



F3.81 & F3.82 Oval Gear Flow Sensor

INSTRUCTION MANUAL

EN 10-11

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1. Introduction



CAUTION

1.1. Safety Instructions

General Statements

- ❑ The sensors F3.81.H.0X and F3.82.H.0X have only been designed to measure the flow of liquids at hi viscosity.
- ❑ Do not install and service the sensors without following the Instruction Manual.
- ❑ These sensors are designed to be connected to other instruments which can be hazardous if used improperly. Read and follow all associated instrument manuals before using with this sensor.
- ❑ Sensor installation and wiring connections should only be performed by qualified staff.
- ❑ Do not modify product construction.

Installation and Commissioning Statements

- ❑ Remove power to the sensor before wiring any connection.
- ❑ Depressurize and vent the system before installing or removing the sensor.
- ❑ Check and confirm the chemical compatibility of the materials in contact with the liquid.
- ❑ Do not exceed maximum temperature/pressure data.
- ❑ To clean the sensor, use only chemical compatible products.

1.2. Unpacking

Please verify that the product is complete and without any damage. The following items must be included:

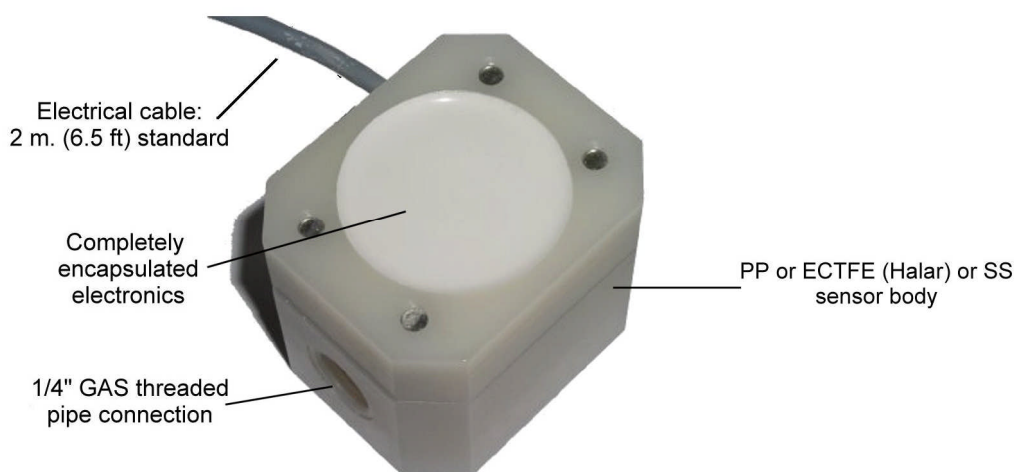
- F3.8X.H.0X Oval Gear Sensor
- Instruction Manual

2. Description

2.1. Design

The compact oval gear flow sensor type F3.81 or F3.82 is designed for use with every kind of aggressive, solid-free liquids even with very high viscosities. The sensor can be fixed to flexible or rigid pipes via ¼" GAS threaded process connections. The sensor produces a frequency output proportional to the volume measured that can be easily transmitted and processed. The Oval Gear sensor offers two different flow ranges starting from 10 or 25 l/h (0.044 or 0.11 gpm). The construction materials, ECTFE (Halar®) or PP or Stainless steel, provide high strength and chemical resistance.

2.2. Technical Features



Halar® is a registered trademark of Ausimont-Solvay.

2.3. Operating Principle

The sensor body contains two oval gears set into rotation by a flowing fluid. The two gears are meshed at 90° to define a fixed fluid volume pumped out every rotation. Two permanent magnets are positioned into each gear and a Hall effect sensor detects the magnetic field generating a square wave signal output with frequency proportional to the number of fluid volumes pumped out.

2.4. Connections to FlowX3 Instruments

FlowX3 Sensors	FlowX3 Instruments					
	F9.00	F9.01	F9.02	F9.03	F9.20	F9.50
F3.81.H		X	X	X		X
F3.82.H		X	X	X		X

3. Specifications

3.1. Technical Data

General

Flow Rate Range:

- F3.81.H version: 10 to 100 l/h (0.044 up to 0.44 gpm)

- F3.82.H version: 25 to 150 l/h (0.11 up to 0.66 gpm)

Linearity: ± 1 % of reading

Repeatability: < 0,3% of reading

Working Temperature: -10° to 60°C (14° to 140°F)

Max. Fluid Viscosity : 1000centipoise

Working Pressure:

PP body:

