

U1000 V2 Ultrasonic flow meter



Product description

The U1000 V2 is an ultrasonic permanent clamp-on flow metering solution for measuring flow rate. This cost effective device can either be used as a stand-alone meter or as an integral part of a control loop.

The 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 U1000 V2 was designed for long-term use in industrial applications.

The 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



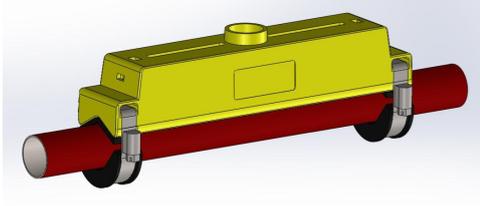
Applications

- Ultrapure water measurement
- Flow measurement for heat metering
- Chilled water metering
- Flow measurement for energy metering
- Monitoring of manufacturing processes

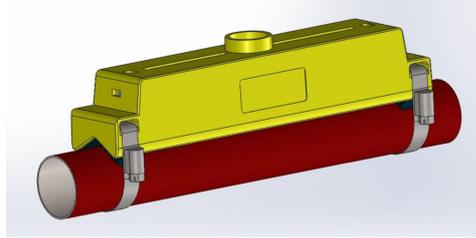
Handling

Selection of pipe adapter

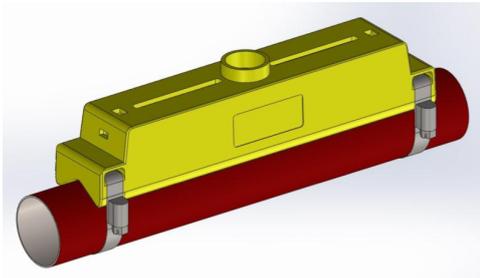
To guarantee a secure fit on the pipe, the proper pipe adapters must be selected, depending on the outside diameter (included in scope of delivery).



OD smaller than 40 mm:
upper and lower pipe adapter



OD 40 – 60 mm:
upper pipe adapter



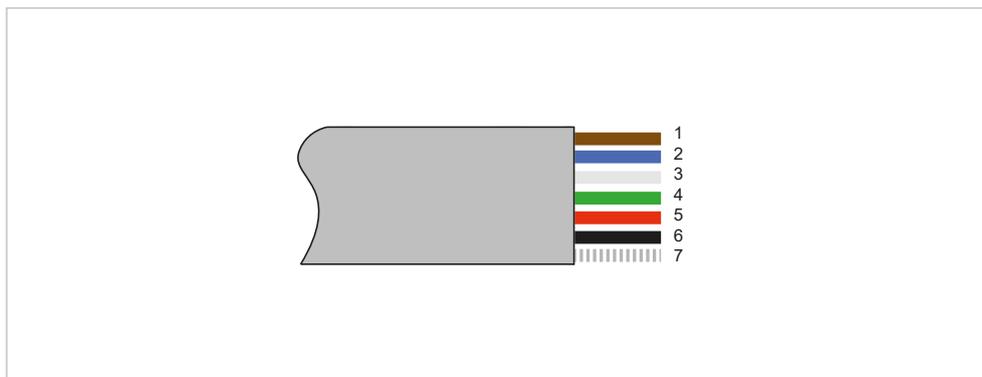
OD 60 mm and larger:
no pipe adapter necessary

Maintenance notes

If the device was installed in accordance with the Operating Manual, no extensive maintenance intervals are to be observed.

Depending on the application, however, you may have to check whether a sufficient quantity of ultrasonic conductive paste has been applied between the pipe surface and the sensor. High relative humidity or sprayed water can wear away at the ultrasonic conductive paste, which leads to a worsening of signal quality and ultimately to a complete interruption of the measurement. Such a test must be performed every 6 – 12 months. If necessary, new ultrasonic conductive paste must be applied.

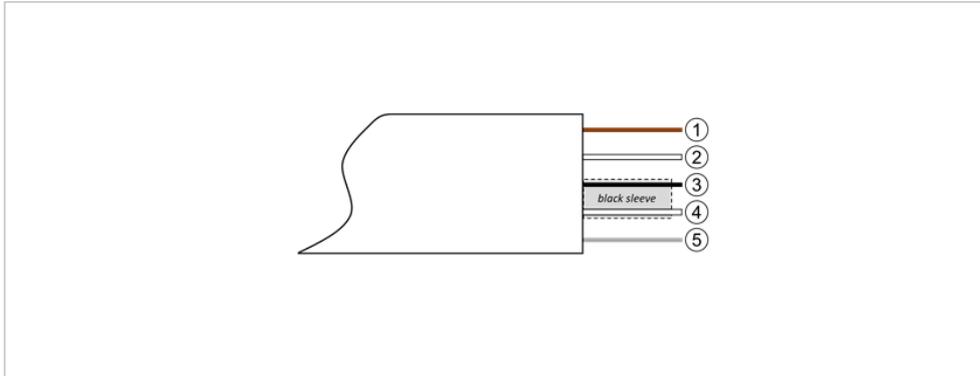
Electrical connection



No.	Description
①	Input 12 V / 24 V (brown)
②	Return conductor 12 V – 24 V (blue)

