



MicroFlow-i

Non-contact, doppler effect radar microwave surface velocity sensor for liquids in ATEX Intrinsically Safe two-wire current loop design

ELECTRONICS

ACOUSTIC

WEIGHT

OVERLOADING
SAFETY SYSTEMS

VALVES

TEMPERATURE

DETECT
A FIRE®

FLOW

DENSITY

INTERFACE

PRESSURE

LEVEL



The water industry's solution to event duration measurement in combined sewer overflows

Pulsar's MicroFlow-i delivers accurate, repeatable velocity measurement for liquid flow, either as an individual sensor or by providing HART communication protocol or a 4-20mA loop powered signal into a SCADA system. Its lightweight, compact design makes installation simple, especially within confined spaces, and requires no interruption to normal operational flow.

Microflow-i options

The MicroFlow range has been specified and designed to meet the demanding requirements of today's process flow measurement applications. The unit is positioned above and at 45 degrees to the flow and measures flow velocity. The standard RS485 version is Ex mb certified for use in Zones 1 and 2, and the 2 wire loop-powered version with HART protocol is intrinsically safe (Ex ia) for Zone 0.

Microflow-i communication

The 2-wire version can be used in digital HART mode or as a 4-20mA loop-powered device. The MicroFlow-i can be set up using a HART modem with either proprietary HART software such as PACTware, or MicroFlow HART PC software.

Cable lengths & brackets

Standard cable lengths 10 m (32.8 ft), 20 m (65.6 ft), and 30 m (98.4 ft) are available.

The MicroFlow-i should be installed directly above the flow with the axis at 45 degrees to the flow to be measured. We have a range of brackets available that will assist with installation angles.

The right meter for

- Event Duration Measurement
- Combined Sewer Overflows
- Open Channel Flow Monitoring
- Remote Locations
- Velocity Area Solutions

Event duration measurement for combined sewer overflows

Event Duration Measurement (EDM) in Combined Sewer Overflow (CSO) applications has, rightly, become a significant focus for our water operators.

Management of pollution under flood conditions is a significant challenge and, with ever more demanding monitoring regimes, operators have implemented thousands of CSO monitoring installations and thousands more are planned, with data logging and level measurement to record spill events. Looking beyond CSO, there are good reasons to monitor flow throughout the wastewater network to identify problem areas, alert maintenance teams, and generate corrective action.

Level is only one part of the equation, as we can now add velocity sensors that are above a channel to measure the flow velocity.

Measuring velocity using a non-contacting technique is a very complex challenge analytically and has only really become realistic with the faster processors now available to instrumentation designers.

Pulsar uses a technique called Refracted Spread Spectrum Analysis (RSSA).

In Pulsar's MicroFlow-i product, a pulse is fired at the liquid surface, producing a mass of reflections from the full width of the channel, a

single transducer handling channels up to 1.5 m (4.9 ft) width and multiple transducers working together for wider applications, applying the RSSA algorithms to analyze and integrate the received signals, then 'slicing' them for real-time analysis and velocity calculation.

Service & Installation

Our award-winning products are favored worldwide due to their reliability and easy menu-driven setup.

All products from TERRY FERRARIS are designed to be easily installed and set up, but if you are unsure of your installation, our service engineers are ready to assist you. From telephone and web support to onsite commissioning and on/off-site product training, we will ensure that you get the most out of your product and sales experience with TERRY FERRARIS.

If you are unsure of your application requirements or which product is right for you, our technical teams can advise you on the best solution to your application and technology requirements, making sure that you get the most accurate and reliable readings every time.

For more information on our service offerings, please visit the website or contact one of our head offices.



