GF PF220/330 V2 Portable Ultrasonic Flowmeter
GF PF330 V2 HM Portable Ultrasonic Heatmeter

The Portaflow range brings simplicity to the non-invasive measurement of liquid flow. Portaflow offers the user quick and accurate flow measurement with its easy to follow menu and simple set up. Results can be achieved within minutes of opening the case. Compact, rugged and reliable, the Portaflow range has been designed to provide sustained performance in industrial environments.

The GF PF220 V2 and GF PF330 V2 Portable Ultrasonic Flowmeter range is designed for temporary or semi-stationary use.

The GF PF330 V2 Heatmeter (HM) is additionally to an ultrasonic flowmeter equipped with Pt100 temperature sensors to calculate the energy of a heat exchanging system. Thus the device is able to work as a heatmeter / energy meter / BTU meter for temporary or semi-stationary use.

The flowmeter range enables enable easy, simple & accurate flow measurement on virtually any pipe. Including PVDF-ABS, PVC, PP, PE, PB-Instaflex, iron and steel pipes. Measurements can be viewed directly on-site with the large graphic display or optionally logged and exported to a PC for further analysis (GF PF330 V2 (HM) versions). One 4-20 mA output and three individually configurable pulse outputs enable easy integration into higher-level systems.

The 'Clamp-On' concept makes the installation of the sensors in running systems possible. The pipe does not have to be opened. Compact, rugged and reliable – the GF PF220 V2 and GF PF330 V2 (HM) portable ultrasonic flowmeters have been designed to provide sustained performance in industrial environments.

Features

- **Large, easy to read graphic display with backlighting**
- **Easy to install with 'Clamp-On' design**
- **Datalogger option (up to 100 million datapoints) (PF330 version)**
- **USB port for easy data export (PF330 version)**
- **Analog, pulse & alarm outputs**
- **Battery lifetime up to 14 hours**
- **Compatible with almost all pipe types**
- **Automatic energy calculation with two Pt100 temperature sensors (HM version)**

CE

Applications

- **Potable Water**
- **River Water**
- **Cooling Water**
- **Demineralized Water**
- **Water/Glycol Solutions**
- **Chemicals**
- **Leak Detection**
- **Boiler Testing**

Specifications

General			
Measuring Method		Ultrasonic transit-time measurement	
Flow Range		0.1 m/s to 20 m/s	
Accuracy		Pipe ID >75 mm	±0.5% to ±2% 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
		All pipe ID's	±6% 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^3/s, m^3/min, m^3/h"
Selectable Total Volume Units		liter, gallons, US gallons, Barrel, m^3	
Total Volume		12 digits	
Menu Languages		EN, DE, FR, RU, SWE, IT, SP, P, NO, DEN (user selectable)	
Temperature sensors (Heatmeter models 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		-20 °C to +85 °C	-4 °F to +185 °F
Accuracy		Pt100 Class B 4-wire	
Resolution		0.1 °C (0.2 °F)	
Humidity During Operation		ax. 90% relative humidity at +50 °C (122 °F)	
Environmental			
Operating Temperature		-20 °C to +50 °C	-4 °F to +122 °F
Storage Temperature		-25 °C to +65 °C	-13 °F to +149 °F
Pipe Wall Temperature		-20 °C to +135 °C	-4 °F to +275 °F
Operating Humidity		Max. 90% relative humidity @ +50°C (+122 °F)	
Suitable Pipe Types			
Pipe Materials		PVDF, PP-H, PE, PB, ABS, UPVC, CPVC, construction steel, iron, stainless steel, copper	
Pipe Diameter (OD)		13 mm to 2000 mm	0.5 inch to 78 inch
Pipe Wall Thickness		1 mm to 75 mm	0.04 inch to 3 inch
Pipe Lining		Applicable pipe linings include Rubber, Glass, Concrete, Epoxy, Steel	
Pipe Lining Thickness		0 mm to 10 mm	0 inch to 0.4 inch
Electronics			
Power Supply		9 to 24 V DC	
Power Consumption		Max. 10.5 W	
Battery			
	Technology	5-cell NiMH	
	Capacity	3.8 Ah	
	Operating Time (typical)	Typically 20 hours continuous with backlight and 4 to 20 mA output OFF	
	Recharge Time	6.5 h	
	Service Life	>500 charge/discharge cycles	
AC Adapter			
Input Voltage		90 to 264 V AC (47 to 63 Hz)	
Output Voltage		12 V DC	
Output Current Maximum		1.5 A	
Approvals		UL, CUL, TUV, CB, CE	

Specifications (continued)