6 bar @ 25°C

3 bar @ 60°C

ECTFE body:

8 bar @ 25°C

5 bar @ 60°C

SS body:

8 bar @ 60°C

Enclosure: IP65

Wetted Materials:

- PP version:
 - Sensor Body: PP
 - O-ring: FPM
 - Gear: ECTFE (Halar[®])
 - Shaft: zircone
- ECTFE version:
 - Sensor Body: ECTFE (Halar[®])
 - O-ring: FPM
 - Gear: ECTFE (Halar[®])
 - Shaft: zircone
- Stainless Steel:
 - Sensor Body: Stainless Steel AISI 316L
 - O-ring: FPM
 - Gear: ECTFE (Halar[®])
 - Shaft: Stainless steel

Connections: ¼" GAS female

Cable length: 2 m (6.5 ft) standard

Standards & Approvals

Manufactured under ISO 9002

CE

Specific for F3.81.H

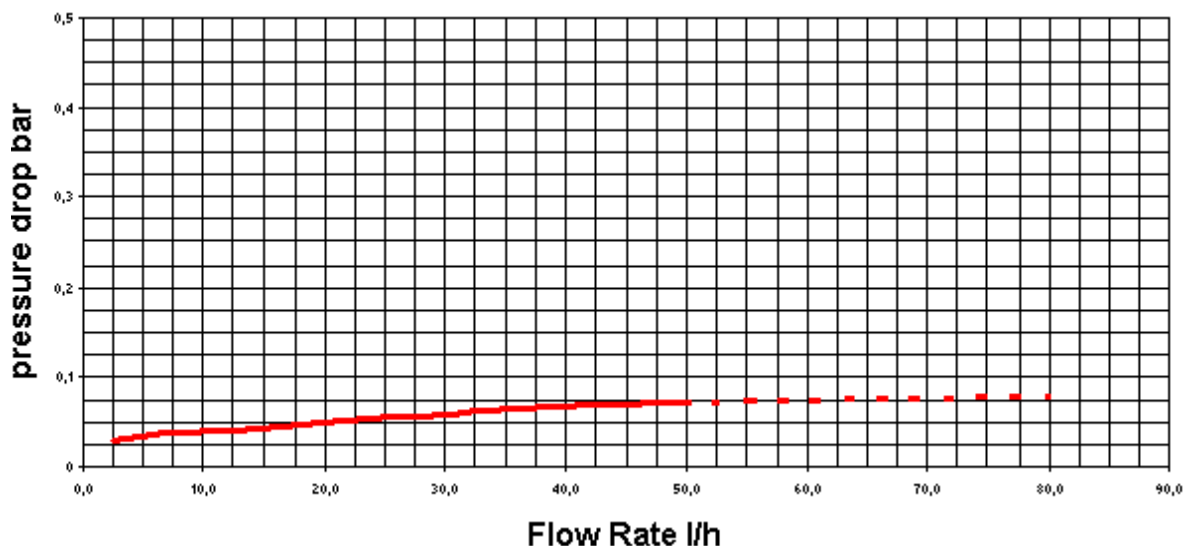
Supply voltage: 5 to 24 VDC regulated

Supply current: < 15 mA @ 24 VDC

Output signal: square wave Cmos (NPN / PNP)

Indication of calibration data for water @20°C:

K-factor = 5950 Pulses/Liter (22521 Pulses/U.S. Gallon)



