

# MICROFLOW

Pulsar Measurement's MicroFlow delivers accurate, repeatable, velocity measurement for liquid flow, either as a stand-alone device or as part of a complete area-velocity measurement system

## Non-Contacting Liquid-Velocity Sensors

MicroFlow builds on Pulsar Measurement's award-winning pipe flow technology and world-leading open channel flow measurement systems. The unit can be installed as a stand-alone sensor delivering data via RS485 Modbus RTU, or instead integrated with a controller and dB level sensor for area-velocity flow measurement in partially filled pipes and channels.

### Area-Velocity Calculations

Area-Velocity calculation using MicroFlow provides a cost-effective flow measurement option compared to the installation of a Primary Measuring Device (PMD), such as a flume or weir, and provides a viable alternative where the hydraulics of a site does not allow for restriction within the channel.

### Area-Velocity for Channels <1.5 Meter Wide

For smaller channels that are less than 1.5 m (4.9 ft) wide, MicroFlow can be combined with the dBMACH3 flow transducer (or another dB Transducer) and a FlowCERT controller to gain accurate area-velocity readings.



## THE RIGHT METER FOR

- Effluent Flow
- Open Channel Flow
- Applications with No PMD
- Area-Velocity
- Water & Wastewater
- Quarry & Mining

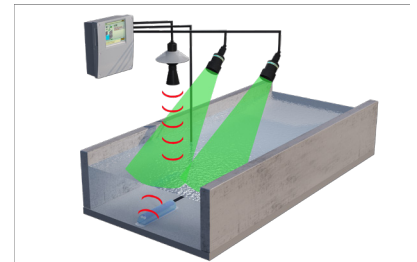
### Area-Velocity for Channels >1.5 Meter Wide

For larger channels such as rivers or effluent flow channels that are more than 1.5 m (4.9 ft) wide, then more than one MicroFlow should be used to provide improved measurement, averaged across the wider flow profile, with the selected dB transducer) and an Ultimate Controller for an area-velocity flow system that averages the velocity from multiple sensors across the channel, ensuring accuracy in difficult to achieve straight-run conditions.

### Software & Technology

The MicroFlow sensor uses K-Band radar technology and Pulsar Measurement's unique analysis software takes readings from the whole width of the channel - if more than one MicroFlow is being used, an average reading will be calculated back in the control unit. To gain the most accurate and reliable reading, the end-user should make sure that the MicroFlow unit is mounted at 45 degrees to the water surface.

The K-Band radar technology works by using short pulses of microwaves, which are transmitted by an enclosed antenna on the face of the unit. When reflected off a moving surface, the signal experiences a shift in frequency characteristic. The reflected signal is captured by the on-board microprocessor via the antenna and analyzed to determine the velocity



MicroFlow combined with dBMACH3 and FlowCERT

### PC Software

PC software is available to allow setup and run diagnostics using the MicroFlow PC via the RS485 connection. The PC software enables users to be able to set up, test, obtain and record readings from a sensor, giving users an idea of signal strength, stability, device parameters, and much more.



MicroFlow angled bracket

### Mounting

For best results, it is highly recommended to use the MicroFlow angled bracket, available from your Pulsar Measurement representative, which will ensure that the MicroFlow can be correctly installed. The bracket can be used if the MicroFlow sensor is to be mounted on its own in a specific location, or along with a Pulsar dB transducer.

The MicroFlow angled bracket should be mounted by marking and drilling the holes suitable for fixing your screws / bolts (length should be to suit your application) and then fixing the bracket in place.

### Maintenance

Thanks to Pulsar Measurement's award-winning and world-leading non-contacting technology, the MicroFlow sensor range does not include any serviceable parts and because it makes no contact with the application, there are no wear and tear issues.



MicroFlow and dBMACH3 in a wastewater application



MicroFlow and dBMACH3



3 MicroFlow's on a wide channel

## Technical Specifications

### PHYSICAL

|  |  |
|--|--|
| <b>Sensor Body Dimensions:</b>           | 90 mm D x 140 mm H (3.5 in x 5.5 in)   |
| <b>Weight:</b>                           | Nominal 1 kg (2.2 lb)  |
| <b>Sensor Body Material/Description:</b> | Valox 357  |
| <b>Transducer Cable Extensions:</b>      | 5-core screened  |
| <b>Maximum Separation:</b>               | Up to 500 m (1,640 ft)   |
| <b>Mounting Connection:</b>              | Via 1" BSP back-mounted thread or 20 mm (0.8 in) via the supplied adaptor. Optional mounting bracket available from Pulsar |
| <b>Mounting Angle:</b>                   | 45° optimal and mounted at the centerline of the channel with a clear uninterrupted view                                   |

