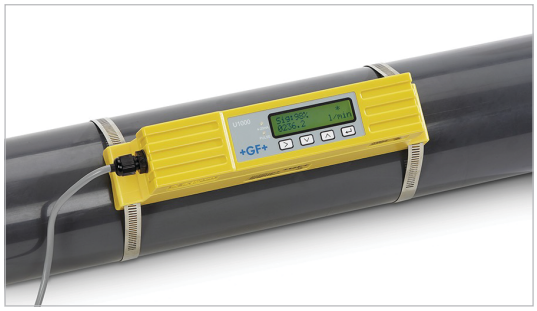
Type U1000 V2 Ultrasonic Flowmeter



Product description

The type U1000 V2 is an ultrasonic permanent Clamp-On flowmeter. This cost effective device can either be used as a stand-alone meter or as an integral part of a control loop.

The type U1000 V2 is very simple to install – clamp it on to the pipe, connect it to power and enter the pipe diameter. No expertise or special tools are required.

The "Clamp-On" concept makes the installation of the sensors in running systems possible. The pipe does not have to be opened. Compact, robust and reliable – the type U1000 V2 was designed for long-term use in industrial applications.

The type U1000 V2 is especially configured for pure water and can be used on PVDF-ABS, PVC, PP, PE, PB-Instaflex, iron and steel pipes. Processes can be monitored directly by a higher-level system via 4 to 20 mA, Modbus, pulse or frequency output.

Benefits/features

- Large, easy to read graphic display with backlighting
- Easy to install without special tools
- „Clamp-on“ design
- Expanded size range (¾ inch to 6 inch pipes)
- Simple to follow programming menu
- Simple quick-start set up procedure
- Compact integral design

Applications

- Ultrapure water measurement
- Chilled water metering
- Flow measurement for energy metering
- Monitoring of manufacturing processes
- New Water / Glycol Measurement

Technical data

Specifications

General		
Measuring method	Ultrasonic transit-time measurement	
Flow range	0.1 m/s – 10 m/s (0.3 ft/s - 32 ft/s)	
Accuracy	± 3 % of the flow value with a flow rate > 0.3 m/s	
Repeatability	± 0.5 % of the measured value	
Response time	< 500 ms	
Selectable flow units	Velocity	m/sec, ft/sec.
	Volume	l/s, l/min, gal/s, gal/min, USgal/s, USgal/min, m3/min, m3/hr
Selectable totalizer units	Liter, m3, gals, USgals	
Menu languages	EN	

Environment		
Maximum Pipe temperature	0 °C to +85 °C	32 °F to 185 °F
Operating temperature	0 °C to +50 °C	32 °F to 122 °F
Storage temperature	-10 °C to +60 °C	14 °F to 140 °F
Temperature of pipe wall	0 °C to +85 °C	32 °F to 185 °F
Humidity during operation	Max. 90 % relative humidity at +50 °C (122 °F)	
Maximum altitude	4,000 m	
Indoors/outdoors	Indoors	
Wet locations	A location in which water or other liquid can drip, splash, or flow on or against electrical equipment.	
Pollution degree	3: Conductive pollution or dry nonconductive pollution that becomes conductive due to condensation.	

Suitable pipe types		
Pipe materials	PVDF, PP-H, PE, PB, ABS, UPVC, CPVC, construction steel, iron, stainless steel 316,copper	
Pipe diameter (OD)	22 - 180 mm*	¾ - 7 inch*

Electronics	
Power supply	12 - 24 V AC/DC
Power consumption	Max. 7 VA

Outputs	
Analog output	
Range	4 - 20mA
Resolution	0.1 % of measurement range
Load max.	620 Ω
Insulation	1MΩ at 100 V
Alarm current	3.5 mA
Pulse output	
Type	Opto-Isolated MOSFET volt free contact (NO/NC)
Pulse sequence	1 – 166 pps user-programmable frequency mode max. 200 Hz
Pulse width	50 ms standard value, 3 – 99 ms user-programmable
Max. voltage	24V DC or 24V AC
Max. current	500 mA
Insulation	1MΩ at 100V
Modbus	
Format	RTU
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400
Data-Parity-StopBits	8-None-2, 8-None-1, 8-Odd-2, 8-Even-1
Standards	PI–MBUS–300 Rev. J
Physical connection	RS485

