PRECISION FLOW 190FD
Fixed Doppler clamp-on ultrasonic flowmeter

Features

● A cost effective clamp-on non–invasive flowmeter.

● Analog and digital outputs.

● Data logger with local display of data. (graphically or as text)

● Advanced matrix array doppler Sensor

● Built in help.

● Reynolds Number flow profile correction.

● Measure flow rate within a pipe without cutting the pipe or stopping flow.

● Latest signal detection system.

● Easy to attach clamp-on sensor.

● Zero head loss results in improved pumping efficiency.

● Clearly laid out high tactile response key-pad.

● Large flow measuring range, with no complicated upper velocity limits on sensors.

● Suitable for all commonly used sonically conductive pipe materials and liquids with suspended particles.

Description

The Precision Flow 190FD is a clamp on Doppler flowmeter designed for liquid flow measurement applications, in particular where dirty or aerated waste water flow conditions prevail and any invasion of the piping system could cause inline meters problems. It is also a very economical solution to flow measurement in larger pipe applications.
Precision Flow's experience in ultrasonic technology ensures that the 190FD is a high precision instrument, which can be configured and operational within minutes.

Various sensors and clamping options are available for non standard applications. Also available using Transit time technology for clean fluid applications. Please contact us for more information.

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

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Principle of operation

The Doppler flowmeter utilises the well known Doppler effect, this is named after Christian Doppler, who documented the effect in 1842. In general terms it is the change in frequency and wavelength of a wave as perceived by an observer moving relative to the source of the waves. The Precision Flow 190D flow meter has an array of piezoelectric crystals, part of the array transmits a beam of high frequency ultrasonic pressure waves so as to form a fixed cross angle with the pipe axis. As the beam travels into the non-homogeneous fluid, some energy is scattered back by solid particles or gas bubbles entrained in the flow. The relative motion of these discontinuities produces a frequency shift of the scattered wave, which is received and analysed by the ultrasonic flow meter. The different frequency is known as the Doppler shift. this is linearly proportional to the fluid velocity. As the internal cross sectional area of the pipe is easily measured so the volumetric flow rate is easily calculated.

Electronics

The Precision flow 190FD is easily configured by selecting the options displayed in the main menu and following simple on screen instructions. The graphic display provides flow data in large highly visible characters, which is enhanced by the use of the back light facility, making it possible to read the flow rate from a distance under extremely poor lighting conditions. Error messages, signal quality, time and date are all continuously displayed, as well as flow information in either numerical or graph format, keeping the user fully aware of the measurement process.

Data Logger

The built in data logger has the capacity to store 120,000 flow readings. Data can be stored in 1-second to 1 hour intervals. Data from each logging session can be saved with a unique name and is stored in the memory until it has been cleared. The stored data can be displayed on the instrument in text or graphical format. The instrument is also capable of downloading the stored data via The RS232 output port to a printer or PC onto a standard spreadsheet. A USB option is available. The unit has a removable electronics pack so the data logger can be taken away for down load if required. (under screw fixed front panel)

Specification

Wall Electronics Enclosure

- Protection Class : IP66
- Material : Painted Steel
- Weight : 4.3 Kg
- Dimensions : 235 mm x 300 mm X 80 mm (with glands)
- Display : 240 x 64 graphics LCD with backlight
- Keypad : 17 key tactile membrane (behind front panel)
- Temperature range standard : 0ºC to +50ºC (operating) -10ºC to +50ºC (storage) extended:-40ºC to +60ºC
- Power supply 100 to 240 V AC or 10 to 36V DC
- Volumetric flow units : m^3, gallons (Imperial and US), Liters
- Velocity units : metres/sec, feet/sec
- Flow velocity range Doppler mode: 0.05 m/sec to 10 m/sec to 4 significant figures (option higher if required)
- Total volume : 12 digits
- Continuous signal quality indication
- Status messages
- Analogue 4-20mA : User definable scaling
- Pulse 5 Volts or open collector (option) User definable scaling
- Serial RS232 USB (option)
- Data Logging memory capacity 120,000 data points User definable timing.
- Data Logging output Via RS232 or displayed graphically/numerically
- Repeatability Doppler mode: ±0.2% of F.S.
- Accuracy Doppler mode: Typically better than ± 1% to ± 3% of F.S or ± 0.03 m/sec . Which ever is the greater, depending on application.

Transducer V Type (Doppler) type Pipe size : 20 mm-1200mm — **Order Code VT190**

- General operating temp :-6 to 105 ^{o}C

Mounting Hardware options:

- Large pipe mounting strap for V Type (1 needed) — **Order Code XD STRAP**
- Mounting rail for small pipes V type — **Order Code VTYPER**

High temperature and application specific transducers are available please contact Omni Instruments Ltd for details.
The specification assumes turbulent flow profile.

We reserve the right to alter any specification without notification

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