**BELUGA™**

Open Channel Digital Acoustic Flow Meter Sensor

**BELUGA™ 45° & BELUGA™ 20°**

The BELUGA™ is the newest digital ACOUSTIC area/velocity flow meter sensor for open channel flow measurements from FLOWTRONIC. It is suitable for partially filled pipes and surcharged pipes without primary devices such as flumes or weirs.

This sensor combines advanced digital Doppler ultrasonic velocity sensing technology with most modern and powerful DSP processor technology, allowing real-time spectral analysis of the velocity distribution through the cross-sectional area.

The BELUGA™ becomes a powerful flow measuring system when combined with a level sensor and a monitor for permanent monitoring (which display flow rate, velocity, level and much more) or a logger for portable monitoring from the IFQ series: IFQ MONITOR™ or IFQ LOGGER™.

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### Technical Specifications

**Velocity Measurement**
- **Method**: Ultrasonic Doppler
- **Frequency**: 1 MHz
- **Range**: -2 to +6 m/s
- **Measurement**: Bidirectional
- **Accuracy**: Better than 1% + zero stability (according to hydraulic and installation conditions compliance)
- **Zero Stability**: ±0.01 m/s
- **Resolution**: 0.001 m/s

**Optional Combined Level Measurement (Ultrasonic)**
- **Method**: Ultrasonic pulsed echo
- **Range**: 0.00 to 1.75 m (with RAV-0002/ULS-02)
- **Accuracy**: ±0.3% of reading (with RAV0002/ULS02)
- **Resolution**: 1 mm

**Optional Combined Level Measurement (Radar)**
- **Method**: Noncontact Pulsed Radar
- **Range**: 0.00 to 15 m
- **Accuracy**: ±2 mm of reading
- **Resolution**: 1 mm

**Optional Separate Level Measurement**
- **Method**: Any 420 mA loop powered sensor

**Flow Measurement**
- **Method**: Conversion from measured velocity to average velocity based on integrated spectral analysis of the velocity distribution in the cross-sectional area.
- **Conversion of water level and pipe size to fluid area. Multiplication of fluid area by average velocity to obtain the flow rate.**

**Communication**
- RS-485 communication port with Modbus ASCII slave communication protocol.

**Outputs (optional)**
- **4-20 mA**: 1 for validated velocity (vQPI) or validated velocity including median filter (vQPIF). 

**Internal Temperature Measurement**
- **Method**: Internal temperature sensor
- **Range**: -40°C to 80°C

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Technical Specifications

Material & Dimensions
Enclosure: HIGH IMPACT PVC
Dimensions: 190 mm L, 48 mm W, 28 mm H
Weight: 0.26 kg (without cable, level sensor and mounting accessories)
Protection rate: IP68

Environmental Conditions
Operating temperature range: -20°C to 50°C
Storage temperature range: -30°C to 60°C

Supply Voltage Required
4 to 26 VDC (max. 130 mA @ 12 VDC) or supplied by IFQ MONITOR™ or IFQ LOGGER™

Power Consumption
Sleep: 60 mA @ 12 VDC
Measuring: 120 mA @ 12 VDC

Certifications
Sensor: CE

Sensor Cable
Material: Polyurethane jacketed
Length: Standard: 10 m
Optional: 20 m, 30 m or length as needed up to 300 m

Specifications are subject to change without notice
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