Vectrino

Sample 3D velocity at up to 200 Hz for use in hydraulic models and laboratory flumes



The Vectrino is a high-resolution acoustic velocimeter used to measure 3D water velocity fluctuations within a very small sampling volume and at sample rates of up to 200 Hz. It can be applied in a variety of environments, from hydraulic labs – where it is regarded as standard equipment – to the ocean. It is ideal for near-boundary flow measurements or to capture any highly dynamic phenomena in a hydraulic tank.

Highlights

- Hydraulic models and flumes
- Inexpensive alternative to laser Doppler velocimeter
- 200 Hz maximum sampling rate

Applications

- 3D flow measurements in laboratory flumes
- Flow measurements near boundaries and in areas that are difficult to access
- Flow measurements in physical models in hydraulic laboratories
- Measurements of laboratory flume bottom changes as a function of time

Technical specifications

Water velocity measurements	
Maximum profiling range	N/A
Distance from probe	0.05 m, 0.1 m (field probe)
Sampling volume diameter	6 mm
Sampling volume height (user-selectable)	3-15 mm
Cell size	N/A
Velocity range*	±0.03, 0.1, 0.3, 1, 2.5, 4 m/s (software-selectable)
Adaptive ping interval	N/A
Accuracy	±0.5% of measured value ±1 mm/s
Velocity precision	N/A
Sampling rate (output)	1-25 Hz (Std firmware),1-200 Hz (Plus firmware)
Internal sampling rate	N/A

- The velocity range is not the same in the horizontal and vertical direction. Please refer to the configuration software.

Distance measurements	
Minimum range	N/A
Maximum range	N/A
Cell size	N/A
Accuracy	N/A
Sampling rate	N/A

Echo intensity	
Acoustic frequency	10 MHz
Resolution	Linear scale
Dynamic range	25 dB

Sensors	
Temperature:	Thermistor embedded in probe
Temp. range	-4 to +32 °C
Temp. accuracy/resolution	1 °C/0.1 °C
Temp. time response	5 min
Compass:	N/A
Accuracy/resolution	N/A
Tilt:	N/A
Accuracy/resolution	N/A
Maximum tilt	N/A
Up or Down	N/A
Pressure:	N/A
Standard range	N/A
Accuracy/precision	N/A

Analog inputs	
No. of channels	N/A
Supply voltage to analog output devices	N/A

Data recording	
Capacity (standard):	N/A
Data record	N/A

Real-time clock	
Accuracy	N/A
Backup in absence of power	N/A

Data communications	
I/O	RS-232
Communication baud rate	300-115 200 Bd
Recorder download baud rate	N/A
User control	Handled via ”Vectrino” software, ActiveX® function calls, or direct commands
Analog outputs	3 channels standard, one for each velocity component
Output range	0–5 V, scaling is user-selectable0

Data communications

Synchronization	RS-485, start on sync, sample on sync,transmit on sync (Plus Firmware)

Connectors

Bulkhead	MCBH-12-FS, bronze
Cable	PMCIL-12-MP – see also options below

Software

Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®)

Multi unit operation

Software	Polysync
I/O	RS 232–USB support for devices with 1, 2, 4, and 8 serial ports

Power

DC input	12-48 V DC
Maximum peak current	2.5 A at 12 V DC (user-selectable)
Max. consumption	1.5 W at 200 Hz
Typical consumption, 4 Hz	N/A
Sleep consumption	N/A
Transmit power	N/A

Batteries

Battery capacity	N/A
New battery voltage	N/A
Data collection capacity	N/A

Environmental

Operating temperature	-4 to +40 °C
Storage temperature	-15 to +60 °C
Vibration	IEC 60068-1/IEC60068-2-64
Depth rating	20 m

Materials

Standard model	POM housing. Stainless steel (316) probe and fasteners

Dimensions

Maximum diameter	66 mm
Maximum length	350 mm (housing only), 365 mm (fixed stem)

Weight

Weight in air	1.2 kg (1.3 kg with field probe)
Weight in water	Neutral (0.1 kg with field probe)

Options

4-beam down-looking probe or side-looking probe. Fixed stem or 1 m flexible cable

Options
10, 20, 30 or 50 m cable with Impulse underwater connector
RS 232–USB converter (one-to-one, four-to-one or eight-to-one)
Standard or Vectrino Plus firmware
Combined transportation and storage case