Housing and display		
Material	Polycarbonate	
Dimensions	250 x 48 x 90 mm	9.85 x 1.9 x 3.55 Inch
Weight	0.5 kg	1.1 lb
Keyboard	Keypad with 4 buttons	
Display		
Type	LCD, 2 lines x 16 characters	
Viewing angle	Min. 30°, max. 40°	
Active area	83 x 18.6 mm	3.3 x 0.73 Inch
Protection class	IP 54	

Shipping information		
Packet dimensions	290 x 280 x 100 mm	11.4 x 11 x 4 Inch
Weight	1.4 kg	3 lbs
Volume weight	1.4 kg	3 lbs

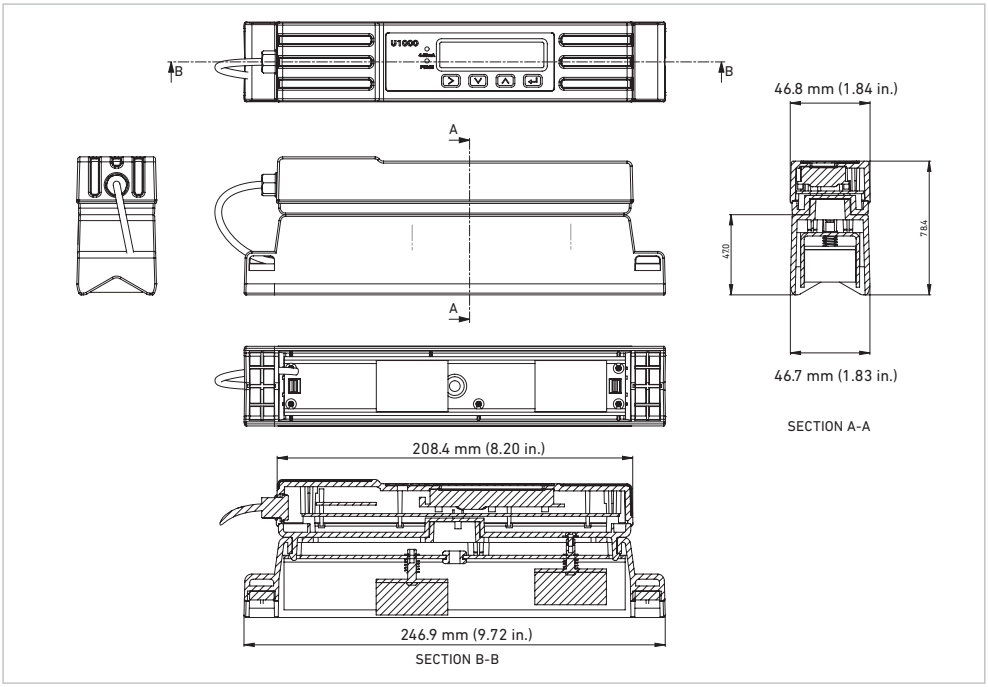
Standards/approvals		
CE, UKCA, RoHS compliant		
UL listed		
Security	BS EN 61010-1:2010	
EMV	BS EN 61326-1:2013	BS EN 61326-2-3:2013
Environment	BS EN 60068-1:2014	
	BS EN 60068-2-1:2007	BS EN 60068-2-2:2007

* Note: Pipe size is dependant on pipe material and inner pipe diameter

Default Values

Parameters	Metric	Imperial
Dimensions	mm	Inches
Flow Units	l/min	USgal/min
Pipe size (ID)	1" to 4" pipes: 50 mm 4" to 6" pipes: 127 mm	1" to 4" pipes: 1.969 in 4" to 6" pipes: 5.000 in
Pulse Output	Off	Off
Volume per Pulse	10 litres	2.642 US gallons
Pulse Width	50 ms	50 ms
Damping	20 seconds	20 seconds
Calibration Factor	1.000	1.000
Zero Cut-off	0.02 m/s	0.07 ft/s
Zero Offset	0.000 m/s	0.000 ft/s

