



## Introducing the PRECISION 190P portable hand held clamp-on ultrasonic flowmeter

### Features

- The world's most cost effective hand held transit time flowmeter.
- Analog and digital outputs.
- Data logger with graphical display of data.
- AZW Adaptive Zoom Windowing technology as standard.
- Built in help.
- Automatic speed of sound measurement and flow profile correction algorithm.
- Measure flow rate within a pipe without cutting the pipe.
- Latest correlation signal detection system.
- Suitable for all commonly used sonically conductive pipe materials and liquids.
- Easy to attach clamp-on sensors.



- Clearly laid out high tactile response keypad.
- Very large flow measuring range with no complicated upper velocity limits .

### Description

The Precision Flow 190P is a lightweight, high quality, transit time, flowmeter designed to meet the flow measurement needs of the service, maintenance and commissioning engineer.

Precision Flow's experience in ultrasonic technology ensures that the 190P is a high precision instrument, which can be configured and operational within minutes.

Various sensor and clamping options are available for non standard applications. Please contact us for more information.





## Principle of operation

Ultrasonic waves are transmitted in the direction of flow. These are accelerated slightly by the velocity of the liquid in the pipe. When ultrasound is transmitted in the opposite direction, the flow of the liquid causes the transmitted sound to decelerate. The subsequent time difference is directly proportional to the flow velocity in the pipe. Having measured the flow velocity and knowing the cross-sectional area, the volumetric flow can be easily calculated. Time differences are resolved to a resolution of 20 Pico seconds, thus giving extremely good performance in small pipes or in large pipes with low velocity flows.

## Electronics

The Precision Flow 190P is easily configured by selecting the options displayed in the main menu and following simple on screen instructions. Flow readings can be achieved at most sites within a few seconds. The use of rechargeable batteries allows the unit to be operated for a period in excess of 10 hours depending on the facilities used. Continuous operation via the PSU is possible while also recharging the battery pack. The graphic display provides flow data in large highly visible characters, which can be 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, battery status, 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 60,000 flow readings. Data can be stored in 5-second to 1 hour intervals. Data from each logging session can be saved with 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/USB output port to a printer or PC onto a standard spreadsheet.

## Specification

### Hand Held Electronics

Protection Class : IP54  
 Material : ABS  
 Weight : < 1.5 Kg  
 Dimensions : 275 x 150 x 55mm  
 Display : 240 x 64 graphics LCD with backlight  
 Keypad : 17 key tactile membrane  
 Temperature range : 0°C to +50°C (operating) -10°C to +50°C (storage)  
 Power supply/charger Input : 12VDC  
 Volumetric flow units : m<sup>3</sup>, gallons (Imperial and US), Litres  
 Velocity units : metres/sec, feet/sec  
 Flow velocity range : 0.01 m/sec to 25 m/sec to 4 significant figures  
 (option higher if required)  
 Total volume : 12 digits forward and reverse  
 Continuous battery level indication  
 Continuous signal quality indication  
 ERROR messages  
 Analogue 4-20mA into 750 Ohms : User definable scaling  
 Resolution : 0.1% of full scale  
 Pulse 5 Volts User definable scaling  
 Serial RS232, USB  
 Data Logging memory capacity 60,000 data points  
 Data Logging output Via RS232 or displayed graphically/numerically

### Transducer Standard X type Pipe size : 15mm-1200mm

General service temp short term :-30 to 130 °C  
 General service temp long term :-30 to 105 °C

### Transducer Standard X type HT Pipe size : 15mm-1200mm

General service temp short term :-40 to 220 °C  
 General service temp long term :-30 to 170 °C

### Transducer Standard Y type Pipe size : 1200mm-6500mm

General service temp short term :-30 to 130 °C  
 General service temp long term :-30 to 105 °C

Special application transducer design service is available please contact Precision Flow for details.

Repeatability ±0.5% with unchanged transducer positions

Accuracy ± 1% to ± 2% or ± 0.02 m/sec whichever is the greater, depending on application.

The specification assumes turbulent flow profile with Reynolds numbers above 4000

icenta Controls Ltd reserve the right to alter any specification without notification

