



FD-01

Hydrostatic Level Measurement

- **Capacitive sensor element with high resistance against overpressure**
- **2- or 3-wire technology**
- **39.5 mm probe diameter**
- **Optionally available with ATEX-approval**

Description:

Hydrostatic level sensors measure the hydrostatic pressure of the fluid column present above the sensor and therefore the fluid level. A ceramic sensor element at the sensor underside picks up this pressure so that the electronic components inside can generate a 4...20 mA or 0...10 VDC signal that is proportional to the level. The suspension on the self-supporting 10 m cable and the design in proven 2-wire technology help perceptibly minimize the cost of installation.

Range of application:

The FD-01 series of level meters is used at measuring points that require an accurate and stable output signal in regard to the level even under extreme conditions. The high degree of protection IP 68 and corrosion resistance enable the use of the probe universally in vessels, basins, ducts and tanks. The large surface of the membrane that has a 25 mm diameter is particularly advantageous in effluents management.

Electrical specifications:

Output signal:	4...20 mA, 2-wire or 0...10 VDC, 3-wire
Supply:	2-wire: 9...32 VDC, Ex-protection: 14...28 VDC 3-wire: 12.5...32 VDC
Permissible load:	$R_{max} = [(U_B - U_{Bmin}) / 0.02]$ Ohm
Current consumption:	max. 21 mA
Influence effects:	
Supply:	0.05% FSO / 10 V
Load:	0.05% FSO / kOhm
Long term stability:	$\leq \pm 0.1$ % FSO / year at reference conditions
Turn-on time:	700 ms
mean Response time:	< 200 ms
max. Response time:	380 ms
Measuring rate:	5/s
Electrical protection:	
Short-circuit protection:	permanent
Reverse polarity protection:	no damage, but also no function
Option Ex-protection:	ATEX II 1G Ex ia IIB T4 Ga (ATEX II 1G Ex ia IIC T4 Ga for version "pipe mounting") ATEX II 1D Ex ia IIIC T85°C Ga
Safety rel. technical maximum values:	$U_i = 28$ VDC, $I_i = 93$ mA, $P_i = 660$ mW, $C_i = 27$ nF, $L_i = 5\mu$ H
Recommended Ex-amplifier:	KFD2-STC4-EX1

Permissible media temperature:

in zone 0 -10°C...+60°C with
patm. 0.8...1.1 bar abs.
in zone 20 -10°C...+70°C

Connecting cables:

capacitance signal line/shield also
signal line/signal line 160 pF/m

inductance signal line/shield also
signal line/signal line 1 mikroH/m

Electromagnetic compatibility:

emmission and immunity
according to - EN 61326

Technical specifications:

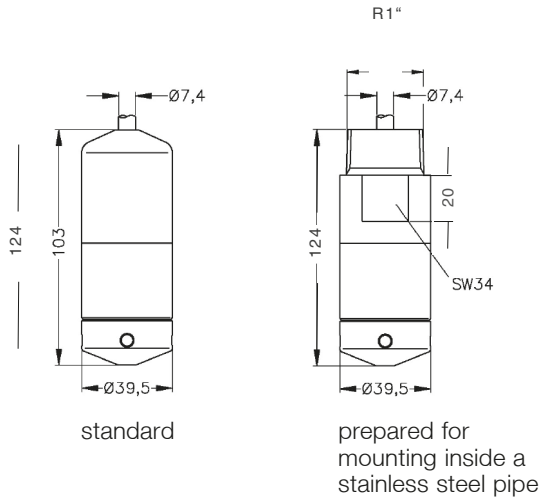
Accuracy:	standard: $\leq \pm 0.35\%$ FSO option: $\leq \pm 0.25\%$ FSO acc. to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)	Cable coating:	PVC (-5°C...+70°C) grey PUR (-25°C...+70°C) black FEP (-25°C...+70°C) black TPE (-25°C...+125°C) blue (cable with integrated air tube for atmospheric pressure reference)
Thermal error:	$\leq \pm 0.1\%$ FSO / 10 K in compensated range 0°C...+70°C	Nose cone:	POM
Storage temperature:	-25°C...+125°C	Wetted parts:	housing, gasket, diaphragm, cable coating and nose cone (if necessary)
Media temperature:	-25°C...+125°C (-10°C...+60°C Ex-version zone 0, -10°C...+70°C Ex-version zone 20)	Weight:	approx. 400 g (without cable)
Materials:		Protection class:	IP 68
Housing:	stainless steel 1.4404 (316L)		
Seals:	FKM (Viton), EPDM or FFKM		
Diaphragm:	standard: ceramic Al ₂ O ₃ 96% option: ceramic Al ₂ O ₃ 99.9%		

Ranges and permissible overpressure

Nominal pressure [bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Level [mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100
Permissible overpressure [bar]	2	2	4	4	6	6	8	8	15	25	25	35	35

Nominal pressure [bar]	16	20
Level [mH ₂ O]	160	200
Permissible overpressure [bar]	45	45

Dimensions in mm:



Ordering codes:

Ordering number: **FD-01.** | 1a. | 0. | 1. | 1. | 1. | 2. | 1. | 1

FD-01 Hydrostatic Level Meter

Operating range:

0a = 0.4 m water column, overload	2 bar
0b = 0.6 m water column, overload	2 bar
1 = 1.0 m water column, overload	4 bar
1a = 1.6 m water column, overload	4 bar
2 = 2.0 m water column, overload	6 bar
2a = 2.5 m water column, overload	6 bar
3 = 4.0 m water column, overload	6 bar
4 = 6.0 m water column, overload	8 bar
5 = 10 m water column, overload	8 bar
5a = 16 m water column, overload	15 bar
6a = 25 m water column, overload	25 bar
6b = 40 m water column, overload	25 bar
7a = 60 m water column, overload	35 bar
8 = 100 m water column, overload	35 bar
9 = 160 m water column, overload	45 bar
10 = 200 m water column, overload	45 bar

Output version:

0 = 4...20 mA, 2-wire
1 = 4...20 mA, 2-wire with ATEX-approval
2 = 0...10 VDC, 3-wire

Gasket:

1 = FKM
2 = EPDM
3 = FFKM

Diaphragm:

1 = ceramic Al ₂ O ₃ 96%
2 = ceramic Al ₂ O ₃ 99.9%

Cable coating:

1 = PVC (-5°C to +70°C)
2 = PUR (-25°C to +70°C)
3 = FEP (-25°C to +70°C)
4 = TPE (-25°C to +125°C)

Cable length in m:

1 = 10 m (standard)
2 = please specify in detailed text

Mounting connection:

1 = none (directly by cable)
2 = R 1" - male (for mounting in a stainless steel pipe)

Accuracy:

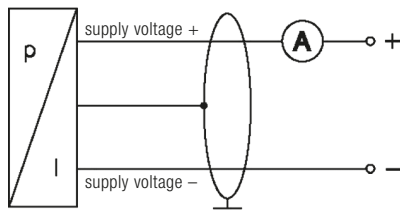
1 = $\leq \pm 0.35\%$ FSO
2 = $\leq \pm 0.25\%$ FSO

Electrical connection table:

Electrical connection	Cable colours (DIN 47100)
2 wire-system supply voltage +	white
supply voltage -	brown
3 wire signal +	green
shield	yellow/green

Wiring diagrams

2-wire-system (power)



3-wire-system (voltage)

