

Type F3.00/F3.01 Flow Sensors



The Type F3.00/F3.01 Paddle Wheel Flow Sensors are the core items in the Digiflow® FlowX3 line. A square wave output signal is generated with frequency proportional to rate of rotor rotation and flow velocity. This pulse output is normally fed to a FlowX3 flow monitor/transmitter, blind transmitter, batch controller or adjustable flow switch. It can also be fed to other brand instruments or PLC's.

Two types of sensors are available, Hall Effect which requires a 5 to 24 VDC power supply and Coil Effect which operates with less power, 3 to 5 VDC. Coil is required with the battery powered flow monitor. Hall Effect signals may be transmitted up to 300 meters (984 ft.) without the need for conditioning whereas Coil Effect signals may be transmitted up to 16 m (52.5 ft.) without conditioning.

Body Materials: CPVC, PVDF, 316L Stainless Steel, Brass

Rotor: ECTFE (Halar®)

Shaft & Bearings: Ceramic

Seals: EPDM, Viton®

Pipe Sizes: 1/2"– 24" in two sensor lengths, L0 or L1
See Installation Fittings (pages 38–41)

Flow Ranges: See page 44

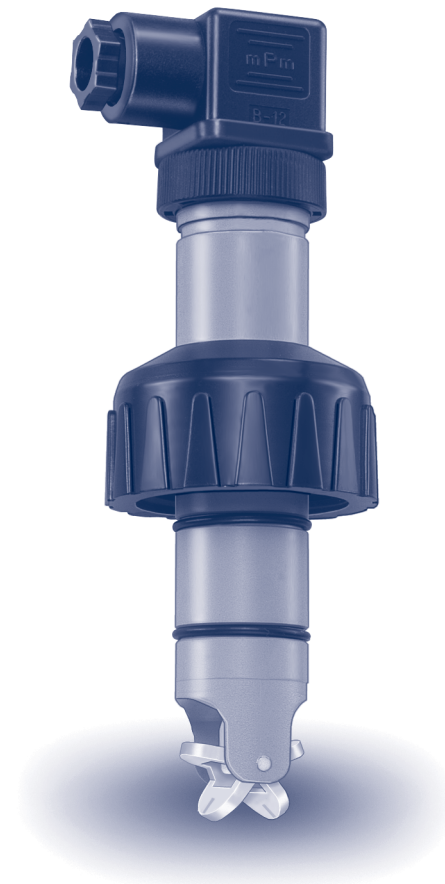
■ Features

- **Ceramic Shaft and Bearings** – For longer life on services containing grit
- **Self Cleaning Design** – Lower maintenance
- **Submersible Sensors Available** – NEMA 6, 6P (IP68) models are available for outdoor or submersible installation

■ Connectable FlowX3 Instruments

Sensor Type	Sensor No.	Instrument Mounting	FlowX3 Instruments*
Hall	F3.01.H	Direct	F9.00, F9.01, F9.02,
	F3.00.H	Panel or Wall	F9.03, F9.50
Coil	F3.01.C	Direct	F9.20
	F3.00.C	Panel or Wall	

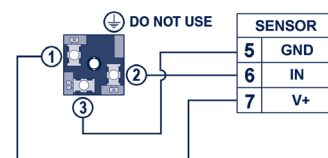
* Power supply is normally fed from FlowX3 instruments.



■ Wiring

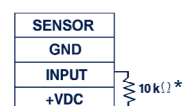
Sensor Connections to Instruments

NEMA 4, 4X (IP65) Sensor



FlowX3 Instruments

Other Brand Instruments

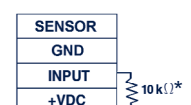


NEMA 6, 6P (IP68) Sensor



FlowX3 Instruments

Other Brand Instruments



* 10 kΩ pull-up resistor may be required when Hall sensors are connected to other brand instruments.