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 to 26mA		
Pulse Output	Type	3x Opto-isolated MOSFET volt free contact (NO/NC)		
	Options	Flow totals, energy (HM version only), loss of signal, low flow alarms.		
	Pulse sequence	Volumetric mode: 1 to 50 pulses/sec user-programmable Frequency mode: 200Hz max. pulse frequency		
	Pulse Width	50 ms standard value, 3 to 99 ms user-programmable		
	Max. Voltage	48 V		
	Max. Current	150 mA		
	Isolation	>110 V AC/DC		
USB Interface (PF330 V2 only)	Protocol	Supports full speed (12Mbits/sec) data connection		
	Software	USB driver software is provided with the package		
	Connector	USB Typ-A female		
Data Logger (PF330 V2 (HM) only)				
Data Logged		application details, time, date, flowrate, forward total, reverse total, flow velocity, flow side temperature, return side temperature, temperature difference, power, total energy, signal quality, signal SNR, signal status		
Number of Data Points		100 million		
Number of Data Sites		12		
Number of Data Points per Site		No limit		
Programmable Logging Interval		5 s to 1 h		
Start / Stop		Manually or timer controlled		
Data Download		USB interface		
Transducer Sets				
Type A		13 to 114 mm (½ inch to 4.5 inch) pipe OD (2MHz)		
Type B		50 to 2000 mm (2 inch to 40 inch) pipe OD (1MHz)		
Housing and Display				
Material		ABS		
Dimensions		264 x 168 x 50 mm	10.4 x 6.6 x 2.0 inch	
Weight		1.1 kg (incl. battery)	2.45 lb	
Keypad		16 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 in.	
Protection class		IP 54		
Shipping Information				
	PF330		PF220	
Packaging Dimensions	420 x 390 x 220 mm	16.5 x 15.4 x 8.7 in.	510 x 140 x 440 mm	20 x 5.5 x 17.3 in.
Weight	7.5 kg	16.5 lb	6 kg	13.2 lb
Volume Weight	5.7 kg	12.5 lb	5.2 kg	11.5 lb
Standards and Approvals				
	CE, RoHS compliant			
	Safety	BS EN 61010-1:2010		
	EMC	BS EN 61326-1:2013	BS EN 61326-2-3:2013	
	Power Supply	EN61204-3	UL, CUL, TUV, CB, CE	
	Environmental	BS EN 60068-1:2014		
		BS EN 60068-2-1:2007	BS EN 60068-2-2:2007	

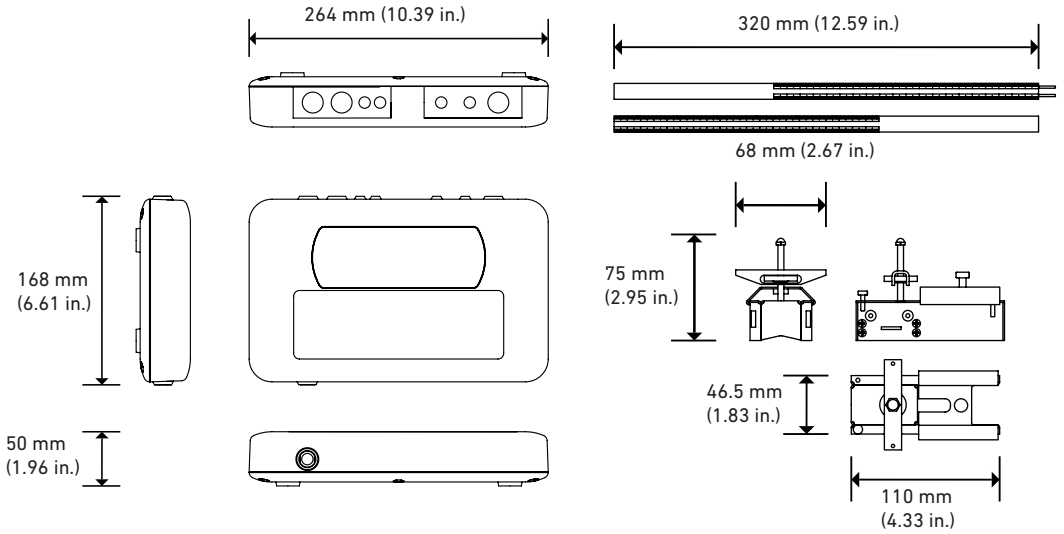
Packaging Content

GF PF330 V2 HM model shown

1. GF PF330 V2 (HM)
2. Transducer cables (2 pcs, each 2 m length)
3. Transducer set 'A' (not all models)
4. Transducer set 'B' (not all models)
5. Ruled guide rail
6. Guide rails
7. Mounting chains (2 pcs, each 3.3 m length)
8. Output signal cable (current loop & 3 digital outputs)
9. Power supply
10. Pt100 temperature probes incl. cable (2 pcs, each 2 m length) (HM models only)
11. S/steel hose-clip for temperature probes (HM models only)
12. Tape measure
13. PVDF test block
14. Heatsink compound (HM models only)
15. Syringe for coupling grease
16. Superlube coupling grease (85 g)
17. USB-Stick for data export (330 models only)
18. Product documentation(User manual & factory calibration certificate)

The GF PF330 V2 (HM) models are supplied in a robust IP67 carrying case, which is padded with foam inside to provide additional transport protection.

