mainstream™ MEASUREMENTS LTD
WORLD CLASS FLOWMETERS

VELOCITY TRANSMITTER

High performance velocity transmitter designed for use as a system component in open channel and part-filled pipe applications.

benefits and features

Powerful, easy to use PC software simplifies transmitter commissioning

Quick to install - no weirs or flumes

Bi-directional velocity measurement for forward and reverse velocities from 10mm/S up to 5m/S

High sensitivity extends applications to 'clean' water

Streamlined velocity probe eliminates fouling and reduces flow disturbances

Real-time processing of velocity signals thereby reducing power consumption

Smart power saving mode - intelligent use of power saving which automatically reduces the measurement time for high flow velocities and high signal qualities and increases the measurement time for low velocities and low signal qualities

Sophisticated ultrasound processing ignores spurious signals

Ultrasound signal quality monitor confirms measurement integrity

Distances up to 500 m from system unit to velocity sensor

measurement principle

Mainstream uses the area-velocity method to give a continuous or time sample measurement of fluid flow. Mainstream uses a streamlined probe that operates immersed in the flowing liquid. The velocity probe transmits ultrasound into the liquid to create a zone of inspection. Bubbles and solid particles carried through this zone by the flow, even when present in only minute quantities, reflect ultrasound back to the probe. Only high quality signals containing verified velocity information is used, thereby ensuring measurement integrity.

This measured frequency shift in the ultrasound signals gives flow velocity. The verified velocity signals produce a histogram of the flow velocities. Analysing this histogram gives the mean flow velocity.

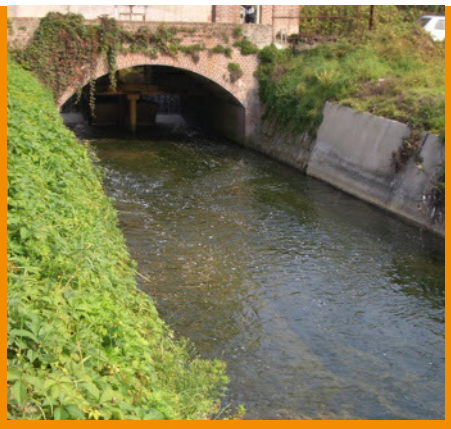
Liquid level is measured by a submerged pressure transmitter or ultrasonic sensor. The flow cross-sectional area is deduced from the liquid level measurement and the stored description of the channel or pipe cross section. The flow rate is the flow velocity multiplied by the flow cross-sectional area.

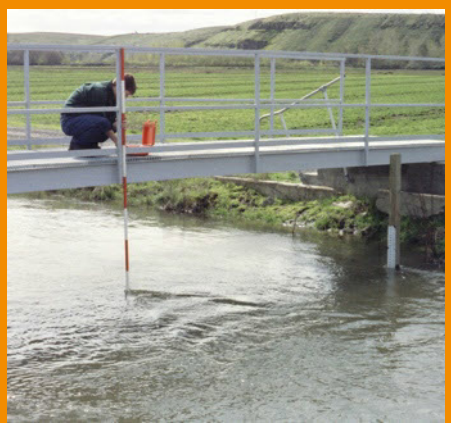
applications

- **Effluent Monitoring**
- **Waste Water Treatment**
- **Industrial Flow Measurement**
- **Irrigation Channels & Canals**
- **River/Stream Flow Measurement**
- **Water Distribution**
- **Sewer Flow Measurement - Inflow & Infiltration, CSO Monitoring**
- **Portable and Fixed-site Flow Measurement with Weirs & Flumes**
- **Velocity Probe Mounting Hardware**

mainstream's communicator data

- Intuitive point-and-click user interface with pull-down menus and Communicator's dynamic/distinctive button bar for flowmeter configuration, diagnostics and real-time displays
- Real time display of measurements and velocity histogram
- Backup and restore of the Mainstream configuration





MAINSTREAM VELOCITY TRANSMITTER
communicator data

PRODUCT FEATURES

VELOCITY MEASUREMENT

Transducer Type :	Submerged ultrasonic sensor containing signal generator, transmitter, receiver and decoder electronics
Method :	Phase Coherence time delay measurement determines the time for tracers carried by the flow to travel a fixed distance (~ 0.75 mm)
Velocity Range :	Bi-directional, -5 m/s to -10 mm/s and 10 mm/s to 5 m/s
Resolution :	Better than 1 mm/s
Measurement Integrity :	Ultrasound signal quality monitor gives the percentage of the measurement time that the received ultrasound signal contains useful velocity information
Smart Power Saving :	Each velocity measurement is based on the same quantity of information. Automatically reduces the measurement time for high flow velocities and high signal qualities and increases the measurement time for low velocities and low signal qualities

DERIVED MEASUREMENTS

4:20mA Output :	Velocity Power Supply and Quality Signal

POWER SUPPLIES

Power Inputs :	Connectors for external 12V and 24V supplies
External 12V supply :	Connection for external 12V
External 24V supply :	Connection for external 24V
Power Supply Monitor :	Power monitoring circuits track supply status. Supply voltages can be viewed via the UI

COMMUNICATIONS

Local :	RS232 and USB compatible interface with automatic baud rate detection. Supports 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600 and 115200 baud
Remote :	Optional external SDI or GPRS device
Software :	Mainstream Communicator UI software for system configuration, diagnostics, real- time measurement. Display and data retrieval. Mainstream Communicator runs on PC platforms under Windows 2000, XP, Vista, 7, 8, 8.1 and 10 with data transmission from device to PC, for data control, processing and export

MEASUREMENT UNITS AND FORMATS

Velocity :	Selectable from mm/s, cm/s, m/s, in/s, ft/s, ft/min
Display Format :	Independently configurable display format for each measurement. Options are integer, fixed point with 1 to 6 decimal places, and scientific (E-format). Display defaults to scientific format if data cannot be correctly represented in selected format
4:20mA Outputs:	One 4:20 mA output. Configurable to selected measurands

PRODUCT HARDWARE

VELOCITY SENSOR

Materials :	Streamlined µPVC moulding and polyurethane cable
Dimensions :	105 mm long x 50 mm wide x 20 mm high
Cable :	8 mm diameter polyeurathane cable with Aramid strain cord. Breaking load 45 kg. Minimum static bend radius 52 mm
Weight :	1 kg including standard 10 m cable length
Maximum Cable Length :	500 m
Environmental Protection :	Totally encapsulated to IP 68
Operating Temperature :	-10°C to 80°C
Minimum Operating Depth :	30 mm

SYSTEM UNIT

Materials :	Ultra pure cast aluminum
Dimensions :	220 mm wide x 120 mm deep x 80 mm high
Weight :	1.5 kg
Environmental Protection :	Enclosure is IP67. Electronic assembly is encapsulated to IP68
Operating Temperature :	-10°C to 70°C