FC-01

Limit Level Switch for Bulk Goods, Fluids, Slurries, Interface and Foam Detection

Description:

The FC-01 series of capacitive limit level switches utilizes the different dielectric constant between air and the medium being monitored in order to detect its presence. A plate capacitor, whose electrical properties depend on the dielectric number of the medium surrounding it, is situated within a protective tube made of plastic. The capacity C of this capacitor is captured by measuring the impedance of a circuit loaded with high-frequency current and evaluated. The response sensitivity of the FC-01 can be adjusted directly on the device by means of a simple potentiometer. In the event of a switching operation, the current in the supplying 2-wire loop drops from 20 mA to 4 mA (or increases inversely depending on the polarity) and a transistor or output switches through.

Features

/ Easy to mount

/ Maintenance-free

/ No moving components

/ Adjustable sensitivity

Application:

The FC-01 is suited for monitoring solid and fluid media including slurries and foam. Selectively, the sensor material is made out of Kynar or abrasion-resistant Ryton so that even hostile and abrasive materials can be detected without problem. The range for temperature is kept at a generous range of -30. . .+100°C or -10. . .+100°C in order to allow a maximum of 10 bar pressure in the entire range. Also with regard to the downstream evaluating electronics the user has no limits. The „Current Sink“ output operates along with 2-wire feeder devices and the transistor output can connect to DC and AC voltages up to 30 V. The FC-01 can be provided with terminal housing for harsh atmospheric conditions or with fixed cable cord and optionally as intrinsically safe version for Zone 0 or Zone 20 (barrier required). For applications in chemically aggressive areas a fully synthetic version is available, which offers a process connection made of PPS instead of stainless steel. The chemical resistance of the FC-01, its insensitivity to high vibrations, its accuracy and, not the least, it’s affordable price render the FC-01 into a universal device that is capable of replacing a tuning fork-switch, a rotating vane sensor or a float switch in many places.

Electrical Specifications:

Supply voltage /	standard 12. . .33VDC, intrinsically safe 10. . .30VDC
Output signal /	falling or rising current 20 on 4 mA or 4 on 20 mA, depending on connection
Switching output /	transistor: 30 V DC/AC, max. 82 mA
Repeatability /	2 mm
Dielectric constant /	min. 1.5
Protection class /	IP65 with cable cord IP68 with housing
Certificates /	Int. safe (barrier required): CSA/FM Class I, II und III, Div. 1, Groups A, B, C, D, E, F, G, T4 ATEX II 1 GD 1/2GD EEx ia IIC T4. . .T6 T107°C

Technical Specifications:

Measuring length /	100 mm
Ambient temperature /	-30. . .+85°C
Fully synthetic:	-10. . .+85°C
Storage temperature /	-40. . .+85°C
Fully synthetic:	-40. . .+85°C
Media temperature /	-30. . .+100°C
Fully synthetic:	-10. . .+100°C
Pressure /	-1. . .10bar
Media /	fluids, bulk goods, slurries, interfaces, foam
Process connection /	¾" NPT [(conical), ANSI/ASME B1.20.1 R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
Connection material /	st. steel 1.4404 or PPS
Sensor material /	PPS (PVDF optional)
Housing material /	thermoplastic Polyester
Lid material /	thermoplastic polycarbonat (PC), transparent
Cable /	1 m, 4 x 0,5 mm² shielded, polyester hood
Cable insertion /	½"-NPT (M20 x 1.5 on request)
Sealing /	FKM (optional FFKM)

Ordering Codes:

Order number	**FC-01.**	**1.**	**1.**	**1.**	**0.**	**0.**	**0**

FC-01 Limit Level Switch

Process connection /
1 = 3/4"-NPT thread
2 = R 1"- thread (BSPT)
3 = G 1"- thread (BSPP), not for fully synth. version

Device version /
1 = standard with cable cord (1 meter), process connection made of stainless steel
2 = version with housing and clamp block, process connection made of stainless steel
2 = fully synthetic version with housing and clamp block, process connection made of PPS

Sensor material /
1 = Ryton (PPS)
2 = Kynar (PVDF), not for fully synthetic version

Overfill protection /
0 = none
1 = with (as per German Federal Water act WHG)

Approvals /
0 = none
1 = ATEX, II 1 GD 1/2GD EEx ia IIC T4. . .T6 T107°C, not for fully synthetic version

Additional protection sleeve (FC-01.1 with ¾"-NPT conn.) /
0 = none
1 = protection sleeve made of PPS with process connection 3/4"-NPT-male
2 = protection sleeve made of PPS with process connection R1"-male