Type F3.00/F3.01 Flow Sensors



■ Technical – General

Output Signal:	Square wave (pulse)
Output Frequency:	45 Hz per m/s nominal (13.7 Hz per ft./sec.)
Electrical Class:	NEMA 6, 6P (IP68) – F3.00 only NEMA 4, 4X (IP65) – F3.00 and F3.01
Accuracy:	< ± 1% of reading value after field calibration or ± 0.75% of full scale
Repeatability:	± 0.5% of full scale
Velocity Range:	0.15 to 8 m/s (0.5 to 25 ft./sec.). See page 44 for corresponding flow ranges.
Viscosity Range:	0.5 to 20 centistokes. Field calibration is required if outside this range, up to 40 centistokes maximum.
Maximum % Solids:	10% with particle size not exceeding 0.5 mm cross section or length
Max. Operating Pressure/Temperature:	See chart on page 45
Cable (where supplied):	22 AWG, 3 conductors

■ Technical – F3.00.H and F3.01.H Hall Sensors

Supply Voltage*:	5 to 24 VDC regulated
Supply Current:	< 30 mA @ 24 VDC
Current Consumption:	12 to 30 mA
Output Type:	Transistor NPN open collector
Output Current:	10 mA max.
Max. Cable Length:	Max. 300 m (984 ft.) recommended without signal conditioning

■ Technical – F3.00.C and F3.01.C Coil Sensor

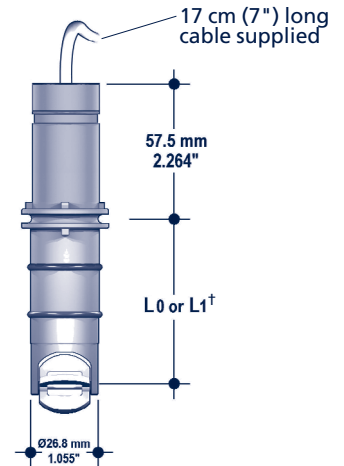
Power Supply:	Normally 2 x 3.6 V Lithium batteries located in the F9.20 flow monitor or 3 to 5 VDC regulated
Supply Current:	< 10 μ A
Min. Input Impedance:	100 k Ω
Max. Cable Length:	Max. 16 m (52.5 ft.) recommended without signal conditioning

* Supply voltage is normally fed from FlowX3 instruments.

■ Installation

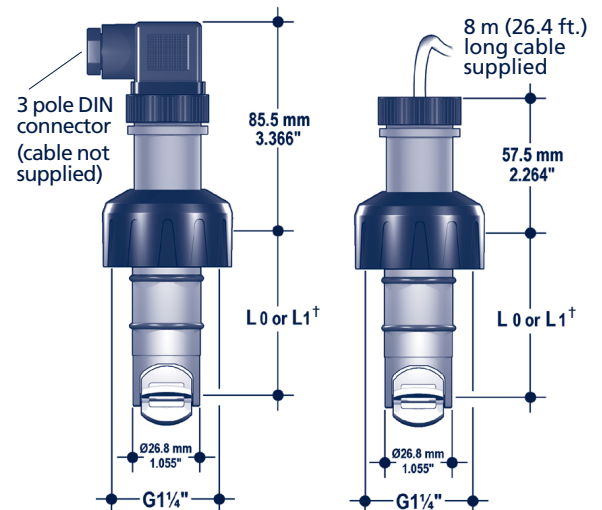
- See page 43 for guidelines on installation in piping systems
- See pages 38 to 41 for installation fittings

F3.01 For Direct Connection to Instruments



NEMA 4, 4X (IP65)*

F3.00 For Remote Connection to Instruments



NEMA 4, 4X (IP65)

NEMA 6, 6P (IP68)

L0 = 68.3 mm (2.69")
L1 = 98.5 mm (3.88")

* F3.01 sensor is NEMA 6, 6P but when instrument is attached, unit becomes NEMA 4, 4X.

† Required sensor length (L0 or L1) depends on choice of installation fittings. See pages 38 to 41.

