Description

The ClearPath|**Flow**™ in-line ultrasonic flow meter has been specially designed for applications that require a low-profile sensor with excellent accuracy & reliability at an economical price point. The compact sensor has no moving parts, non-wetted sensors, and an unobtrusive flow path that will not cause an additional pressure drop. The flow path is a straight uninterrupted Biopharmaceutical grade PFA tube without any dead volume. The small footprint and the product's light weight make integration with existing equipment simple. Due to its unique construction, it is impervious to most fluids, including corrosives.

The ClearPath|**Flow**™ flow meter bases its operation on measuring the time difference of an ultrasonic wave traveling with and against the flowing medium. The time difference is directly proportional to the fluid's flow rate.

Multiple outputs are available, including 4-20mA, scaled frequency, and Modbus serial communication.

Features

- Designed for single-use, semi-permanent, or permanent installation
- Process fluid only contacts PFA tube material
- USP Class VI & 21 CFR 177.1550 compliant tubing
- Excellent accuracy
- No moving parts
- Extremely compact
- All plastic construction
- Robust design

Specifications

Maximum Flow Rate	
4mm	2 l/min
6mm	10 l/min
8mm	22 l/min
Accuracy	
Calibrated	±0.5% of reading plus zero stability[1]
Zero Stability	±0.25% of full scale
Repeatability	<0.2% typical
Nominal Line Sizes (OD)	4, 6, & 8mm
Materials of Construction	
Tube	PFA (USP Class VI, 21 CFR 177.1550)
Housing (non-wetted)	ABS
Temperature Range	+10°C to 60°C
Max. Pressure	145PSIA (10bar)[2]
Input Power	9-30 VDC[3]
Outputs	
Analog	4-20mA[3]
Scaled Frequency	0 to 100kHz (selectable)
Communications	Modbus RTU over TIA485
Baud Rate	115200
Electrical connection	Modular Jack 8P8C (Ethernet-style)

1. Calibrated conditions are defined as water at ~25°C. Standard calibrated range is 10:1.
2. At 20°C. Pressure rating decreases with temperatures above 20°C.
3. 24-30 VDC power required if using analog output.

QIT Series (integrated sensor version)

The QIT Series is a fully integrated unit containing the main PCB which provides a direct 4-20mA, frequency, and Modbus RTU outputs. The unit is supplied fully configured with the meter's individual calibration factors stored in the unit. The user connects to the meter via a Modular Jack 8P8C (Ethernet-Style) connector.

QRT Series (remote sensor version)

For single-use applications, the QRT Series can be used to interface with remote electronics (the QRE). The QRT is supplied with a 1-meter cable that connects directly to the QRE. The sensor is supplied fully configured with the meter's individual calibration factors stored in the unit, and this information can be automatically uploaded to the QRE when the QRE detects that a new sensor has been connected.
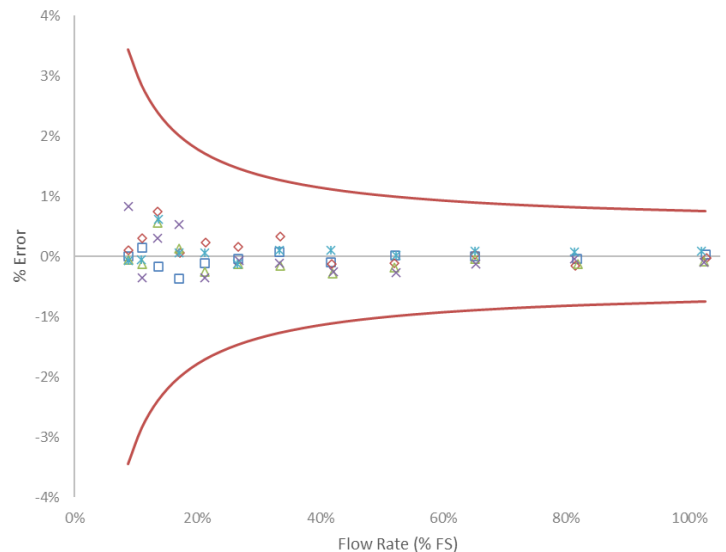
QRE Remote Electronics

The QRE remote electronics interfaces with the QRT ultrasonic sensor. The QRE provides 4-20mA, frequency, and Modbus RTU outputs, and the user connects to the QRE via a Modular Jack 8P8C (Ethernet-Style) connectors. The integrated display enables the user to display process variables and modify configuration parameters as required.

