FISCHER MESS- UND REGELTECHNIK

Data sheet

FD38 | Digital flow transmitter / switch with colour-change LCD

The device serves to measure the flow of non-aggressive liquid and gaseous media. The manufacturer must be consulted before using the device for aggressive media because media-compatible materials are required for the measuring path.

Fields of application include

- Measuring steam
- Oil measurement
- Water measurement

Design and mode of operation

The measuring section comprises a measuring orifice with differential pressure removal boreholes and a differential pressure sensor with a sturdy and non-sensitive unit.

In case of differential pressure, a force is exerted on the measuring diaphragm which causes a deflection in the direction of the lower pressure. This deflection is transferred to an inductive displacement transducer via a tappet, and is then converted to a square rooted analogue output signal by the microprocessor-controlled electronics.

Optionally, there are also two additional switch outputs available.

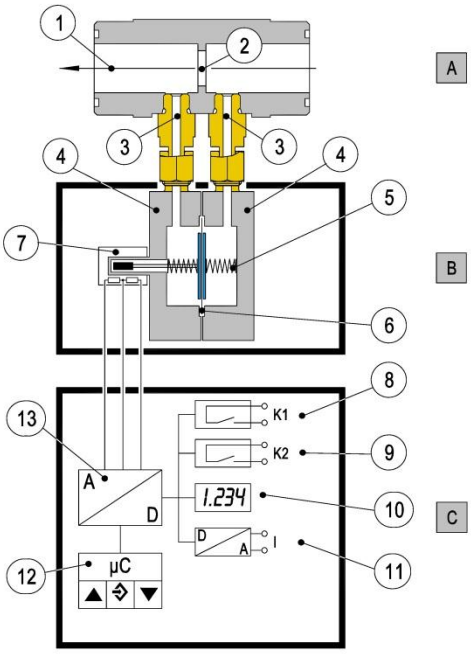
Important features

- Wear-free measuring system
- Maintenance-free

Typical applications

- Display device
- Volume measuring unit
- Flow security

Functional Schematic



A	Measuring path
1	Flow direction
2	Measuring orifice
3	Differential pressure removal borehole

B	Membrane measuring system
4	Pressure chamber
5	Measuring springs
6	Measuring membrane
7	Inductive displacement transducer

C	Electronics
8	Switch output 1
9	Switch output 2
10	LC display
11	Analogue output
12	Microcontroller
13	Signal preparation

09005560 DB_EN_FD38_LCD Rev.B 02/14

Technical data

Basic measuring ranges	mbar / bar		0…400	0…0.6
Static operating pressure	bar	max	16	16
Characteristic curve deviation	%FS	max	2.5	2.5
		type	0.8	0.8
Tk span°°	%FS/10K	max	0.8	0.4
		type	0.2	0.2
Tk zero point °°	%FS/10K	max	0.8	0.5
		type	0.2	0.2

° : Characteristic curve deviation (non-linearity and hysteresis) at 25°C, basic measuring range (linear characteristic curve, not spread)
°° : with reference to the basic measuring range (linear characteristic curve, not spread), compensation range 0...60 C.

	General points			
Admissible ambient temperature	-10 … 70°C			
Admissible media temperature	-10 … 70°C			
Admissible storage temperature	-20 … 70°C			
Enclosure protection class	IP 65 acc. to DIN EN 60529			
	Electrical data			
Rated Voltage	24 V DC/AC			
Admissible operating voltage U_b	12 … 32 V DC/AC			
Electrical connection type	Three-wire			
Characteristic curve	programmable (partially set ex-works)			
Power consumption	approx. 2 W / VA			
Display	4-digit colour change LCD for free unit up to 6 points Display with 4-digit resolution			
	Output signal			
Admissible apparent ohmic resistance	0/4… 20 mA		0 … 10 V	
	$U_b \leq 26V$	$R_L \leq \frac{U_b-4V}{0,02A}$	$U_b < 15V$	$R_L \geq 10k\Omega$
	$U_b > 26V$	$R_L \leq 1100\Omega$	$U_b \geq 15V$	$R_L \geq 2k\Omega$
	programmable switch contacts			
	2 potential-free relay contacts as NO contact or NC contact		2 potential-free MOSFET semiconductor switch SPST[1] as NO contact or NC contact	
U_{max}	32 V AC/DC		3…32 V AC/DC	
I_{max}	2 A		0.25 A	
P_{max}	64 W/VA		8 W/VA	
	Ports			
Electrical connection	1 x rectangular plug connector DIN EN 175 301-803 A or 2 x round plug connector M12 Plug 1 for supply and analogue output signal (5-pin, male) Plug 2 for switch contacts (4-pin, male)			
	Materials			
Casing	Polyamide PA 6.6			
Media-contacting material	Brass, FKM, NBR			

