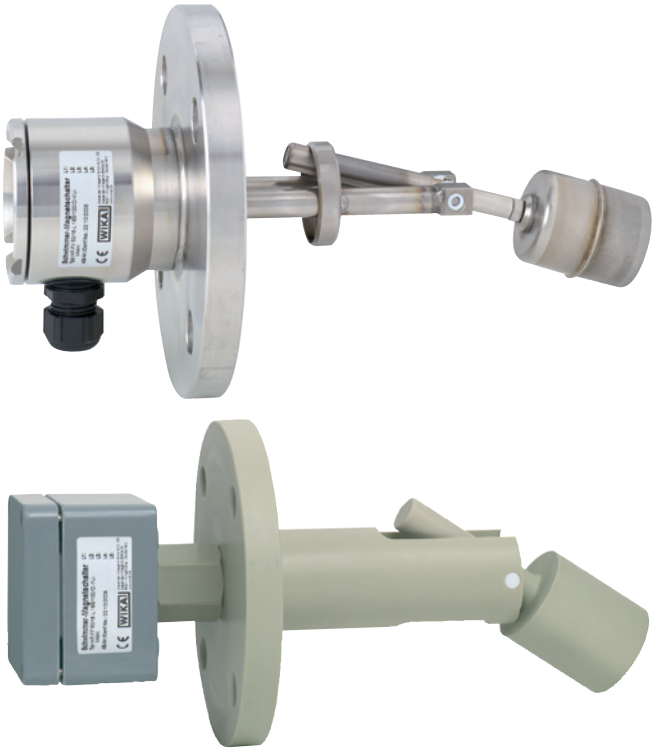
Float Switches with Permanent Magnet For Horizontal Installation Model HIF

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 ... +350 °C
  - Working pressure: P = vacuum to 100 bar
  - Limit S. G.: ρ ≥ 400 kg/m³
- 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.

Data Sheets showing similar devices:
Float Switches with Permanent Magnet, vertical installation; Model RSM; see data sheet LM 30.01
Float Switches with Permanent Magnet, lateral mounting; Model RSB; see data sheet LM 30.03