Dimensions

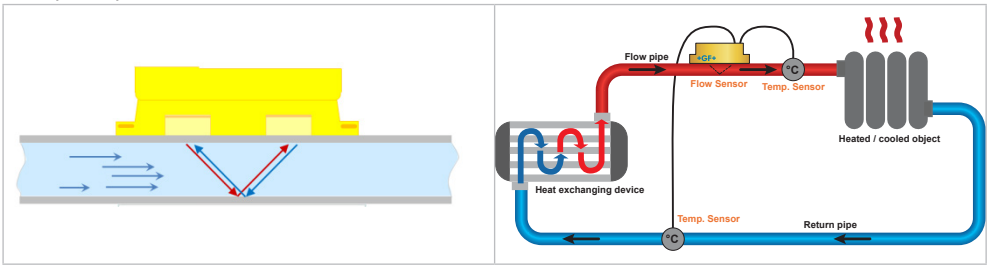


Packaging content

1 Guide rail
2 Type U1000 V2 head-unit incl. cable (5 m length)
3 Gel pads
4 Pipe adapters
5 S/steel hose-clips for guide rail
6 Modbus cable (Modbus models only)
7 Product documentation(- Quick-start guide & factory assembly certificate)

Function

The U1000 V2 functions, as do all GF current ultrasonic flow meters, according to the path-time principle of ultrasonic waves.



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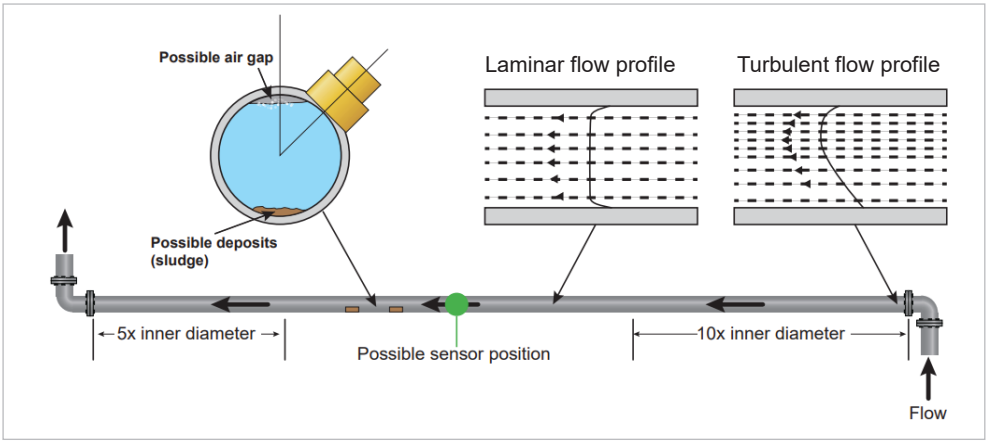
The device is installed directly on a pipe surface and transmits ultrasonic waves back and forth between the two sound transducers. Depending on the flow, a small time difference arises between the two ultrasonic signals – this is proportional to the flow speed.



Order overview

Code	Type	Description
159 300 300	U1000 V2	Type U1000 V2 | Flowmeter | 12-24 VAC | d22-d115 | 0.75 in. to 4 in. | 4 to 20 mA, Pulse
159 300 301	U1000 V2	Type U1000 V2 | Flowmeter | 12-24 VAC | d125-d180 | 5 in. to 6 in. | 4 to 20 mA, Pulse
159 300 302	U1000 V2	Type U1000 V2 | Flowmeter | 12-24 VAC | d22-d115 | 0.75 in. to 4 in. | Modbus, Pulse
159 300 303	U1000 V2	Type U1000 V2 | Flowmeter | 12-24 VAC | d125-d180 | 5 in. to 6 in. | Modbus, Pulse

Spare Parts and Accessories

Code	Description
159 300 088	Ultrasonic Flowmeter | Spare parts | Transducer gel pads (2 pcs)
159 300 038	Ultrasonic Flowmeter | Spare parts | Superlube coupling grease (85 g)
159 300 089	Ultrasonic Flowmeter | type U1000 V2 | Spare parts | Guide rail incl. transducers

1-1234.0xx Rev X (0x/yy)
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