No.	Description	
③	Pulse + (white)	The SPNO MOSFET relay of the electronics module provides an isolated switching pulse for a maximum switching current of 500 mA and a maximum voltage of 48 V AC. The relay ensures 2500 V isolation. Galvanically, this is a zero potential output.
④	Pulse – (green)	
⑤	Output (+), 4 – 20 mA (red)	The 4 – 20 mA current output is an isolated current source and designed for a load of < 620 Ω. The alarm current that is triggered by a flow outside of the stated range or due to a signal loss, is set to 3.5 mA.
⑥	Return conductor (-), 4 – 20 mA (black)	
⑦	Non-isolated shielding	

Electrical connection Modbus



No.	Description
①	Modbus –ve (brown)
②	Modbus ground (white)
③	Modbus +ve (black)
④	Modbus ground (white)
⑤	Modbus optional ground (uninsulated screen)

⚠ Note: Ensure the white wires are correctly associated with the black & brown wires. The black/white twisted pair is fitted with a black sleeve to distinguish between the black/white and brown/white pairs.

⚠ Installation and maintenance must be performed according to the corresponding installation instructions. The installation manual is included with the product, see also the online product catalogue at www.gfps.com

Outputs

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

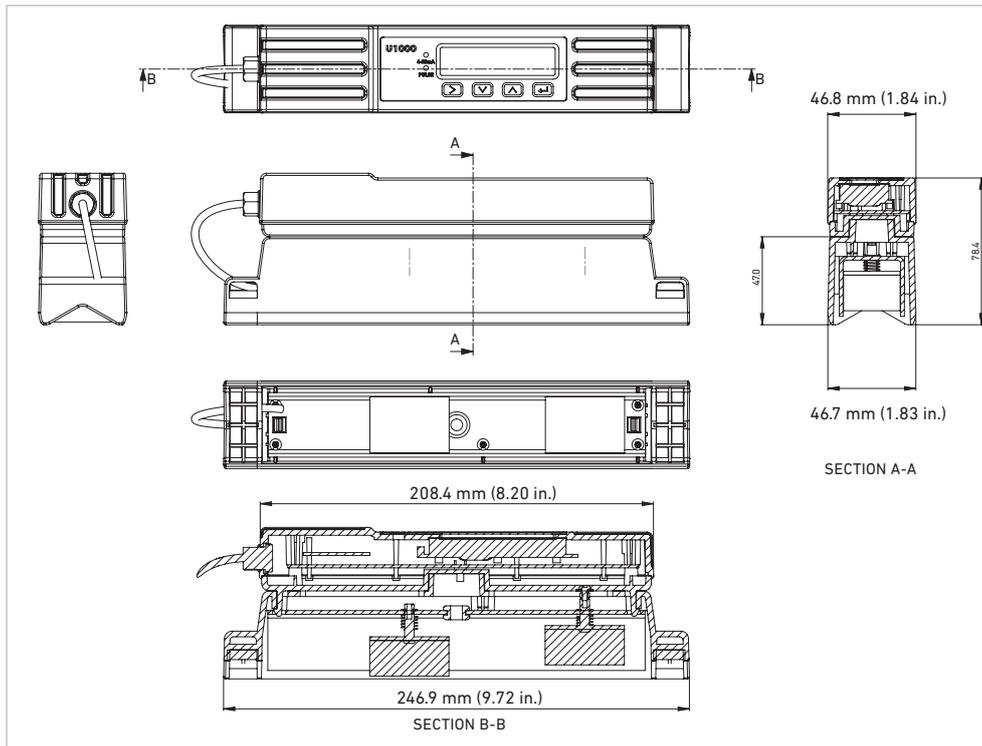
Packet dimensions	290 x 280 x 100 mm	11.4 x 11 x 4 Inch
Weight	1.4 kg	0.05 lb
Volume weight	1.4 kg	0.05 lb

Standards/approvals

CE, conforms to RoHS		
UL listed		
Security	BS EN 61010-1:2001	
EMV	BS EN 61326-1:2006	BS EN 61326-2-3:2006
Environment	BS EN 60068-1:1995	
	BS EN 60068-2-1:2007	BS EN 60068-2-2:2007

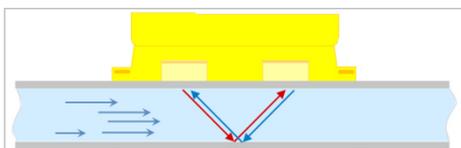
* Note: Pipe size is dependant on pipe material and inner pipe diameter

Dimensions



Function

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



The device is installed directly on the 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.

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

Order overview

Code	Type	Description
159 300 300	U1000 V2	U1000 V2 4-20 mA & pulse d22 – d115 (¾ in. - 4 in.)
159 300 301	U1000 V2	U1000 V2 4-20 mA & pulse d125 – d180 (5 in. - 6 in.)
159 300 302	U1000 V2	U1000 V2 Modbus & pulse d22 – d115 (¾ in. - 4 in.)
159 300 303	U1000 V2	U1000 V2 Modbus & pulse d125 – d180 (5 in. - 6 in.)

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