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

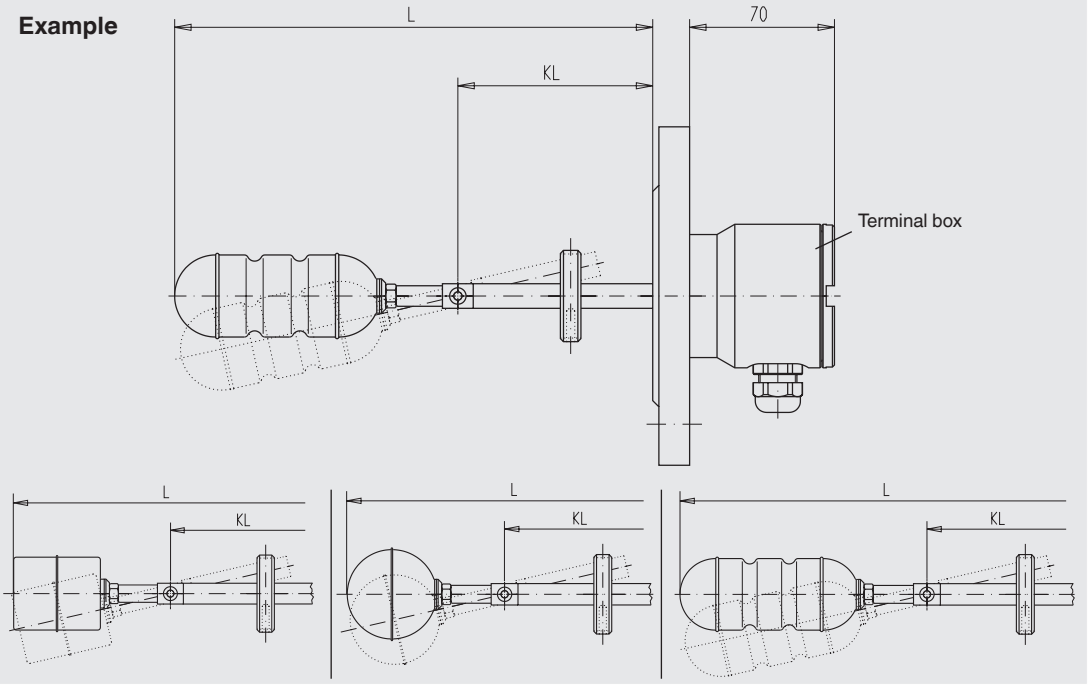
Options

- 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

Example



	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 Contact tube length KL	 190 ... 1090 mm 100 ... 1000 mm		 250 ... 1150 mm
Float material	Stainless steel 1.4571	Titanium 3.7035	Stainless steel 1.4571
Float Diameter Length	 44 mm 52 mm	 52 mm 52 mm	 43 mm 100 mm
Max. working pressure	16 bar	100 bar	20 bar
Min. specific gravity	600 kg/m³		
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

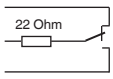
1 switch point

blue (1)
brown (2)
black (3)

1 switch point

Wiring for operation with a PLC

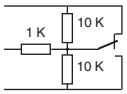
blue (1)
brown (2)
black (3)



1 switch point

Initiator equivalent circuit
per EN 60 947-5-6

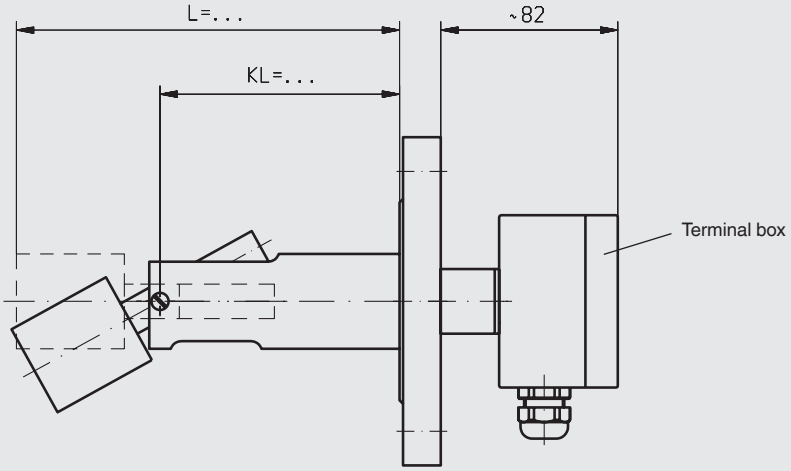
blue (1)
brown (2)
black (3)



Plastic version

Process connection, contact tube and float made of polypropylene

Example



	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 Contact tube length KL	 176 mm 111 mm	
Float material	■ Polypropylene	
Float Diameter Length	 44 mm 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 **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

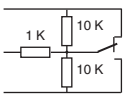
1 switch point

blue (1)
brown (2)
black (3)

1 switch point

Initiator equivalent circuit
per EN 60 947-5-6

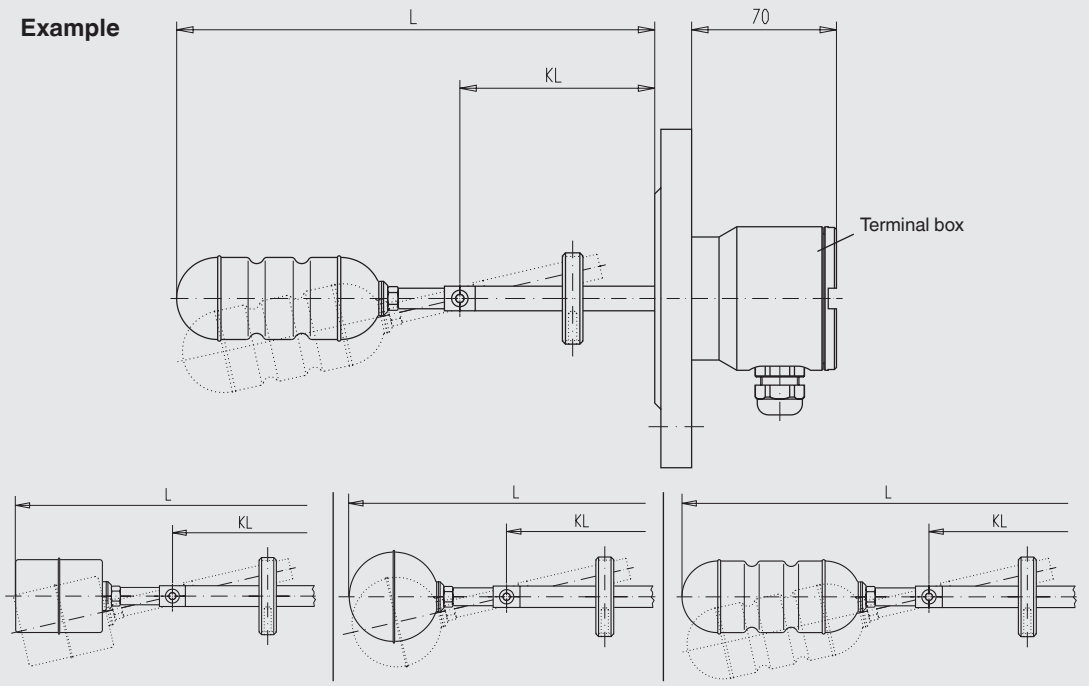
blue (1)
brown (2)
black (3)