MicroFlow-i measures dBi flow velocity for level monitoring



The MicroFlow-i and dBi low powered sensors for CSO Network Monitoring

Technical Specifications

PHYSICAL: MOUNTING OPTION SPECIFIC

Sensor Body Dimensions	90 mm D x 140 mm H (3.5 in x 5.5 in)
Weight	Nominal 1 kg (2.2 lb)
Sensor Body Material/Description	Valox 357
Transducer Cable Extensions	2-core screened
Maximum Separation	Up to 1,000 m (3,280 ft)
Mounting Connection	Via 1" BSP back-mounted thread or 20 mm (0.8 in) via the supplied adaptor. Optional mounting bracket available from Pulsar
Mounting Angle	45° optimal and mounted at the centerline of the channel with a clear uninterrupted view

ENVIRONMENTAL

Enclosure Protection	IP68
Max. & Min. Temperature (Electronics)	-20 °C to +60 °C (-4 °F to +140 °F)
CE & Radar Approvals	Listed in the Certificate of Conformity within the manual
ATEX Approval	Ex II 1 G D, Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da (Directive 2014/34/EU)

PERFORMANCE

Velocity Range	200 mm/s to 6 m/s (7.9 in/s to 19.7 ft/s)
Operational Range	Up to 3 m H
Accuracy	The greater of ±1.5% or 50 mm/s (2 in/s)
Optimal Installation	Install at an angle of 45° in line with the flow. More information is provided within the manual - see the "Locating the MicroFlow-i sensor" section
Max. Channel Width per Sensor	1.5 m (4.9 ft)
Radar	RadarK-Band (ISM)
Transmitter Power	<15 dBm
Beam Width	20° inclusive
Wake-up Time	Typically 4 seconds warm (<12 hours from last start-up)

OUTPUTS

Outputs	HART compatible, 4-20mA loop powered
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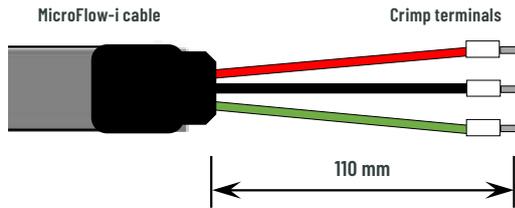
PROGRAMMING

PC Programming	MicroFlow-i HART PC
Programming Security	Via passcode
Programmed Data Integrity	Via non-volatile memory
PC Setup & Monitoring Software	Compatible with Windows 7/8/10

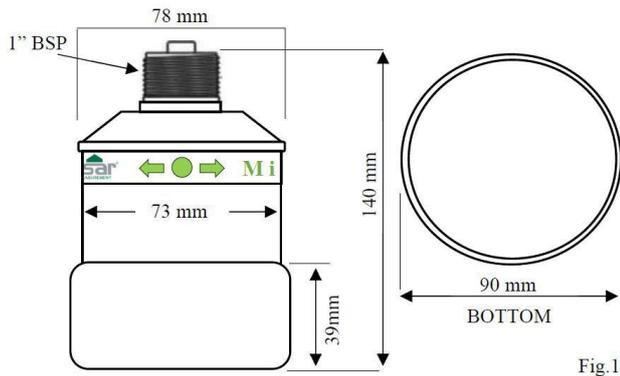
SUPPLY

Operating Voltage	10-28 V DC
Power Consumption	<ul style="list-style-type: none"> Start-up = 20mA Average current = 60 µA per hour when one velocity measurement is performed every 15 minutes

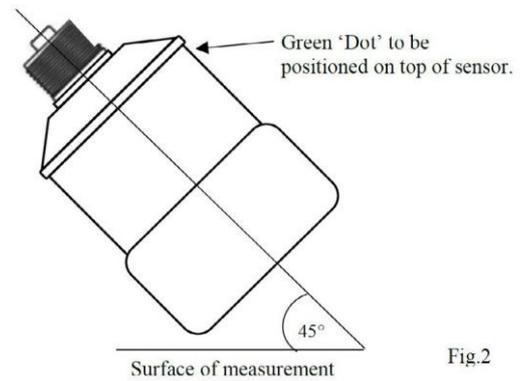
MicroFlow-i - Connection Diagram



Cable Colour	Function
Red	10 ± 28Vcc (power supply)
Black	0Vcc
Green	Screen



MicroFlow-i - Drawing



MicroFlow-i - Mounting Drawing

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