Dimensions

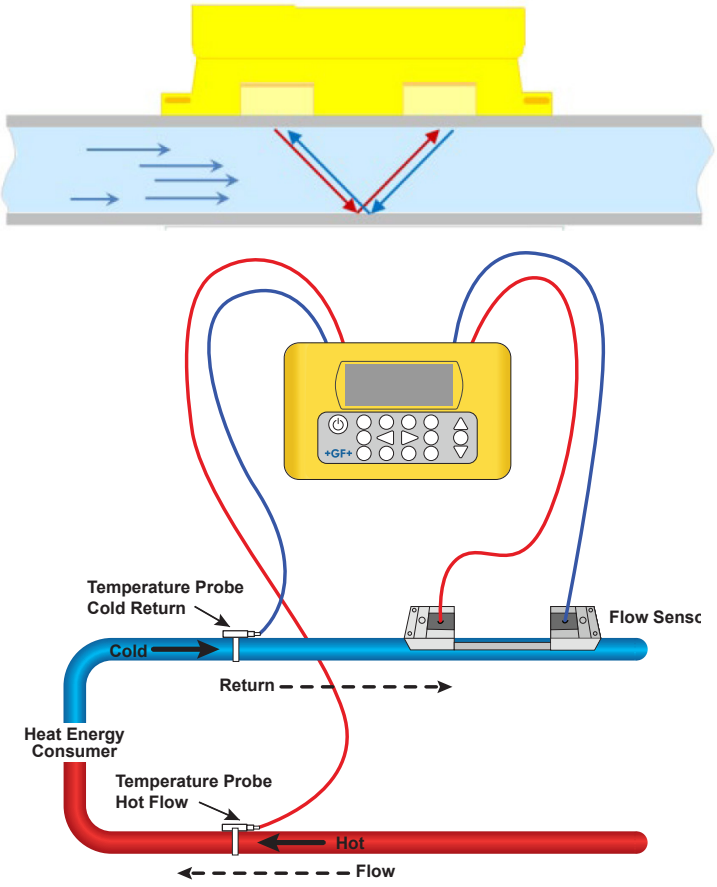


Function

The GF PF330 V2 (HM) 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 GF PF330 V2 HM (without brackets) is additionally calculating its thermal energy (in BTU, J or kWh).



Ordering Information

Mfr. Part No.	Code	Description
PF220 V2	159300360	GF PF220 V2 Type A | Portable Ultrasonic Flowmeter | d13-d115 | Battery & external 110/240 VAC
PF220 V2	159300361	GF PF220 V2 Type B | Portable Ultrasonic Flowmeter | d115-d2000 | Battery & external 110/240 VAC
PF220 V2	159300362	GF PF220 V2 Type A+B | Portable Ultrasonic Flowmeter | d13-d2000 | Battery & external 110/240 VAC
PF330 V2	159300363	GF PF330 V2 Type A | Portable Ultrasonic Flowmeter | d13-d115 | Battery & external 110/240 VAC
PF330 V2	159300364	GF PF330 V2 Type B| Portable Ultrasonic Flowmeter | d115-d2000 | Battery & external 110/240 VAC
PF330 V2	159300365	GF PF330 V2 Type A+B | Portable Ultrasonic Flowmeter | d13-d2000 | Battery & external 110/240 VAC
PF330 V2 HM	159300366	GF PF330 V2 HM Type A | Portable Ultrasonic Heatmeter | d13-d115 | Battery & external 110/240 VAC
PF330 V2 HM	159300367	GF PF330 V2 HM Type B | Portable Ultrasonic Heatmeter | d115-d2000 | Battery & external 110/240 VAC
PF330 V2 HM	159300368	GF PF330 V2 HM Type A+B | Portable Ultrasonic Heatmeter | d13-d2000 | Battery & external 110/240 VAC

Spare Parts and Accessories

Mfr. Part No.	Code	Description
-	**159300088**	Ultrasonic Flowmeter | Spare parts | Transducer gel pads (2 pcs)
-	**159300038**	Ultrasonic Flowmeter | Spare parts | Superlube coupling grease (85 g)
-	**159300013**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Transducer assembly A (2x Transducer A)
-	**159300014**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Transducer assembly B (2x Transducer B)
-		Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Output cable assembly
-	**159300071**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Sensor cable kit (2 meter)
-	**159300072**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Sensor cable kit (5 meter)
-	**159300073**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Sensor cable kit (10 meter)
-	**159300015**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Stainless steel guide rail
-	**159300016**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Magnetic guide rail
-	**159300033**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Link chain zink (3.3 meter)
-	**159300034**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Ruled guide rail
-	**159300035**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Battery assembly
-	**159300036**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Transducer test block
-	**159300037**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Guide rail assembly (guide rail only; no chain; no ruler)
-	**159300039**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | Power supply unit (incl. lemo plug & US, Euro, UK adaptors)
-	**159300031**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | PF330 V2 carry case with foam
-	**159300032**	Ultrasonic Flowmeter | GF PF220/330 V2 | Spare parts | PF220 V2 carry case with foam

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