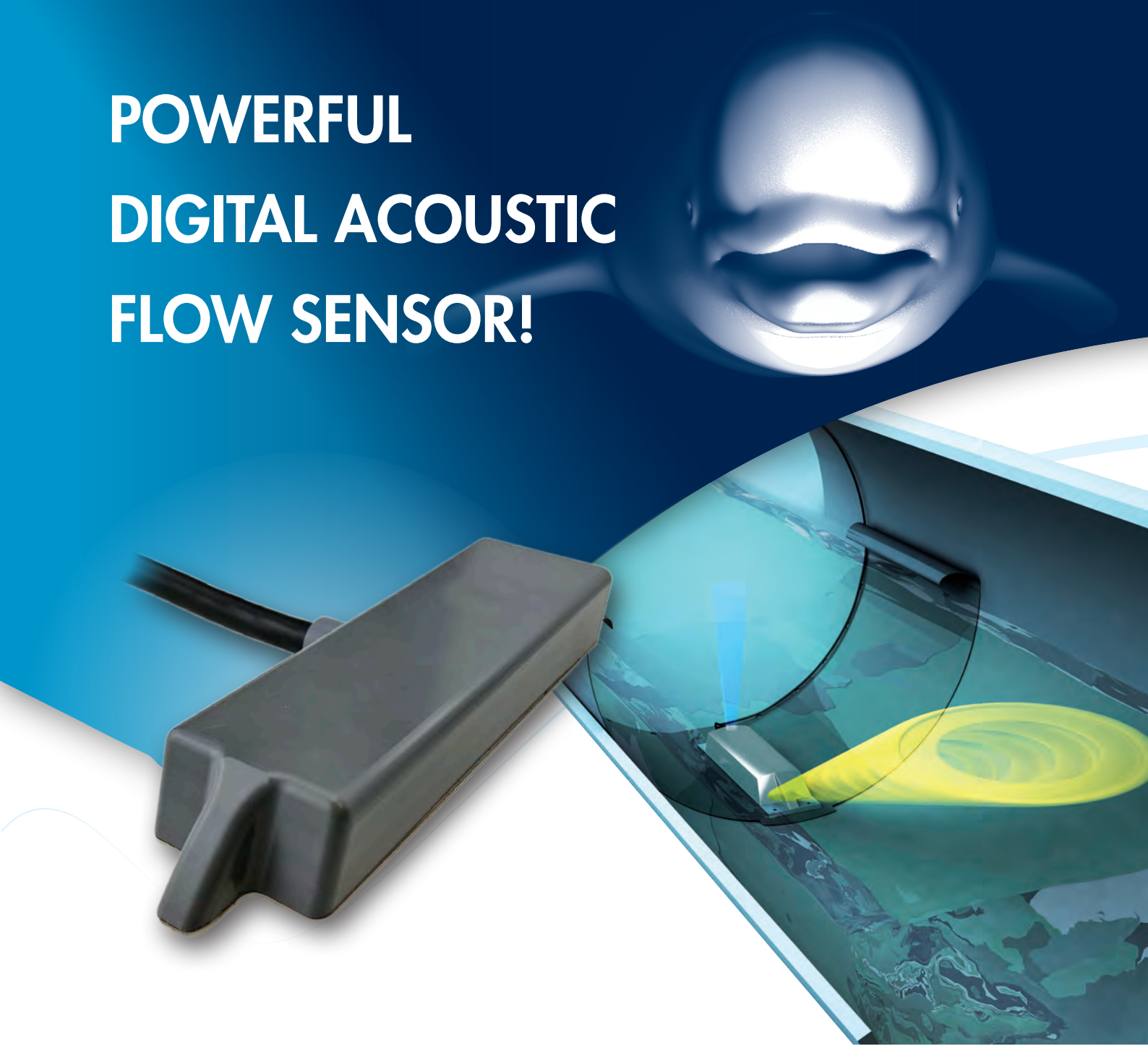
BELUGA A/V

ULTRASONIC AREA/VELOCITY FLOW METER

POWERFUL DIGITAL ACOUSTIC FLOW SENSOR!



FLOW-TRONIC

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How does it work?

The BELUGA A/V is the newest digital ACOUSTIC area/velocity flow meter sensor for open channel flow measurements from FLOW-TRONIC. 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 sensor is designed for permanent or portable applications.

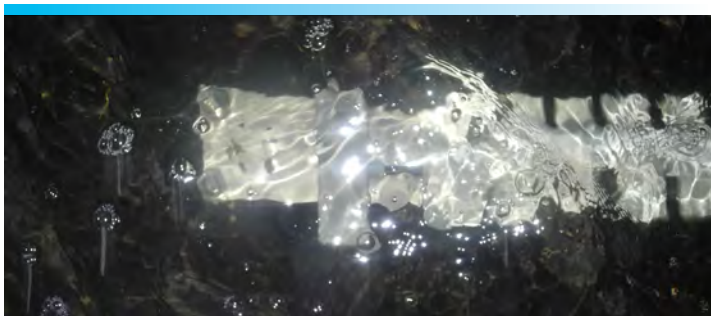
The BELUGA A/V is a powerful measuring system. With its integrated and **replaceable pressure level sensor**, it outputs flow directly without needing any other intermediate controller. All **computations** are made **inside the sensor**.

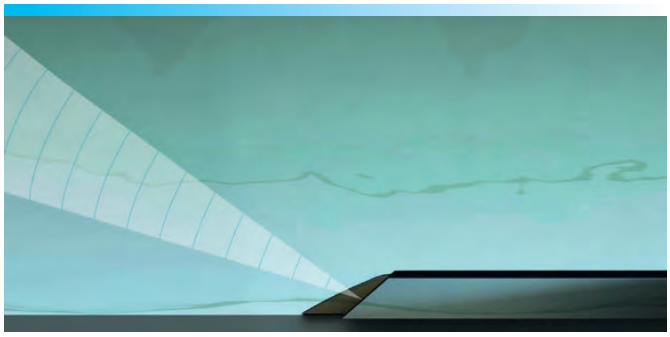
The **Smart Velocity feature** can be activated for velocity and flow estimation when water level does not permit an efficient velocity reading (typically below 2 cm / 0.8 in).