Specific for F3.82.H

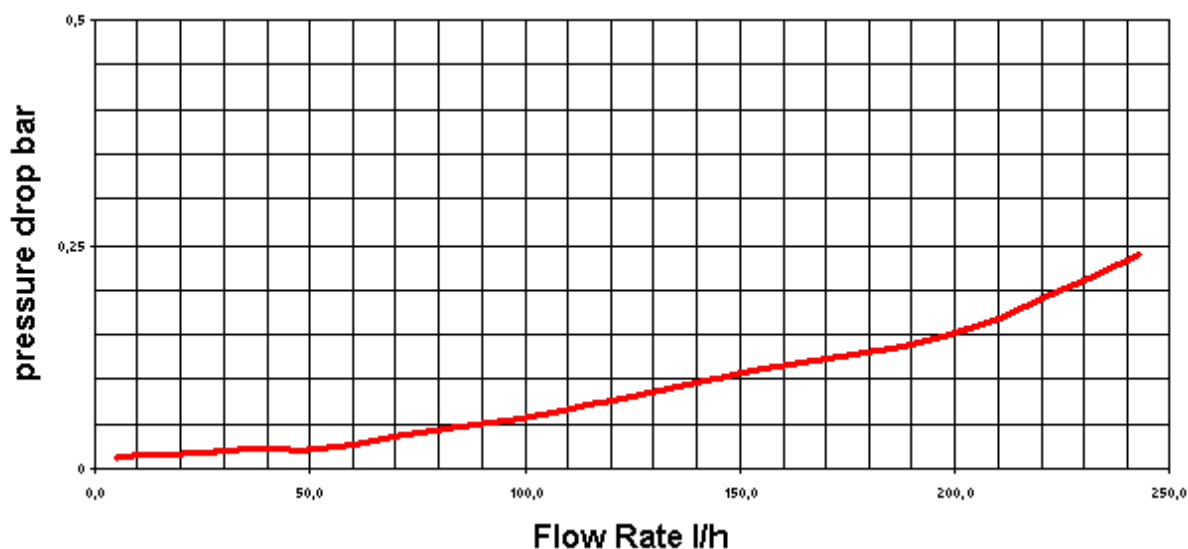
Supply voltage: 5 to 24 VDC regulated

Supply current: < 15 mA @ 24 VDC

Output signal: square wave Cmos (NPN / PNP)

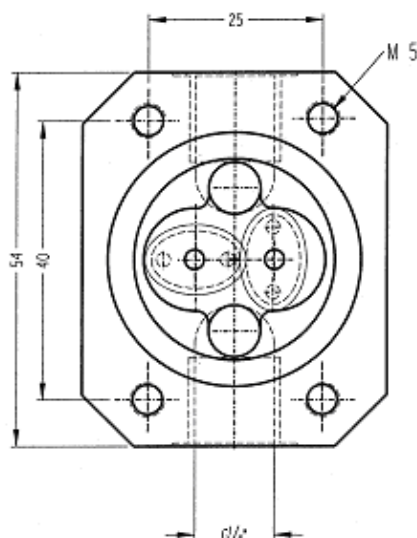
Indication of calibration data for water @20°C:

K-factor = 3400 Pulses/Liter (12869 Pulses/U.S. Gallon)



- *- use the tested K-factor write on the label on the sensor
- for viscosity different than water, the K factor will change. Adjust K-factor value doing few batches

3.2. Dimensions



4. Installation

4.1. Location

- The sensor can be installed in any position, both horizontally or vertically, although horizontal flow is preferred. A non horizontal installation may cause a greater error in the lower part of the measurement range.
- Install the sensor with the arrow pointing the direction of the flow.
- Always maximize distance between sensor and pump. Do not install the sensor immediately downstream of valves, elbows or any kind of obstacles: 150 mm of straight pipe are suggested before and after the sensor.

4.2. Wiring

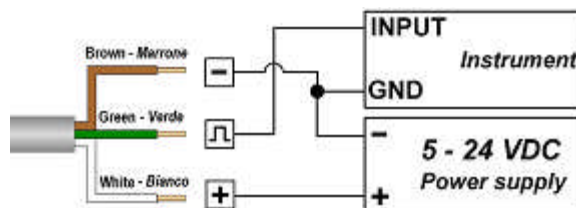
- Always ensure the power supply is switched off before working on the sensor.
- Always use a high quality (regulated) DC voltage supply.

F3.8X.H Oval Gear Sensor Connection to FlowX3 Instruments



SENSOR	
5	GND
6	IN
7	V+

F3.8X.H Oval Gear Sensor Connection to Other Brand Instruments



5. Ordering Data

FlowX3 F3.81.H.0X

Part No.	Version	Power supply	Material	Flow Rate Range
F3.81.H.01	Hall	5 - 24 VDC	PP / FPM	10 to 100 l/h (0.044 to 0.44 gpm)
F3.81.H.02	Hall	5 - 24 VDC	ECTFE / FPM	10 to 100 l/h (0.044 to 0.44 gpm)
F3.81.H.03	Hall	5 - 24 VDC	SS316L / FPM	10 to 100 l/h (0.044 to 0.44 gpm)

FlowX3 F3.82.H.0X

Part No.	Version	Power supply	Material	Flow Rate Range
F3.82.H.01	Hall	5 - 24 VDC	PP / FPM	25 to 150 l/h (0.11 to 0.66 gpm)
F3.82.H.02	Hall	5 - 24 VDC	ECTFE / FPM	25 to 150 l/h (0.11 to 0.66 gpm)
F3.82.H.03	Hall	5 - 24 VDC	SS316L / FPM	25 to 150 l/h (0.11 to 0.66 gpm)

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