### ENVIRONMENTAL

|   |   |
|---|---|
| <b>Enclosure Protection:</b>                      | IP68  |
| <b>Max. &amp; Min. Temperature (Electronics):</b> | -20 °C to +60 °C (-4 °F to +140 °F)   |
| <b>CE &amp; Radar Approvals:</b>                  | Listed in the Certificate of Conformity within the manual.  |
| <b>ATEX Approval:</b>                             | Ex II 2 G D, Ex mb IIC T4 Gb, Ex mb IIIC T135 °C Db, Ta= -20 °C to +60 °C                                       |
| <b>FM Approval:</b>                               | cFMus certified special protection (encapsulation) for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G |

### PERFORMANCE

|                                       |  |
|---------------------------------------|--|
| <b>Velocity Range:</b>                | 0.3 m/s to 6 m/s (0.98 ft/s to 19.7 ft/s)  |
| <b>Operational Range:</b>             | Up to 3 m H (9.8 ft)   |
| <b>Accuracy:</b>                      | The greater of ±0.5% or 50 mm/s (2 in/s)   |
| <b>Optimal Installation:</b>          | Install at an angle of 45° in line with the flow. More information is provided within the manual — see the 'Locating the MicroFlow sensor' section |
| <b>Max. Channel Width Per Sensor:</b> | 1.5 m (4.9 ft)   |
| <b>Radar:</b>                         | K-Band (ISM)   |
| <b>Transmitter Power:</b>             | <15 dBm  |
| <b>Beam Width:</b>                    | 20° inclusive  |

### OUTPUTS

|   |                                      |
|---|--------------------------------------|
| <b>Communication:</b>                         | RS485 and Modbus RTU                 |
| <b>Compatibility with Pulsar Controllers:</b> | Integrates with FlowCERT or Ultimate |

### PROGRAMMING

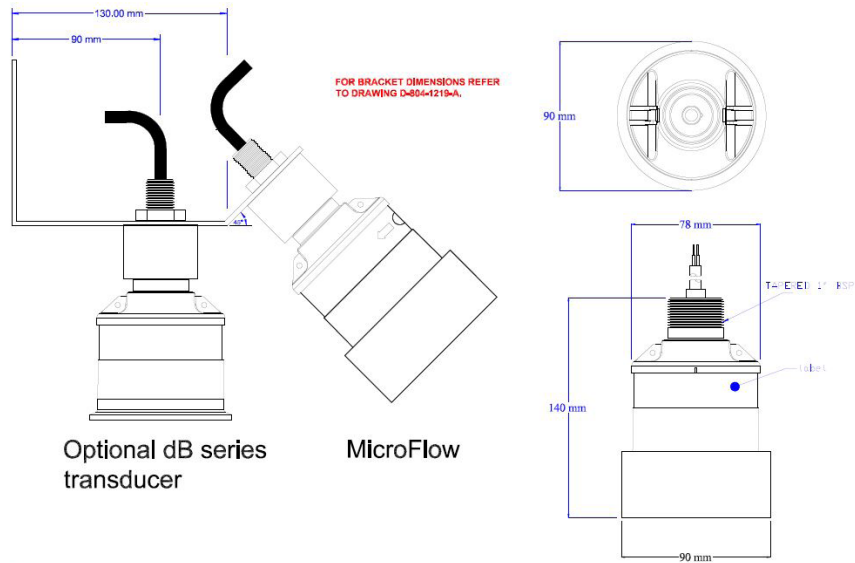
|  |   |
|--|---|
| <b>PC Programming:</b>                     | Via RS485 Modbus RTU                          |
| <b>Programming Security:</b>               | Via passcode                                  |
| <b>Programmed Data Integrity:</b>          | Via non-volatile memory                       |
| <b>PC Setup &amp; Monitoring Software:</b> | MicroFlow PC — Compatible with Windows 7/8/10 |

## SUPPLY

**Operating Voltage:** 10-28 V DC

**Power Consumption:** 0.36 W

Also available in a 4-20mA loop powered version with ATEX Ex ia Zone 0 approval — MicroFlow-i



## Delivering the Measure of Possibility

Pulsar Measurement offers worldwide professional support for all of our products, and our network of global partners all offer full support and training. Our facilities in Malvern, UK and Largo, USA are home to technical support teams who are always available to answer your call or attend your site when required. Our global presence, with direct offices in the UK, USA, Canada, and Malaysia, allows us to create close relationships with our customers and provide service, support, training, and information throughout the lifetime of your product.

For more information, please visit our website:

[www.pulsarmeasurement.com](http://www.pulsarmeasurement.com)



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