



The simple and reliable paddlewheel technology has been moved into this new MINIFLOW sensor type F3.10, designed for use with every kind of solid-free liquids. The sensor can measure flow from 0.25 m/s (0.8 ft/s) producing a frequency output signal highly repeatable. A rugged construction and a proven technology guarantee exceptional performances with little or no maintenance required. The very small dimension and a special design make it suitable for installation on FIP standard Tee-fittings from DN15 to DN40 (0.5 to 1.5 in.).

**Main Features**

- IP 68 enclosure.
- ABS body with EPDM or FPM seal.
- ABS 4-blade paddlewheel (no bearings).
- Mono-directional design.
- Installation on standard FIP tees.
- PVDF body version on request

**Applications**

- Water treatment.
- Filtration systems.
- Pure water production.
- Water monitoring.
- Fertigation.

**Operating principle**

The flow sensor consists of a transducer and a four-blade paddlewheel using insertion technology. The paddlewheel is equipped with a permanent magnet integrated in two blades. As the magnet passes close to the transducer a pulse is generated.

When liquid flows into the pipe, the paddlewheel is set in rotation producing a square wave output signal. The frequency is proportional to the flow velocity.

**Connections to FlowX3 Instruments**

FLOWX3 Sensor	FLOW X3 Instruments					
	F9.00.L	F9.02.L	F9.03	F9.20	F9.50.L	F9.51.L
<b>F310.H</b>	■	■	■		■	■

## Dimensions



Length = 41 mm (1,6")  
 Width = 20 mm (0,8")  
 Cap = 3/4"

## Installation Fittings

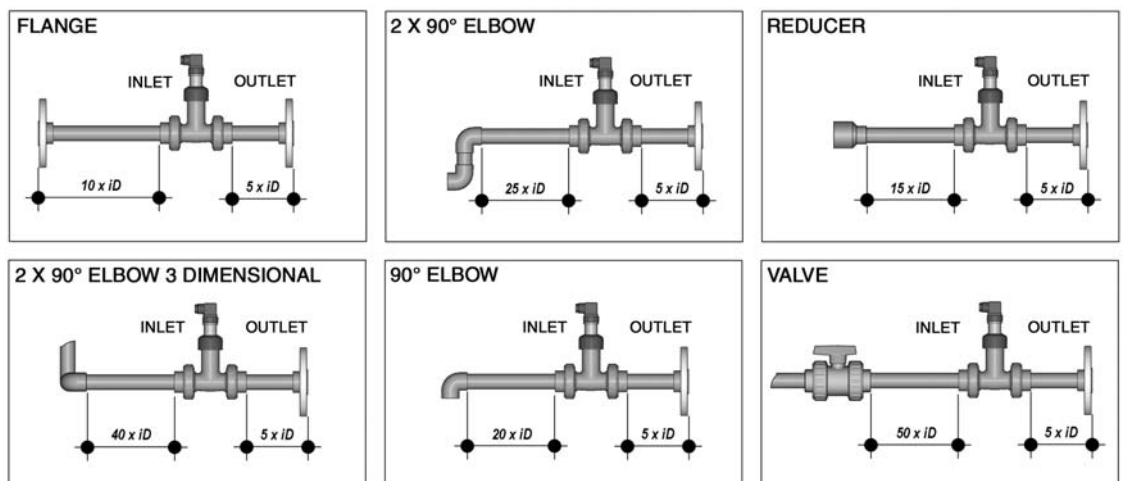
Please refer to Installation Fittings section for more details and a complete listing of items.

	Type	Description
	Plastic Tees	Size: D20 to D50 (0.5" to 1.5") Materials: UPVC, CPVC
	Brass Tees	Internal diameter: 23 mm Process connection: 1 1/4" BSP Male Threads

## Installation Guidelines

- Different pipe configurations and obstacles in the flow line such as valves, elbows, pipe bends and strainers create variations on the flow profile.
- The six most common installation configurations are shown to help in selecting the best location in the pipeline for paddlewheel flow sensor.

- For more information, please refer to EN ISO 5167-1.
- Always maximize distance between flow sensors and pumps.



## Mounting Positions

Make sure the pipeline is always full.

■ Horizontal pipe runs:

- Fig.1: installation with no sediments present
- Fig.2: installation with no air bubbles present
- Fig.3: installation if sediments or air bubbles may be present.

■ Vertical pipe runs:

- Install sensor in any orientation.
- Upward flow is preferred to ensure full pipe.

