

Type U1000 V2 WM Ultrasonic Flowmeter/ WHM Ultrasonic Heatmeter



Product description

The type U1000 V2 Wallmount (WM) is a permanent ultrasonic clamp-on flowmetering solution with wallmounted head unit. 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 Wallmount Heatmeter (WHM) is an ultrasonic permanent Clamp-On heatmeter / energy meter / BTU meter. Additionally to an ultrasonic flowmeter it is equipped with Pt100 temperature sensors to calculate the energy of a heat exchanging system.

The type U1000 V2 WM (WHM) 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 WM (WHM) was designed for long-term use in industrial applications.

The type U1000 V2 WM (WHM) 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

- Easy to install, compact, robust and reliable - designed for long-term use in industrial applications
- Accurate flow measurement on virtually any pipe
- Automatic energy calculation with integrated Pt100 temperature sensors (HM version only)
- Ready for Industry 4.0 with various communications options. Including: Modbus, 4 to 20 mA, pulse & alarm output
- 'Clamp-on' flowmetering solution with external wallmount head unit
- Large, easy to read graphic display with backlighting
- Expanded size range (¾ inch to 8 inch)



Applications

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

Technical data

Specification

General

Measuring Method	Ultrasonic transit-time measurement	
Flow Range	0.1 m/s – 10 m/s (0.3 ft/s - 32 ft/s), bi-directional	
Accuracy	± 3 % of the flow value with a flow rate > 0.3 m/s (1.0 ft/s)	
Repeatability	±0.5 % of 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, gallons, US gallons, m ³	
Menu Languages	EN	

Temperature sensors (Heatmeter types only)

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 135 °C	32 °F to 275 °F
Accuracy	Pt100 Class B 4-wire	
Resolution	0.1 °C (0.2 °F)	
Humidity During Operation	Max. 90% relative humidity at +50 °C (122 °F)	

Suitable Pipe types

Pipe Materials	PVDF, PP-H, PE, PB, ABS, PVC, CPVC, steel, iron, stainless steel 316, copper	
Pipe Dimension (OD)	22 mm to 225 mm*	¾ - 8 inch*

Electronics

Power Supply	12 to 24 V AC/DC
Power Consumption	Max. 7 VA

Outputs

Analog Output	Range	4 to 20 mA
	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 Output	Format	RTU
	Baud Rate	1200, 2400, 4800, 9600, 19200, 38400
	Data-Parity-Stop-Bits	8-None-2, 8-None-1, 8-Odd-2, 8-Even-1
	Standards	PI-MBUS-300 Rev. J
	Physical Connection	RS485

Housing and Display

Reading 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

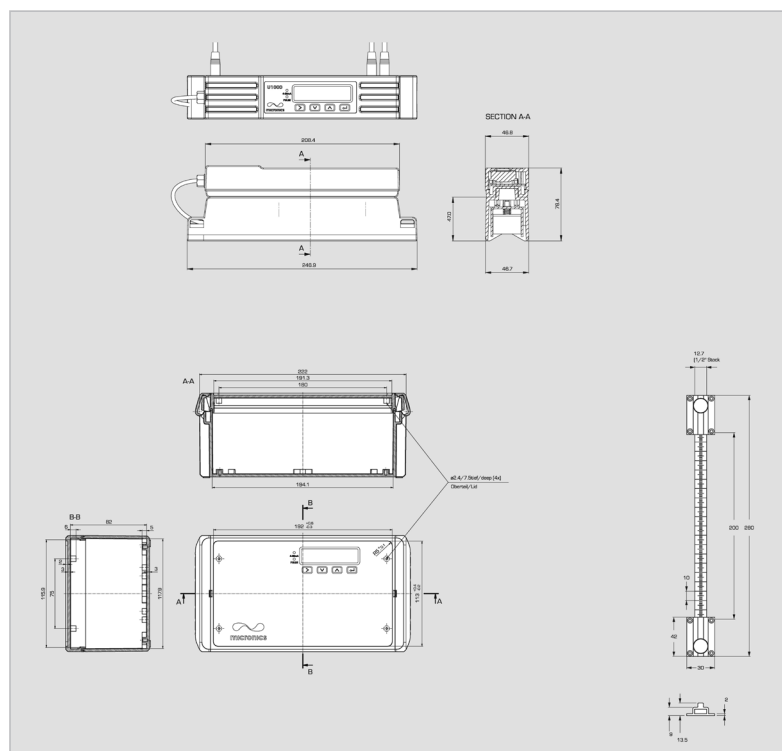
Packaging Dimensions	290 x 280 x 100 mm	11.4 x 11 x 4 inch
Weight	1.4 kg	3 lbs
Volume Weight	1.4 kg	3 lbs

Standards and Approvals

CE, UKCA, RoHS compliant		
Safety	BS EN 61010-1:2010	
EMC	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

* Measurable pipe sizes are dependent on pipe material and inner pipe diameter.

