

# PORTAFLOW™ 300 CE

**ULTRASONIC LIQUID  
FLOW METER**

**NOW WITH HIGH  
TEMPERATURE  
SENSORS AS  
STANDARD**



**MICRONICS**

# PORTAFLOW 300

## PORTABLE ULTRASONIC LIQUID FLOW METER

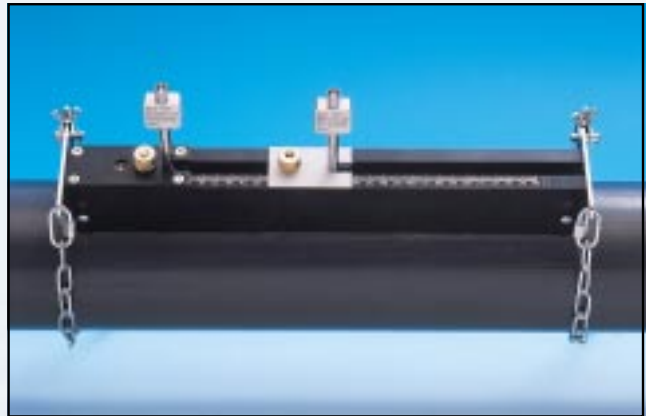
The Portaflow 300 brings a new simplicity to the non-invasive measurement of liquid flow. This clamp-on ultrasonic instrument offers the user quick and accurate flow measurement from outside the pipe.

Micronics engineers have utilised their 15 years experience of developing portable flow measuring instruments to design a compact rugged and reliable unit. The instrument gives a digital readout of velocity or volumetric flow rate and total integrated flow in either imperial or metric units. Output include an RS232, 4-20mA and pulse that allow the user more versatility when collecting application data.

The Portaflow 300 is supplied in a waterproof carrying case which houses the electronics, transducer assemblies and all mounting hardware suitable for most flow applications. A separate carrying case is used when transducer set "D" is included within the kit of parts supplied.

The instrument is able to work on a wide variety of pipe sizes from 13mm up to 5000mm, simply by selecting the correct transducers and attaching them to the outside of the pipewall using the hardware provided.

Operation is push button easy such that the user is only required to know the pipe dimensions and the type of pipe wall material. All other application parameters can be measured by the instrument itself.

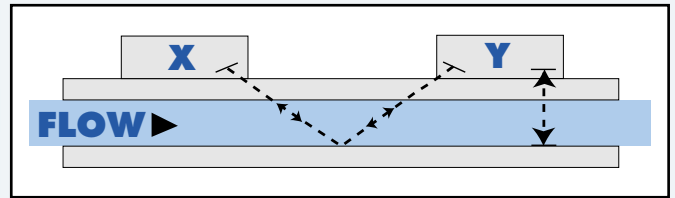


**The Portaflow  
300 can be  
applied to both  
clear and cloudy  
liquids in any  
type of pipe  
including those  
with composite  
walls.  
It is user friendly,  
compact,  
lightweight and  
thanks to modern  
technology, low  
cost, both to  
purchase and  
operate.**



## PRINCIPLE

The Portaflow 300 is a Transit Time ultrasonic flow meter that has been designed to work with clamp-on transducers, thus enabling liquid flowing within a closed pipe to be measured accurately, without the need for any mechanical parts to be inserted through the pipe wall or to protrude into the flow system. When ultrasound is transmitted between transducers X and Y, the speed at which the sound travels through the liquid is accelerated slightly by the velocity of the liquid through 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 pipe cross-sectional area, the volumetric flow can be easily calculated. Micronics engineers have developed a measurement technique which has the ability to resolve extremely small time differences down to 25 pico seconds ( $25 \times 10^{-12}$  seconds), thus giving extremely good performance on small pipes or in large pipes with low velocity flows.