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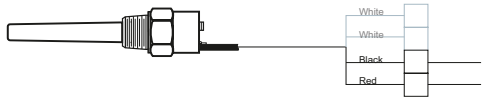
fax +49 (0)471 98 24 152 | **mail** info@profimess.de | **web** profimess.com

Electrical Connection:

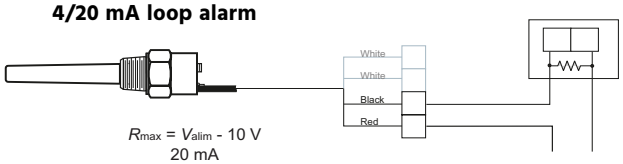
Cable Version (not intrinsically safe):

MIN / MAX alarm



polarity as required for
desired operation
DC 12. . .33 V

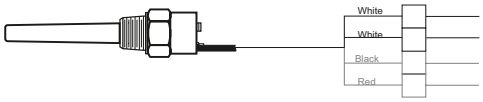
4/20 mA loop alarm



$R_{max} = V_{alim}$ - 10 V
20 mA

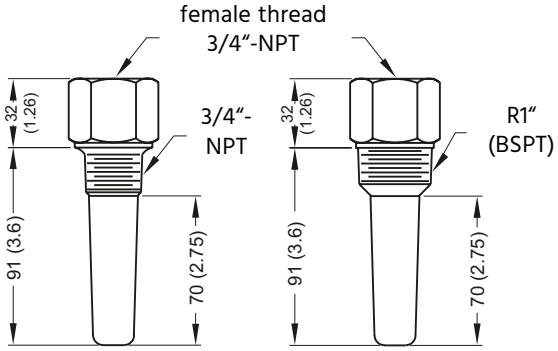
supply
DC 12. . .33 V

Solid state Switch

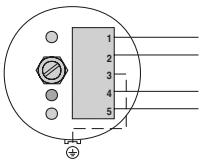


Transistor
DC 30 V / AC 30 V (peak)
82 mA max.
DC 12. . .33 VDC

Optionale separate prot. sleeve:



Housing and fully synthetic version



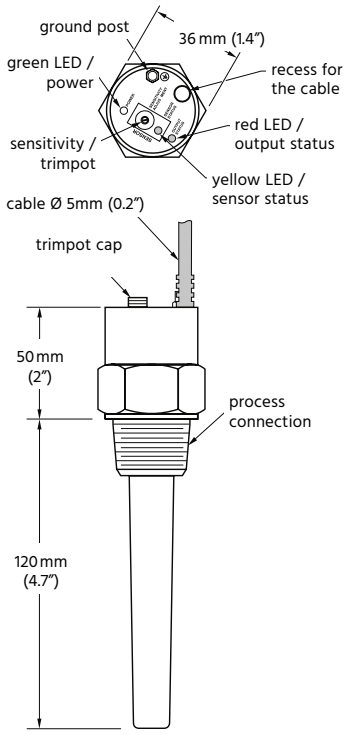
Terminal operations	Cable equivalent
mA current loop (+V or -V)	red wire
mA current loop (+V or -V)	black wire
ground	cable shield
solid state/relay	white wire
solid state/relay	white wire

solid state/relay normally open in unpowered state,
relay just available for fully synthetic version

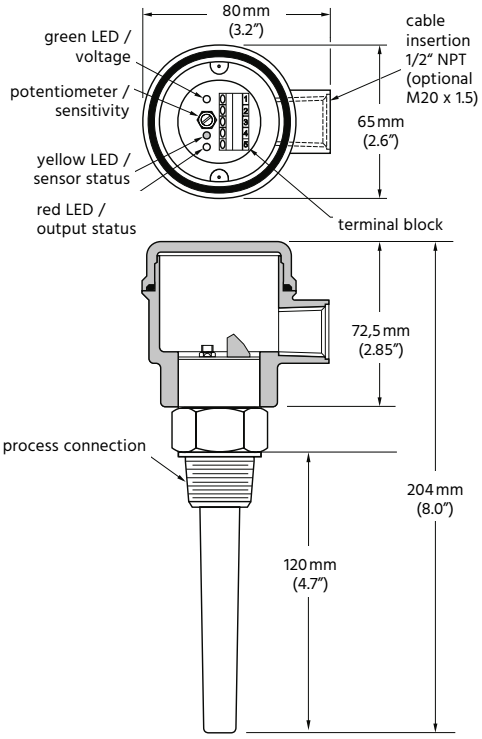
Note: use protection diode for inductive load!

Dimensions in mm:

Standard Version



Housing Version



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