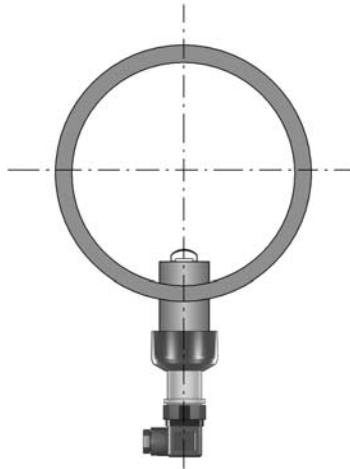


Fig. 1

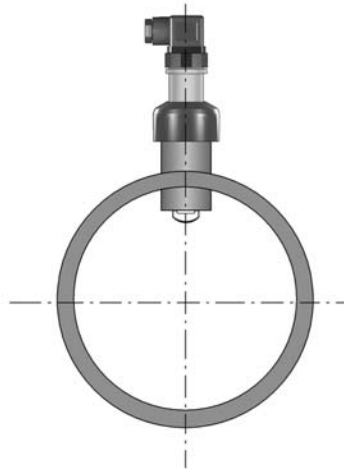


Fig. 2

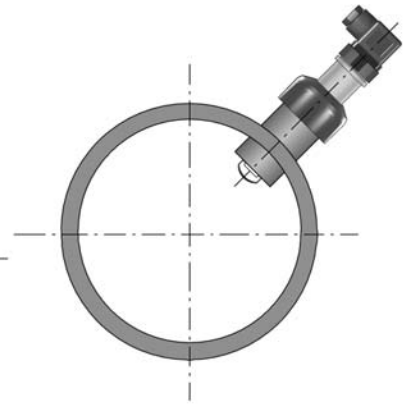
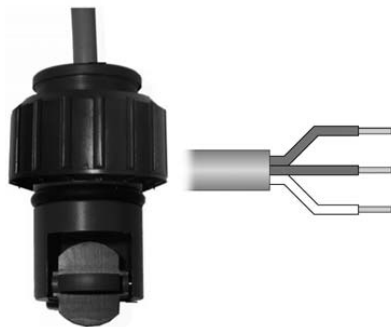


Fig. 3

## Wiring

### F3.10.H IP68 Sensor Connection to FlowX3 Instruments

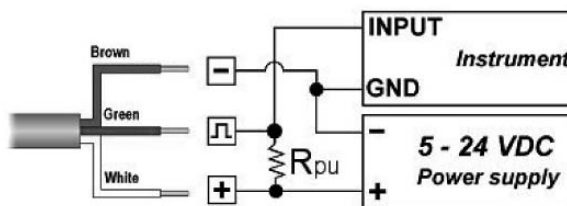


Brown  
Green  
White

SENSOR	
5	GND
6	IN
7	V+

B

### F3.10.H IP68 Sensor Connection to Other Brand Instruments



2 K $\Omega$  to 10 K $\Omega$  Pull-up resistor may be required.

## Technical Data

### General

- Pipe Size Range: DN15 to DN40 (0.5 to 1 1/2"). Please refer to Installation Fittings section for more details.
- Flow Rate Range: 0.25 to 4 m/s (0.8 to 12,5 ft./s).
- Linearity:  $\pm 1\%$  of full scale.
- Repeatability:  $\pm 0.5\%$  of full scale.
- Minimum Reynolds Number Required: 4500.
- Enclosure: IP68.
- Operating Pressure:
  - max 10 bar (145 psi) @ 20 °C (68°F).
  - max 2 bar (30 psi) @ 70 °C (158°F).
- Operating Pressure: -20°C to 70°C (-4°F to 158°F).
- Wetted Materials:
  - Sensor Body: ABS (PVDF for special version)
  - O-rings: EPDM or FPM
  - Rotor: ABS (PVDF for special version)
  - Shaft: AISI 316L.
  - Magnets: SmCo5.

### Electrical

- Supply current: < 30 mA @ 24 VDC.
- Output signal:
  - square wave
  - Output frequency: 15 Hz per m/s nominal (4,6 Hz per ft/s nominal)
  - Output type: transistor NPN open collector
  - Output current: 10 mA max.
- Cable length: 2 m (6,5 ft) standard, 300 m (990 ft) maximum.

### Standards & Approvals

- Manufactured under ISO 9001 (Quality).
- Manufactured under ISO 14001 (Environmental Management).
- CE.

## Ordering Data

### FLOWX3 F3.10.H.XX Sensor

Part No.	Version	Power supply	Length	Body	O-rings	Enclosure
F3.10.H.01	Hall	5 - 24 VDC	41 mm	ABS	EPDM	IP68
F3.10.H.02	Hall	5 - 24 VDC	41 mm	ABS	FPM	IP68

### Spare Parts

Item	Part No.	Name	Description
A-1	F3.SP2.7	Sensor Cap	Gray Sensor Cap
A-2	F3.SP3.3	O-Rings	EPDM Sensor body O-rings
A-3	F3.SP3.4	O-Rings	FPM Sensor body O-rings
A-4	F3.SP4.3	Rotor KIT	ABS rotor with AISI 316L Shaft
	F3.SP5.4	Sensor Plug	ABS Sensor Plug
	F3.SP6	Electrical cable	Cable (per meter), 3 cond., 22AWG

