

# 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)



## 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 <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h"
Selectable Total Volume Units	liter, gallons, US gallons, Barrel, m <sup>3</sup>	
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

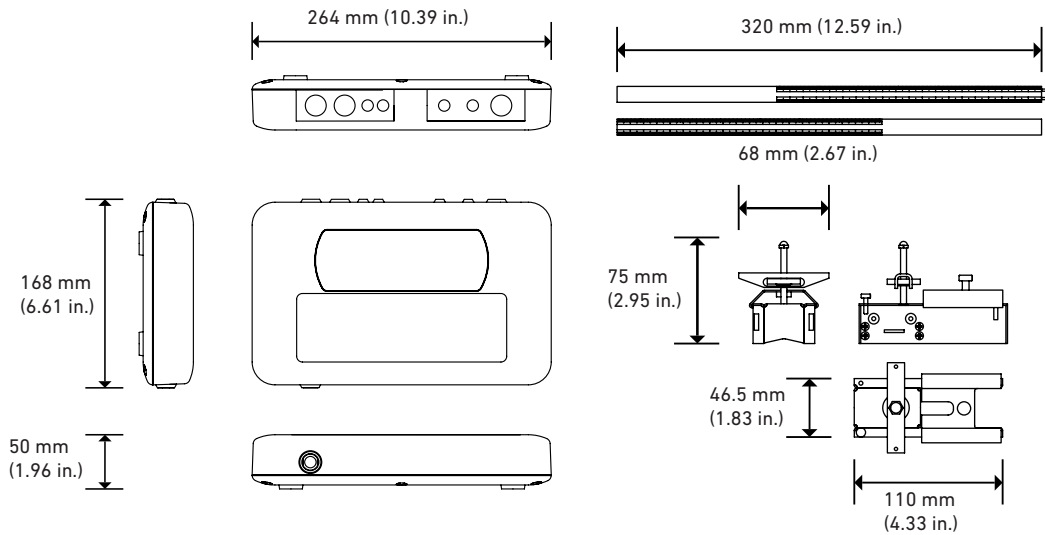


GF PF330 V2 HM model shown

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

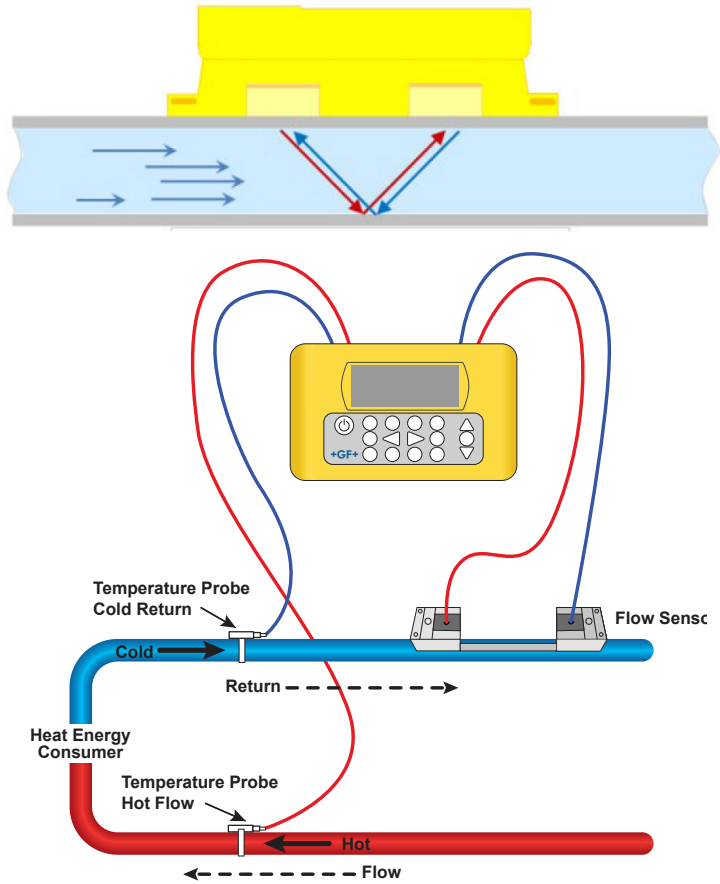


## Function

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