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

Example



	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 Contact tube length KL	 190 ... 1090 mm 100 ... 1000 mm		250 ... 1150 mm
Float material	Stainless steel 1.4571	Titanium 3.7035	Stainless steel 1.4571
Float Diameter Length	 44 mm 52 mm	 52 mm 52 mm	 43 mm 100 mm
Max. working pressure	16 bar	100 bar	20 bar
Min. specific gravity	600 kg/m³		

Temperature class		T2	T3	T4	T5	T6
Process temperature	Max.	180 °C	160 °C	108 °C	80 °C	65 °C
Ambient temperature at terminal box	Max.	80 °C	80 °C	80 °C	80 °C	60 °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 ± 30°
Ingress protection	IP 65 per EN 60 529 / IEC 529

Connection diagrams

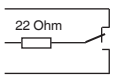
1 switch point

blue (1)
brown (2)
black (3)

1 switch point

Wiring for operation with a PLC

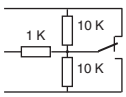
blue (1)
brown (2)
black (3)



1 switch point

Initiator equivalent circuit per EN 60 947-5-6

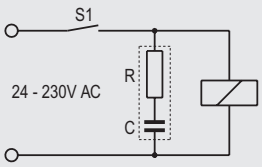
blue (1)
brown (2)
black (3)



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.

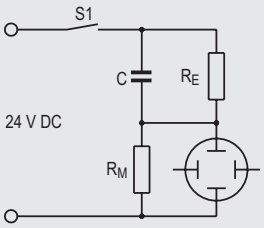
Inductive load AC



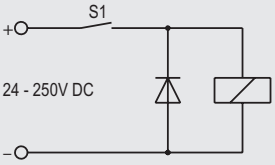
RC modules depending on operating voltage see table

Surge current measurement with oscilloscope

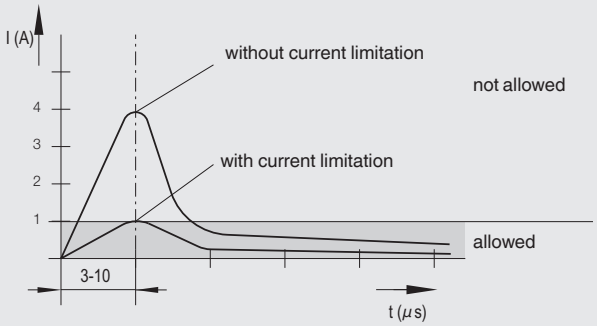
Example:
C = 0.33 µF/24 V DC



Inductive load DC

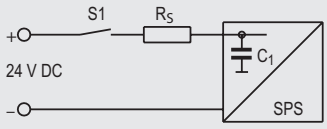


Shunt diode
e.g. 1N4007



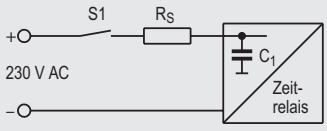
Current limitation with capacitive load

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



Rs = 22 Ohm
(47 Ohm with
10 VA contacts)
C_1 = internal capacitance

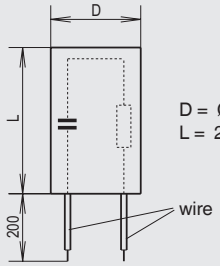
Current limitation with electronic timers



Rs = 220 Ohm
230 V AC)
C_1 = internal capacitance

Protective RC modules

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



D = Ø 16 mm - Ø 25 mm
L = 26 mm - 58 mm

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

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