Dimensions



Packaging Content



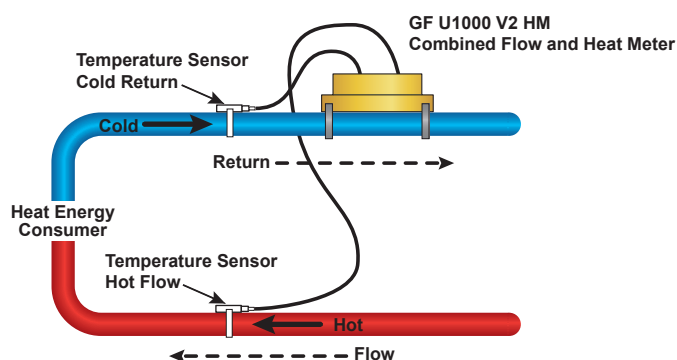
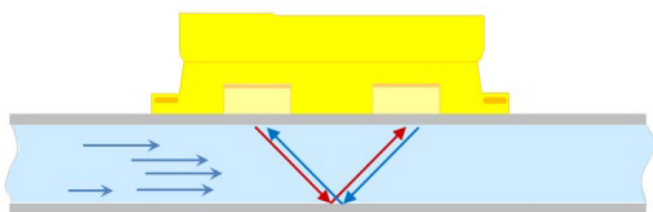
- 1 Type U1000 V2 WM (WHM)
- 2 Flow sensors / transducers incl. cable (5 m length)
- 3 Gel pads
- 4 Ruled guide rail
- 5 S/steel hose-clips for flow sensors
- 6 Pt100 temperature probes incl. cable (3 m length) (HM types only)
- 7 S/steel hose-clips for temperature probes (HM types only)
- 8 Power supply (optional)
- 9 Product documentation (User manual & factory assembly certificate)

Function

The type U1000 V2 WM (WHM) functions, as do all current ultrasonic flowmeters, according to the path-time principle of ultrasonic waves.

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.

By measuring the temperature change between the flow and return pipe of the heat exchanging system with the integrated Pt100 sensors the type U1000 V2 WHM is calculating its thermal energy (in BTU, J or kWh).



Ordering Information

Mfr. Part No.	Code	Description
U1000 V2 WM	159 300 310	Type U1000 V2 WM Flowmeter 12-24 VAC d22-d115 0.75 in. to 4 in. 4-20 mA, Pulse
U1000 V2 WM	159 300 311	Type U1000 V2 WM Flowmeter 12-24 VAC d22-d115 0.75 in. to 4 in. Modbus, Pulse
U1000 V2 WM	159 300 312	Type U1000 V2 WM Flowmeter 12-24 VAC d22-d115 0.75 in. to 4 in. Modbus, 4-20 mA, Pulse
U1000 V2 WM	159 300 313	Type U1000 V2 WM Flowmeter 12-24 VAC d125-d225 5 in. to 8 in. 4-20 mA, Pulse
U1000 V2 WM	159 300 314	Type U1000 V2 WM Flowmeter 12-24 VAC d125-d225 5 in. to 8 in. Modbus, Pulse
U1000 V2 WM	159 300 315	Type U1000 V2 WM Flowmeter 12-24 VAC d125-d225 5 in. to 8 in. Modbus, 4-20 mA, Pulse
U1000 V2 WHM	159 300 316	Type U1000 V2 WHM Heatmeter 12-24 VAC d22-d115 0.75 in. to 4 in. Modbus, 4-20 mA, Pulse
U1000 V2 WHM	159 300 317	Type U1000 V2 WHM Heatmeter 12-24 VAC d125-d225 5 in. to 8 in. Modbus, 4-20 mA, Pulse

Spare Parts and Accessories

Mfr. Part No.	Code	Description
-	159 300 088	Ultrasonic Flowmeter Transducer gel pads (2 pcs)
-	159 300 038	Ultrasonic Flowmeter Super Lube® coupling grease (85 mg)
-	159 300 406	Ultrasonic Flowmeter type U1000 V2 WM/WHM type U1000 V2 WM Guide rail incl. transducers
	159 300 413	Ultrasonic Flowmeter 12V external power supply (incl. US, Euro, UK adaptors)

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