Parameters

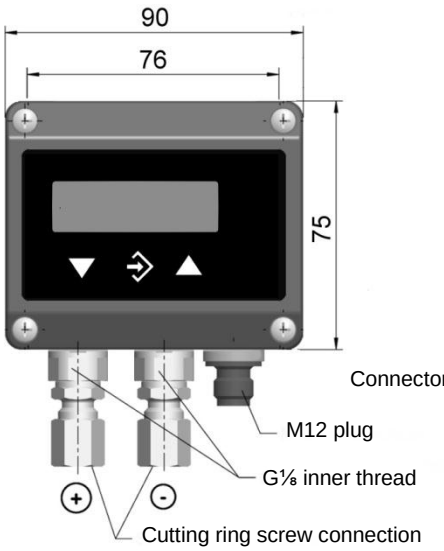
Via membrane keyboard with menu-controlled operation or PC adapter; can be locked with a password.

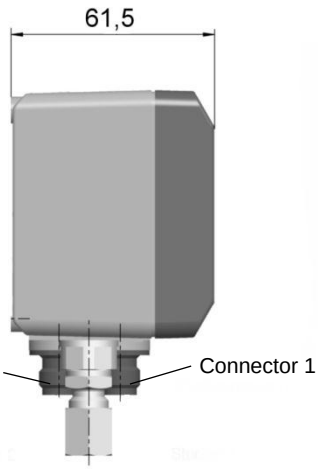
	Settings
Attenuation	0.0 ... 100.0 s (jump response time 10 / 90 %), separate also for display
Switch contacts (SP1, SP2)	Switch-off point, switch-on point, response time (0 ... 100 s); function (NO contact /NC contact)
Measuring range unit	m^3/h, l/min
Zero-point stabilising	0 ... ⅛ of the basic measuring range [2]
Zero point correction	⅓ of the basic measuring range [3]
Implementation of characteristic curve	root extracted
Password	001 ... 999 (deactivated via value = 000)

[1] SPST: **S**ingle **P**ole **S**ingle **T**hrow
[2] Measured values around zero are set to zero, e.g. to suppress leak flow rate.
[3] Zero-point correction to compensate the different installation positions.

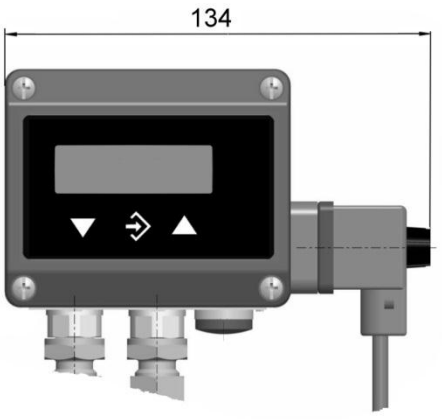
Dimensional drawings (All dimensions in mm unless stated otherwise)

