

# ULTRAFLOW U3000 / U4000 Ultrasonic Flowsensor



The Ultraflow brings simplicity to the non-invasive measurement of liquid flow, offering the user quick and accurate flow measurement with its easy to follow menu and simple set up. Dry servicing, providing minimum downtime and maximum availability, even in a continuously running system. Compact, rugged and reliable, the Ultraflo has been designed to provide sustained performance in industrial environments.

## Features

- Large, easy to read graphic display
- Easy to install
- Clamp-on sensors for dry servicing
- Simple to follow programming menu
- Simple 'Quick Start' set up procedure
- Data logger for 198 k data points (Type U4000)
- Analog, pulse and alarm outputs
- Reynolds number correction



## Applications

- HVAC & Energy System Audits
- Pump Verification
- Process Control
- Chemical Addition
- Hydraulic Systems
- Fire Systems
- Leak Detection
- Boiler Testing

# Specifications

General		
DSP Measurement Technique	Transit time	
Flow Velocity Range	0.1 m/s - 20 m/s	
Accuracy	Pipe ID >75 mm	±0.5% to ±3 % of flow reading for flow rate >0.2 m/s
	Pipe ID 13 mm - 75 mm	±3% of flow reading for flow rate >0.2 m/s
Repeatability	±0.5% of measured value or ±0.02 m/s whichever is the greater	
Response Time	< 500 ms depending on pipe diameter.	
Selectable Flow Units	Velocity	m/sec, ft/sec.
	Volume	l/s, l/min, l/h, gal/min, gal/h, USgals/min, USgals/h, Barrel/h, Barrel/day, m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h.
Selectable Total Volume Units	liters, m <sup>3</sup> , gallons, US gallons, barrels	
Total Volume	12 Digits	
Menu Languages	EN, DE, FR, RU, SWE, IT, SP, P, NO, DEN	
Environmental		
Operating Temperature	-20 °C to +50 °C	-4 °F to +122 °F
Storage Temperature	-25 °C to +75 °C	-13 °F to +167 °F
Pipe Wall Temperature	-20 °C to +135 °C	-4 °F to +275 °F
Operating Humidity	Max. 90% relative humidity @ 50 °C (122 °F)	
Applicable Pipe Types		
Pipe Materials	PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316, Copper	
Pipe Dimension (OD)	13 mm to 2000 mm	0.5 in. to 78 in.
Pipe Wall Thickness	1 mm to 75 mm	0.04 in. to 3 in.
Pipe Lining	Applicable pipe linings include Rubber, Glass, Concrete, Epoxy, Steel	
Pipe Lining Thickness	0 mm to 25 mm	0 in. to 1 in.
Electrical		
Supply Voltage	12 - 24 V AC or DC; 86 - 264 V AC (47Hz to 63Hz)	
Power Consumption	Max. 10.5 W	
Outputs		
Analog Output	Range	4 to 20 mA, 0 to 20 mA, 0 to 16 mA
	Resolution	0.1% of full scale
	Load Max.	620 Ω
	Isolation	1500 V Opto-isolated
	Alarm Current	Adjustable between 0-26 mA
Pulse Output	Type	Digital MOSFET relay
	Pulse Repetition	1 to 250 pps, user programmable
	Pulse Width	2 to 500 ms, user programmable
	Voltage Max.	48 V
	Current Max.	500 mA
Alarm Outputs	Isolation	1500 V opto isolated
	Type	2 x MOSFET relays
	Voltage Max.	48 V
	Current Max.	500 mA
	Isolation	1500 V opto isolated
USB Interface (U4000 only)	Protocol	Supports full speed (12Mbits/sec) data connection
	Software	USB driver software is provided with the package
	Connector	Mini USB
RS-232 Interface (U4000 only)	Protocol	"Serial RS-232 communication including XON/XOFF handshaking"
	Terminal Block	GND, RxD, TxD

## Specifications (continued)

### Data Logger (U4000 only)

Data Logged	Log application details, flow rate, unit, time stamp	
Number of Data Points	198 k	
Number of Data Sites	20	
Number of Data Points per Site	No limit (max. 198k)	
Programmable Logging Interval	5 s - 1 h	
Start / Stop	Manually or timer controlled	
Data Download	Via RS232 / USB interface	

### Transducer sets

Type A	13 - 114 mm pipe O.D. (2 MHz)	
Type B	115 - 2000 mm pipe O.D. (1 MHz)	

### Enclosure and Display

Material	ABS and aluminium	
Dimensions	230 x 180 x 120 mm	9.0 x 7.1 x 4.7 inch
Weight	1.2 kg	2.65 lb
Keypad	"15 key tactile feedback membrane keypad"	
Display	Type	240 x 64 pixel graphic display, high contrast black-on-white, with backlight.
	Viewing Angle	Min. 30°, typically 40°
	Active Area	127 x 34 mm      5 x 1.3 inch
IP Rating	IP 65	

