

Product information

LABOPLUS-XF

Flow transmitter LABOPLUS-XF

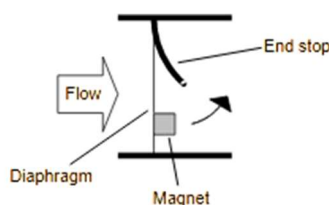


- Very short response time
- High overload protection
- Metering range 1:100
- Low pressure loss
- Compact design
- One Analog output (10 V or 20 mA switchable)
- One switching output
- IO-Link connectivity

Product description

A thin elastic diaphragm made of stainless steel, which covers the entire flow cross-section, is deflected by the flowing fluid, and thereby pushes against an arched end stop.

There is a plastic-coated magnet on the diaphragm. When there is a deflection, its magnetic field changes, and this is detected by a sensor outside the flow chamber.

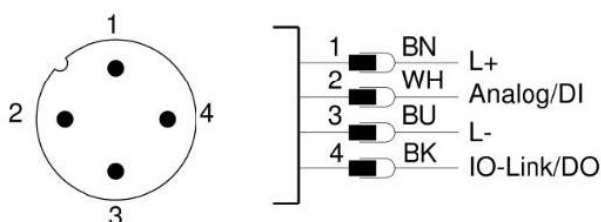


The integrated electronics have an analog output and a switching output, which can alternatively be used as a frequency output. In addition, it has an IO-Link interface that allows digital communication with the sensor for configuration and reading measurement values.

Wiring diagram

Connector M12 x 1

Pin assignment



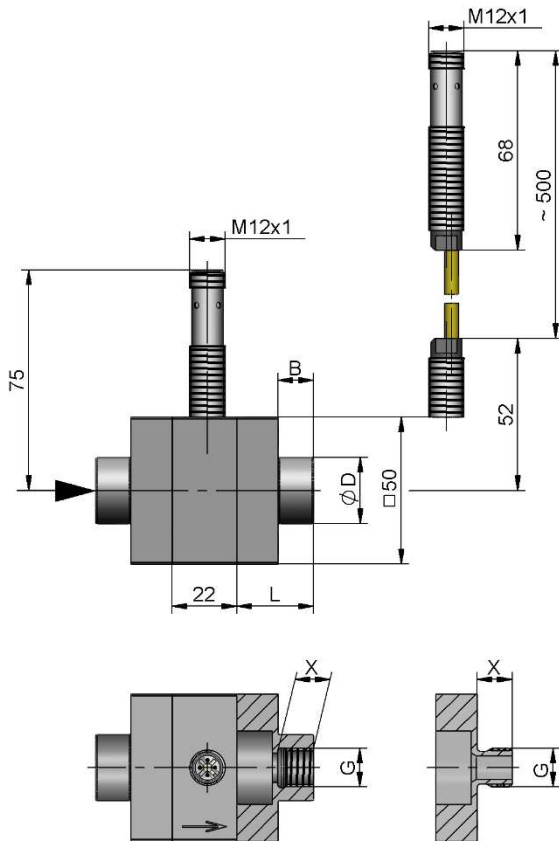
Specifications

Measuring principle	Dynamic orifice
Nominal size	DN 8 ... DN 25
Process connection	Female thread G 1/4...G 1, optionally male thread or hose nozzle (other connector types on request)
Measurement media	Water or other low-viscous non-aggressive liquids
Measuring ranges	Standard ranges: 1 ... 100 l/min (water) Low flow range: 0.4 ... 6 l/min (water) For details see table 'Ranges'
Measurement uncertainty	Standard ranges: ±3 % O.R., min. 0.25 l/min Low flow range: ±3 % O.R., min. 0.1 l/min
Pressure loss	max. 0.5 bar
Compressive strength	Plastic version PN 16 All-metal version PN 100
Media temperature	0 ... +70 °C Extended temperature range 0 ... +110 °C
Storage temperature	-20 ... +80 °C
Materials (wetted)	Body: PPS, CW614N nickelled or Stainless st. 1.4404 Connections: POM, CW614N nickelled or Stainless st. 1.4404 Gaskets: FKM (alternatively EPDM or NBR) Diaphragm: Stainless st. 1.4031k Magnet holder: PPS Supporting ring: PVDF Glue: Epoxy resin
Supply voltage	18 ... 30 V DC
Current consumption	< 50 mA (SIO mode, unloaded outputs)
IO-Link specification	IO-Link revision V1.1.4 Bit rate COM2 (38400 bit/s) Minimum cycle time 20 ms SIO mode yes Port class A Block parameterization yes Data storage yes
Analog output	Current: 4 ... 20 mA 0 ... 20 mA Voltage: 0 ... 10 V 2 ... 10 V 0 ... 5 V 1 ... 5 V 0.5 ... 4.5 V
Switching output	Transistor output push-pull, parameterizable as NPN o.C. short-circuit and reverse polarity resistant I _{out} = 100 mA max per output Configurable on the device as ● Limit switch ● Frequency output ● Pulse output ● Signal output for preset counter
Electrical connection	M12x1 circular connector, 4-pin
Protection class	IP65 / IP67
Conformity	CE