The **RS485 Modbus RTU/ASCII** allows an easy integration with a large variety of third-party loggers or controllers. For studies or measuring campaigns, it can be associated to the RTQ-IoT battery powered system with remote communication and remote configuration capabilities.

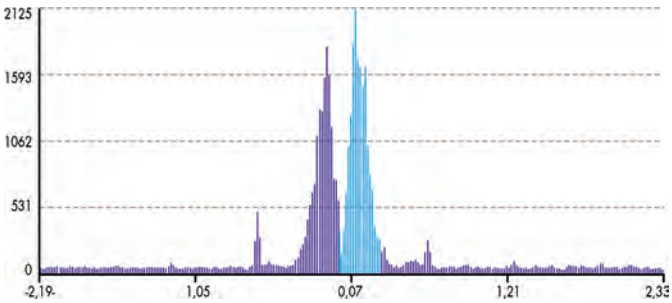
Optionally, the BELUGA A/V can be equipped with a **4-20 mA output** for flow allowing an easy connection to any existing system.

The **side-mounted** cable ensures efficient and space-saving mounting.





BELUGA 20°



Technical specifications

General

Size	153 mm L, 43 mm W, 22 mm H (6.03'' L, 1.69'' W, 0.87'' H)
Weight	0.26 kg (0.57 lb)(without cable, level sensor and mounting accessories)
Materials	Enclosure: HIGH IMPACT PVC-C
Cable	Polyurethane jacketed
Cable Lengths	Standard: 10 m (32.81 ft) - Optional: 20 m (65.62 ft), 30 m (98.43 ft)
Protection	IP68 (NEMA 6P)
Certifications	CE
Temperature Range	Operating: -20°C to +50°C (-4 to +122°F)
	Storage: -30°C to +60°C (-22 to +140°F)
Supply Voltage Required	5 to 26 VDC (max. 75 mA at 12 VDC) or supplied by IFQ MONITOR
Power Consumption	54 mA at 12 VDC
	0.65 W at 12 VDC
Outputs (optional)	One for flow (Q), validated velocity (vQP) or validated velocity including median filter (vQPMF).
Communication	RS-485 communication port with Modbus ASCII and RTU slave communication protocol

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.

Velocity Measurement

Method	Ultrasonic Doppler
Frequency	1 MHz (twin crystals)
Measurement Range	-2 m/s to +6 m/s (-6.56 to +19.68 ft/s)
Measurement	Bi-directional
Accuracy	Better than 1% + zero stability (according to hydraulic and installation conditions compliance)
Zero Stability	±0.01 m/s (± 0.03 ft/s)
Resolution	0.001 m/s (0.003 ft/s)
Operating Depth	2 cm (0.8 in)

Water Temperature Measurement

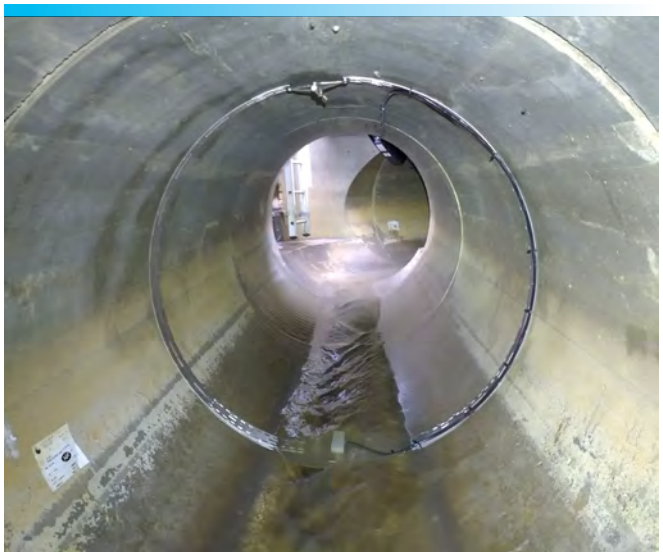
Method	Internal temperature sensor
Measurement Range	-40°C to +80°C (-40° to +176°F)

Level Measurement (Hydrostatic)

Method	Differential pressure transducer
Measurement Range	0 to 2 m H^2O (0.00 to 6.56 ft)
Accuracy	±0,25% full scale (incl. non-linearity & hysteresis)
Resolution	1 mm (0.04'')
Max. allowable level	25 m (82 ft)
Material	Stainless steel diaphragm
	Replaceable module

Main benefits

- Accurate flow measurement
- Integrated and replaceable level sensor
- Full digital sensor
- Bi-directional velocity measurement
  -2 m/s to +6 m/s (-6.56 to +19.68 ft/s)
- Portable or stationary version available
- Easy installation without modification of the channel thanks to adapted mounting accessories
- Robust IP68 enclosure
- Resistant to fouling, corrosion and abrasion
- Velocity distribution analysis using spectral analysis
- For channels from 125 mm to 2000 mm (4.92" to 78.74")
- Easy integration with SCADA, PLC or telemetry systems: the flow rate is calculated into the BELUGA A/V sensor



Applications

Sewer/Channel Networks Monitoring

- Sewer systems evaluation
- Capacity study
- Combined sewer overflow (CSO) studies
- Infiltration studies
- By pass/overflow
- Billing/custody transfer

Industry

- Plant effluent
- Process waste water

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