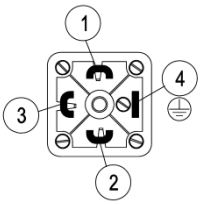
Model with M12 plug connector





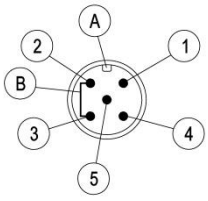
Version with rectangular connector





Rectangular plug connector
DIN EN 175 301-803 A

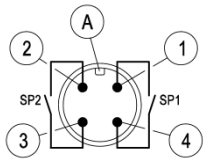
1	Supply	$+U_b$
2	Supply	$-U_b$
3	Output	+Sig
4	Functional earth	



Plug 1
M12 plug 5-pin

1	Supply	$+U_b$
2	Output	-Sig
3	Supply	$-U_b$
4	Output	+Sig
5	Functional earth	

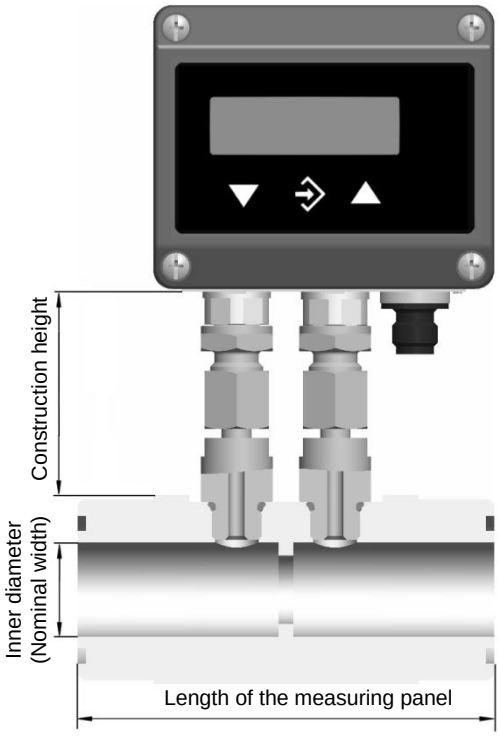
A Coding
B Bridge



Connector 2
M12 plug 4-pin

1	Switch output 1	SP1
2	Switch output 2	SP2
3	Switch output 2	SP2
4	Switch output 1	SP1

A Coding



NOTE: The dimensions of the measuring panel, in particular the construction height and the length, are determined on the basis of the information in the panel questionnaire[4] and are recalculated for each application case.

[4] Please contact our sales team about this.

Order Codes

Digital flow transmitter with colour-change LCD

Type FD38 [ ][ ][V][ ][ ][ ][ ][L][ ][ ][ ][ ]

Nominal width / connection thread

DN15	G1	> **1**	**A**
DN20	G1¼	> **2**	**B**
DN25	G1½	> **3**	**C**
DN32	G2	> **4**	**D**
DN40	G2¼	> **5**	**E**
DN50	G2¾	> **6**	**F**
DN63	G3	> **7**	**G**

Seal with contact the measuring medium

FKM > **V**

Measuring panel material

Polypropylene (grey) > **A**
Stainless steel 1.4404 > **C**
Polyvinylide flouride (PVDF) > **E**

Measuring medium

Gas > **0** **G**
Liquid > **0** **F**

Electrical output signal (DC, 3-conductor, root extracted)

0 … 20 mA > **E**
4 … 20 mA. > **F**
0 … 10 V > **G**

Operating voltage

12 … 32 V AC/DC (24 V nominal voltage) > **L**

Measuring unit (flow)

without > **0**
m^3/h > **B**
l/min > **F**

Measured value display / contact elements

4-digit colour change LCD – without contacts > **B**
4-digit colour change LCD - 2 relay contacts > **C**
4-digit colour change LCD - 2 semiconductor switch > **D**

Electrical connection

Rectangular plug connector DIN EN 175 301-803 A (4-pin, male)[5] > **H**
2x M12 round plug connector (5-pin, male and 4-pin, male) > **C**

Flow direction

Vertical > **A**
Horizontal > **D**

Customer information

In order to produce the measuring panel, the panel questionnaire needs to be completed.

[5] No switch contacts possible