Product information

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Dimensions and weights



Process connections

G	DN	L	B	X	ØD metal/ plastic	Weight* kg metal / plastic
G ¹ / ₄	DN 8	26	12	12	22.5 / 33	0.245 / 0.055
G ³ / ₈	DN 10					0.240 / 0.050
G ¹ / ₂	DN 15	28	14	14	28.0 / 37	0.250 / 0.055
G ³ / ₄	DN 20					0.270 / 0.060
G1	DN 25	30	16	16	35.0 / 42	0.400 / 0.085
G ¹ / ₄ A	DN 8					0.230 / 0.045
G ³ / ₈ A	DN 10	26	12	12	22.5 / 33	0.230 / 0.045
G ¹ / ₂ A	DN 15					0.240 / 0.050
G ³ / ₄ A	DN 20	30	16	16	35.0 / 42	0.235 / 0.050
G1 A	DN 25					0.235 / 0.050

* Weights per connection without screws
Custom specific connections on request

Body

Construction	Weight*
Plastic	approx. 0.1 kg
Metal	approx. 0.4 kg

* Weights including inner parts, sensor, and screws for connection pieces

Ranges

Nominal size	Measurmntn range l/min (H ₂ O)	Q _{max} l/min (H ₂ O)
DN 8...25	0.4 ... 6.0	120
DN 8...25	1.0... 15.0	
DN 10...25	1.0... 25.0	
DN 15...25	1.0... 50.0	
DN 20...25	1.0... 80.0	
DN 25 *	1.0...100.0	

* Inner tube diameter ≥ Ø22.5

Options

Through a range of options, the XF system is flexibly adaptable to very varied requirements:

Body material

The standard version has a plastic body with a compressive strength of 16 bar. Alternatively, the body can be made of nickel-plated brass or stainless steel. In combination with metal connectors (all-metal version), a pressure resistance of 100 bar is achieved.

Measurements are possible in the range of 1...100 l/min.

Extended temperature range

If the all-metal version is equipped with suitable sensors, operation at media temperatures of up to 110 °C is possible. In this case, the sensor element is located in the housing of the measuring unit, while the electronics are separated from the housing by a 40 cm long heat-resistant cable.

Resistance to backflow

In forward flow, the orifice rests against a curved stop and is not damaged even at flows significantly higher than the intended measurement range or during water hammer. In the case of flow or pressure surges in the reverse direction, it rests against a circumferential supporting ring made of plastic in the standard version, almost completely sealing the flow cross-section. This builds up a pressure that can destroy the diaphragm. In applications where such conditions may occur (e.g., due to elastic hoses behind the measuring device), the use of the 'backflow resistance' option is recommended. In this case, the supporting ring is replaced by a similarly curved stop made of stainless steel, so that the diaphragm has the same overload and pressure surge resistance in reverse flow as it does in forward flow. However, measurement in reverse direction is not possible.

Low flow measurement

For measuring ranges up to 6 l/min, the sensitivity of the measuring system can be increased, so that measurements below 1 l/min, specifically from 0.4 l/min, become measurable. For this purpose, the sensor is installed on the opposite side of the housing. This option is not available for metal housings and versions with backflow resistance.

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