Calibration Flow Ranges

Size	Tube OD mm	Tube ID mm	Min Flow l/min (gpm)	Max Flow l/min (gpm)
4mm	4	2	0.1 (0.03)	2 (0.53)
6mm	6	4	0.5 (0.13)	10 (2.64)
8mm	8	6	1.1 (0.29)	22 (5.81)

Performance

Typical % Error
Error bars at 0.5% reading + 0.25%FS

End-Fitting Adapters (Optional)

Tube to Male NPT

Part Number	Tube (mm)	Male NPT (in.)	A mm (in.)	L mm (in.)
64-104595-101	4	1/4	18.0 (0.71)	25.4 (1.00)
64-104595-102	6	1/4	18.0 (0.71)	25.4 (1.00)
64-104595-103	6	3/8	19.1 (0.75)	25.4 (1.00)
64-104595-104	8	3/8	19.1 (0.75)	25.4 (1.00)

Tube to Female NPT

Part Number	Tube (mm)	Female NPT (in.)	A mm (in.)	L mm (in.)
64-104596-101	4	1/4	19.1 (0.75)	31.8 (1.25)
64-104596-102	6	1/4	19.1 (0.75)	31.8 (1.25)
64-104596-103	6	3/8	19.1 (0.75)	34.9 (1.38)
64-104596-104	8	3/8	19.1 (0.75)	34.9 (1.38)

Tube to Tube (metric)

Part Number	Tube 1 (mm)	Tube 2 (mm)	A mm (in.)	L mm (in.)
64-95754-01	4	4	10.4 (0.41)	32.5 (1.28)
64-95874-01	4	6	10.4 (0.41)	29.0 (1.14)
64-95754-02	6	6	12.8 (0.50)	34.5 (1.36)
64-95874-02	6	8	13.5 (0.53)	37.0 (1.46)
64-95754-03	8	8	15.2 (0.60)	38.5 (1.52)
64-95874-03	8	10	16.0 (0.63)	42.0 (1.65)

Tube to Tube (in. / metric)

Part Number	Tube 1 (mm)	Tube 2 (in.)	A mm (in.)	L mm (in.)
64-95877-01	4	1/8	8.4 (0.33)	24.4 (0.96)
64-95877-02	4	3/16	16.0 (0.63)	27.0 (1.06)
64-95877-03	4	1/4	18.0 (0.71)	27.0 (1.06)
64-95877-04	6	1/4	18.0 (0.71)	29.5 (1.16)
64-95877-05	8	3/8	19.8 (0.78)	41.9 (1.65)
64-95877-06	8	1/2	22.8 (0.90)	45.7 (1.80)

Ordering Information

Model	Code
Integrated sensor	QIT
Remote sensor	QRT

Size	Code
4mm	004
6mm	006
8mm	008

Part Number	Description
QRE-AA10*	Remote electronics & display

*For use with QRT model only

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Cables

Part Number	Description	Length m (ft)
19-104885-105	Connector to flying leads	1.5 (5.0)
19-104885-110	Connector to flying leads	3.0 (10.0)
19-104885-116	Connector to flying leads	4.8 (16.0)
19-104885-123	Connector to flying leads	7.0 (23.0)
19-104885-150	Connector to flying leads	15.0 (50.0)

Dimensions

Size Code	Dim A mm (in.)	Dim B mm (in.)	Dim C mm (in.)
004	24.9 (0.98)	35.0 (1.38)	40.4 (1.59)
006	24.9 (0.98)	35.0 (1.38)	40.4 (1.59)
008	26.7 (1.05)	40.0 (1.56)	42.7 (1.68)

[1.25"] 31.80 2x

[8"] 203.20

A   B   C
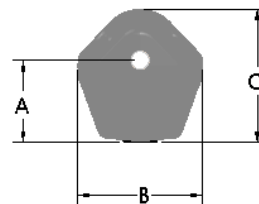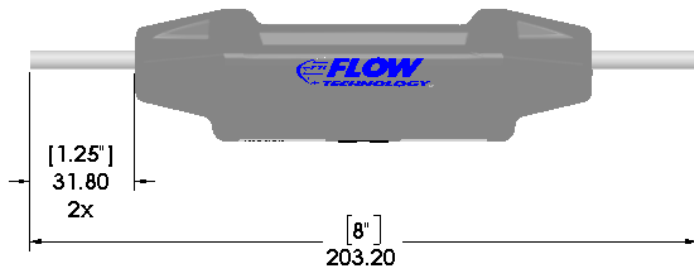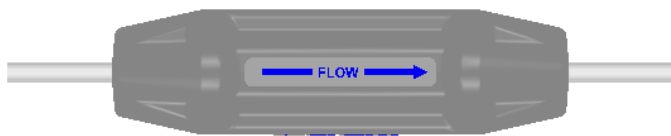
* All dimensions are in mm [inches]

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