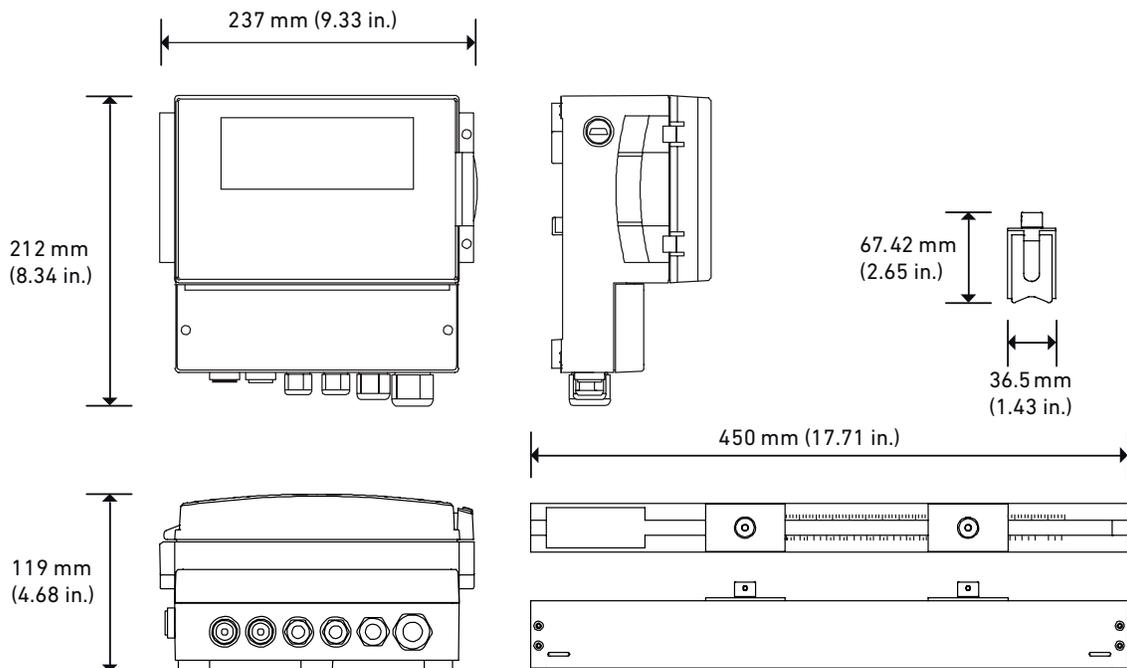
### Shipping Weight

Box Dimensions	480 x 320 x 230 mm	19 x 12.5 x 9 inch
Weight	4.8 kg	10.6 lb
Volumetric weight	5.8 kg	12.8 lb

### Standards and Approvals

CE, RoHS compliant		
EMC	BS EN 61326-1:2006	BS EN 61326-2-3:2006
Safety	BS EN 61010-1:2001	
Environmental	BS EN 60068-1:1995	
	BS EN 60068-2-1:2007	
	BS EN 60068-2-2:2007	

## Dimensions

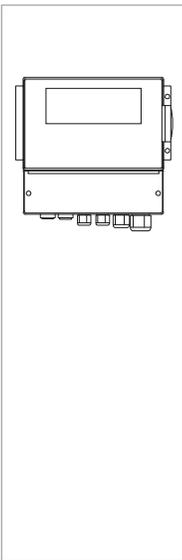


## System Overview



- 1 - Instrument with backlit graphic display
- 2 - Guide rail for use with 'A' or 'B' transducers
- 3 - Steel bands used to secure the transducer guide rails to the pipe
- 4 - Transducers 'A-ST' x2 (U3000/U4000A) for use with pipes ranging 13 mm – 114 mm
- 5 - Transducers 'B-ST' x2 (U3000/U4000B) for use with pipes ranging 115 mm – 2000 mm
- 6 - User documentation
- 7 - Acoustic couplant
- 8 - USB cable and RS232-C cable (U4000)
- 9 - Transducer cables (x2) 10 meters long

## Ordering Information



Mfr. Part No.	Code	Description
<b>Supply voltage 230 V AC</b>		
U3000A d13-114	<b>159 300 004</b>	Ultraflow U3000, for pipe OD 13 - 114 mm
U3000B d115-299	<b>159 300 006</b>	Ultraflow U3000, for pipe OD 115 - 299 mm
U3000B d300-2000	<b>159 300 075</b>	Ultraflow U3000, for pipe OD 300 - 2000 mm
U4000A d13-114	<b>159 300 008</b>	Ultraflow U4000, for pipe OD 13 - 114 mm, data logger
U4000B d115-299	<b>159 300 010</b>	Ultraflow U4000, for pipe OD 115 - 299 mm, data logger
U4000B d300-2000	<b>159 300 076</b>	Ultraflow U4000, for pipe OD 300 - 2000 mm, data logger
<b>Supply voltage 24 V DC</b>		
U3000A d13-114	<b>159 300 005</b>	Ultraflow U3000, for pipe OD 13 - 114 mm
U3000B d115-299	<b>159 300 007</b>	Ultraflow U3000, for pipe OD 115 - 299 mm
U3000B d300-2000	<b>159 300 077</b>	Ultraflow U3000, for pipe OD 300 - 2000 mm
U4000A d13-114	<b>159 300 009</b>	Ultraflow U4000, for pipe OD 13 - 114 mm, data logger
U4000B d115-299	<b>159 300 011</b>	Ultraflow U4000, for pipe OD 115 - 299 mm, data logger
U4000B d300-2000	<b>159 300 079</b>	Ultraflow U4000, for pipe OD 300 - 2000 mm, data logger

## Accessories

Code	Description
<b>159 300 068</b>	Cable Kit 5 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 069</b>	Cable Kit 10 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 290</b>	Cable Kit 15 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 070</b>	Cable Kit 20 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 291</b>	Cable Kit 25 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 292</b>	Cable Kit 30 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 293</b>	Cable Kit 35 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 294</b>	Cable Kit 40 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 295</b>	Cable Kit 45 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 296</b>	Cable Kit 50 meter - Sensor Cable Kit (contains 2 cables each red/blue)