Type F3.00/F3.01 Flow Sensors



■ Item Numbers

Hall Effect Sensors

For Connection to F9.00, F9.01, F9.02, F9.03 and F9.50 FlowX3 Instruments

For Direct Mounting to Instruments

Electrical Class	O-Ring	Sensor Length [†]	Body Material			
			CPVC	PVDF	316L SS	Brass
NEMA 4, 4X (IP65)	EPDM	L0	F3.01.H.01	F3.01.H.05	F3.01.H.09	F3.01.H.25
	Viton®	L0	F3.01.H.02	F3.01.H.06	F3.01.H.10	F3.01.H.26
	EPDM	L1	F3.01.H.03	F3.01.H.07	F3.01.H.11	F3.01.H.27
	Viton®	L1	F3.01.H.04	F3.01.H.08	F3.01.H.12	F3.01.H.28

For Connection to Panel or Wall Mount Instruments

Electrical Class	O-Ring	Sensor Length [†]	Body Material			
			CPVC	PVDF	316L SS	Brass
NEMA 6, 6P (IP68)	EPDM	L0	F3.00.H.01	F3.00.H.05	F3.00.H.09	F3.00.H.25
	Viton®	L0	F3.00.H.02	F3.00.H.06	F3.00.H.10	F3.00.H.26
	EPDM	L1	F3.00.H.03	F3.00.H.07	F3.00.H.11	F3.00.H.27
	Viton®	L1	F3.00.H.04	F3.00.H.08	F3.00.H.12	F3.00.H.28
NEMA 4, 4X (IP65)	EPDM	L0	F3.00.H.13	F3.00.H.17	F3.00.H.21	F3.00.H.29
	Viton®	L0	F3.00.H.14	F3.00.H.18	F3.00.H.22	F3.00.H.30
	EPDM	L1	F3.00.H.15	F3.00.H.19	F3.00.H.23	F3.00.H.31
	Viton®	L1	F3.00.H.16	F3.00.H.20	F3.00.H.24	F3.00.H.32

Coil Effect Sensors

For Connection to F9.20 FlowX3 Instrument

For Direct Mounting to Instruments

Electrical Class	O-Ring	Sensor Length [†]	Body Material			
			CPVC	PVDF	316L SS	Brass
NEMA 4, 4X (IP65)	EPDM	L0	F3.01.C.01	F3.01.C.05	F3.01.C.09	F3.01.C.25
	Viton®	L0	F3.01.C.02	F3.01.C.06	F3.01.C.10	F3.01.C.26
	EPDM	L1	F3.01.C.03	F3.01.C.07	F3.01.C.11	F3.01.C.27
	Viton®	L1	F3.01.C.04	F3.01.C.08	F3.01.C.12	F3.01.C.28

For Connection to Panel or Wall Mount Instruments

Electrical Class	O-Ring	Sensor Length [†]	Body Material			
			CPVC	PVDF	316L SS	Brass
NEMA 6, 6P (IP68)	EPDM	L0	F3.00.C.01	F3.00.C.05	F3.00.C.09	F3.00.C.25
	Viton®	L0	F3.00.C.02	F3.00.C.06	F3.00.C.10	F3.00.C.26
	EPDM	L1	F3.00.C.03	F3.00.C.07	F3.00.C.11	F3.00.C.27
	Viton®	L1	F3.00.C.04	F3.00.C.08	F3.00.C.12	F3.00.C.28
NEMA 4, 4X (IP65)	EPDM	L0	F3.00.C.13	F3.00.C.17	F3.00.C.21	F3.00.C.29
	Viton®	L0	F3.00.C.14	F3.00.C.18	F3.00.C.22	F3.00.C.30
	EPDM	L1	F3.00.C.15	F3.00.C.19	F3.00.C.23	F3.00.C.31
	Viton®	L1	F3.00.C.16	F3.00.C.20	F3.00.C.24	F3.00.C.32

[†] Required sensor length (L0 or L1) depends on choice of installation fittings. See pages 38 to 41.