52 mm	52 mm	100 mm
Max. working pressure	16 bar	100 bar	20 bar
Min. specific gravity	600 kg/m³		
Temperature class			
Process temperature	Max. T2 180 °C	T3 160 °C	T4 108 °C
Ambient temperature at terminal box	Max. 80 °C	80 °C	80 °C
Switch function	Change-over U (initiator SJ 3.5-SN) - at increasing level		
Max. number of contacts	1 x U		
Contact rating	Only for connection to a certified intrinsically safe circuit with U_{max} 36 V, I_{max} 100 mA		
Mounting position	Horizontal $\pm 30^\circ$		
Ingress protection	IP 65 per EN 60 529 / IEC 529		

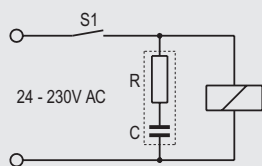
Connection diagrams



Contact protection measures

To ensure reliable operation of sensors with reed switches and highest possible service life, we recommend using one of the following circuits.

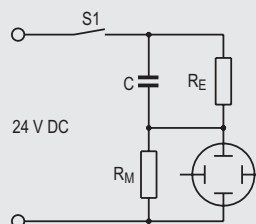
Inductive load AC



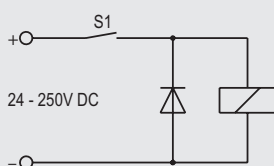
RC modules depending on operating voltage see table

Surge current measurement with oscilloscope

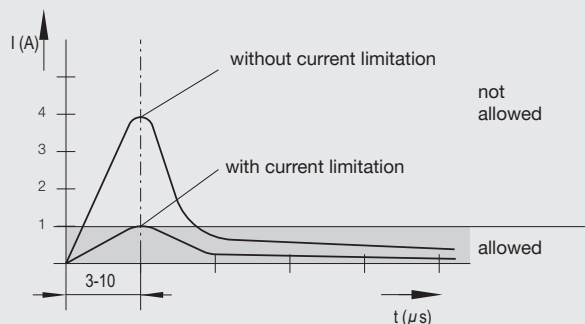
Example:
 $C = 0.33 \mu\text{F}/24 \text{ V DC}$



Inductive load DC

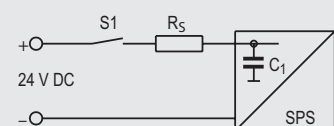


Shunt diode
e.g. 1N4007



Current limitation with capacitive load

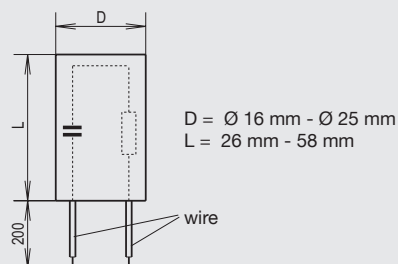
e.g. PLC, DCS and cables > 50 m



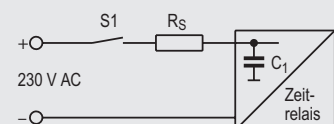
$R_S = 22 \text{ Ohm}$
(47 Ohm with 10 VA contacts)
 $C_1 = \text{internal capacitance}$

Protective RC modules

RC modules are, depending on the operating voltage, to be used exclusively according to the table below.



Current limitation with electronic timers



$R_S = 220 \text{ Ohm}$
(230 V AC)
 $C_1 = \text{internal capacitance}$

For inert gas contacts from 10 ... 40 VA

Capacitance	Resistance	Voltage
0.33 μF	100 Ohm	24 V AC
0.33 μF	220 Ohm	48 V AC
0.33 μF	470 Ohm	115 V AC
0.33 μF	1500 Ohm	230 V AC

For inert gas contacts from 40 ... 100 VA

Capacitance	Resistance	Voltage
0.33 μF	47 Ohm	24 V AC
0.33 μF	100 Ohm	48 V AC
0.33 μF	470 Ohm	115 V AC
0.33 μF	1000 Ohm	230 V AC

Other types than the RC modules specified here might lead to destruction of the reed contact.

Ordering information

Model / Version / Electrical connection / Process connection / Contact tube (insertion length L, contact tube length KL) / Options

Modifications may take place and materials specified may be replaced by others without prior notice.
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.



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