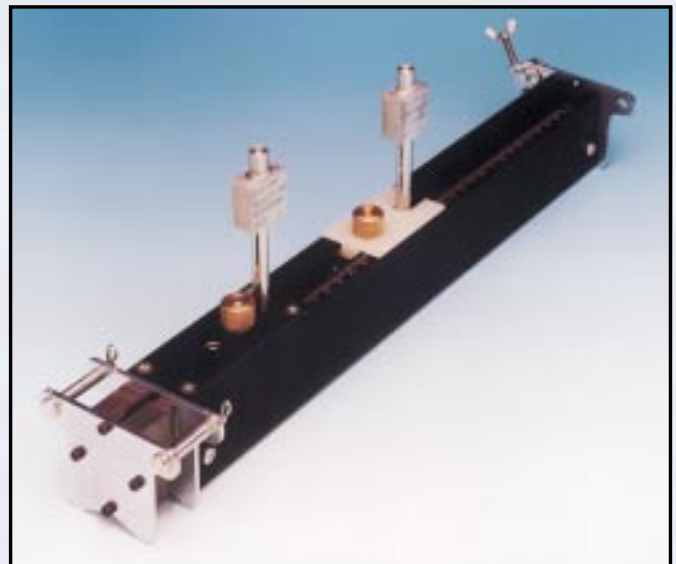
## ELECTRONICS

The Portaflow 300 electronics are housed in an IP66 enclosure which incorporates the graphic display, keypad, sensor and output facility connections. The Microprocessor driven electronics makes the instrument respond quickly to any instructions given. Programming the unit is carried out by selecting the options displayed in the main menu and by following the simple instructions given. Flow readings can then be achieved on most applications within a few minutes. The use of rechargeable batteries allows the unit to be operated for a period in excess of 24 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 of 5-10 metres away under extremely poor lighting conditions. Error messages, battery status, signal strength, application temperature, 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. Languages are available as an option, in English, French or German. They can be supplied on disc to be downloaded via the RS232 or already programmed into the instrument.



## TRANSDUCERS

The Portaflow 300 is able to work with four different transducer sets, depending on the application. High temperature sensors are now supplied as standard. The instrument is supplied with transducer sets 'A' and 'B' as standard. Transducer sets 'C' and 'D' are available as options to increase the velocity and pipe range of the instrument. 'D' transducers will only work up to +80°C and are supplied and are supplied separately with webbing straps. Chains are used to secure the guide rails to the pipe. Magnetic assemblies are available for the 'B' guide rail only.





# PORTAFLOW 300

## Electronic Enclosure

IP66 Protection Class Material - High Density Polyurethane	
Weight	: < 1.5 Kg
Dimensions	: 275 x 150 x 55mm
Display	: 240 x 64 Graphics LCD with Backlight
Keypad	: IP68 16 key tactile membrane
Connectors	: Lemo, IP66 protection
Temperature Range	: -10°C to +50°C Operating
	: -10°C to +50°C Storage

## Supply Voltage

Power supply/charger	Input	: 100-260V AC $\pm$ 10% @50/60 Hz Max 9 watts
		: 9VDC unregulated

## Battery Pack

Internal Batteries	5 x 4/3 AA Nickel Metal Hydride	: 24-30 hrs continuous operating on fully charged battery cells
	Recharge time	: 10-16 Hours

## Output/Inputs

Languages	English/German/French	
Display	Volumetric Flow	: M <sup>3</sup> , L, Galls, Imp, US Galls
	Flow Velocity	: metres/sec, feet/sec
	Flow Rate	: 0.2 m/sec... 12 m/sec to 4 significant figures
	Total Flow	: 12 digits Forward and Reverse
	Continuous battery level indication	
	Continuous level indication	
	ERROR Messages	
Analogue	4-20mA into 750 $\Omega$	: user definable scaling
	Resolution	: 0.1% of full scale
Pulse	5 Volts	
	Max. 1 pulse per second	: User Definable scaling

## Data Logging

Memory Capacity	100K (50,000 data points)
Output	Via RS232 or displayed Graphically
Logs	Block data storage with text and graphic display, transferred to Microsoft Windows or Micronics user compatible software package (optional)

## Transducer Sets

	Pipe Size	Velocity Range
"A"	13mm to 115mm (standard)	0.2...4 m/sec to (8 m/sec)
"B"	50mm to 1000mm (standard)	0.2...8 m/sec to (12 m/sec)
"C" high velocity	300mm to 200mm (optional)	0.2...4 m/sec to (7 m/sec)
"D"	1000mm to 5000mm (optional)	0.2...4 m/sec to (7 m/sec)
	Temperature range	-20°C to +200°C standard
	Frequency	1MHz, 2MHz and 0.5MHz

## Pipe materials

Any sonic conducting medium such as Carbon Steel, Stainless Steel, Copper, UPVC, PVDF, Concrete, Galvanised Steel, Mild Steel, Glass, Brass.  
Including Lined Pipes - Epoxy/Rubber/Steel/Plastic.

## Repeatability

$\pm$ 0.5% with unxhanged transducer positions.

## Accuracy

$\pm$  1...2% of flow reading or  $\pm$  0.02 m/sec whichever is the greater  
The specification assumes turbulent flow profile with Reynolds numbers above 4000

Micronics reserve the right to alter any specification without notification.

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