



PF-220 / PF-330

Portable Ultrasonic Liquid Flowmeters according to Transit Time Difference Method



Trust, but verify...

Non-contact ultrasonic measurement of liquid flow in pipes

- **fast**
- **comfortable**
- **accurate**



PF-220

Portable Ultrasonic Liquid Flowmeter according to Transit-Time Difference Method



- **Measurement through the pipe**
- **Non-contacting**
- **Easy to install**
- **For pipes up to 1000 mm**
- **Operating temperatures up to 135°C**
- **Reynoldsnumber correction**
- **Cost effective**
- **Ideally suited for difficult media**

Description:

The portable ultrasonic liquid flow meters of the PF series measure the flow in a closed pipe according to the transit-time difference method without the need for any mechanical parts to be inserted through the pipe wall.

Two ultrasonic transducers are mounted to the pipe with a fastening rail.

In the course of commissioning, individual data of the measuring point, like for example the medium, pipe material, pipe diameter, wall thickness etc., is entered into the transmitter. The ideal separation distance of the two transducers is then calculated by the transmitter in response to the entered data concerning the pipe and fluid characteristics.

In the measuring mode the transducers work alternating as emitter and receiver. The transit time of the ultrasound between the transducers is measured once in flow direction and once against the flow direction. Because the ultrasound transmitted in the same direction as the liquid flows is faster than against it, a time difference which is directly proportional to the flow velocity of the liquid and independent of the individual features of the fluid results.

The PF-220 is capable to transmit the recorded flow data as analog output or pulse output and also in alphanumeric text on the built-in LCD backlit graphic display as flow rate or velocity together with totalized values.

The internal battery of the PF-220 allows up to 20 hours of operating time, depending on the output utilisation and backlight usage. The PF-220 is delivered either with transducers A for pipe sizes 13 mm to 115 mm or with transducers B for pipe sizes 50 mm to 1000 mm. A combination of PF-220.A with transducers B or conversely PF-220.B with transducers A is not possible.

Range of application:

- Building services
- Leak detection
- Filter sizing and inspection
- Hydraulik system testing
- Balancing systems
- Pump verification
- Fuel oil measurement
- Ultrapure water
- Heavy fuel oil
- and much more...

Technical specifications:

accouterment

PF-220.A:

- evaluation unit with backlit graphic display
- 0/4...20 mA-output
- 5 Volt pulse output
- language options:
German, English, French,
Dutch, Italian, Norwegian,
Portuguese, Russian, Spanish
- transducers A or
pipe outer diameter 13...115 mm
temperature range -20°C up to +135°C
- extra strong IP67 carrying case from
PP foam inlay and
double walls, cable,
instruction manual, ancillary equipment
- transducer guide rails with all mounting
hardware
- test piece for confirmation of correct
system operation

The version PF-220.B contains the following

- transducers B for
pipe outer diameter 50...2000 mm
temperature range -20°C up to +135°C

instead of the transducers A. The rest of the equipment is similar.

Flow range: 0,1...20 m/s, bi-directional

Accuracy: ± 0,5% up to ± 2% of measuring value
for flow velocities > 0,2 m/s
and pipe inner diameters > 75 mm

± 3% of measuring value for
flow velocities > 0,2 m/s
and pipe inner diameters < 75 mm

Elektrical specifications:

Outputs: 0/4...20 mA opto-isolated,
5 V pulse output, max. 1 pulse/second

Display: 64 x 240 Pixel

Exposition: continuous display of battery status,
signal strength and
flow information
(counter and flow)

Keypad: 16 keys

Supply voltage: rechargeable battery or line
voltage 110...240 VAC ± 10%

**Battery
capacity:** 20 hours

Line voltage: 110...240 VAC, 50 Hz ± 10%

Approval: CE

Ordering codes:

Ordering number:

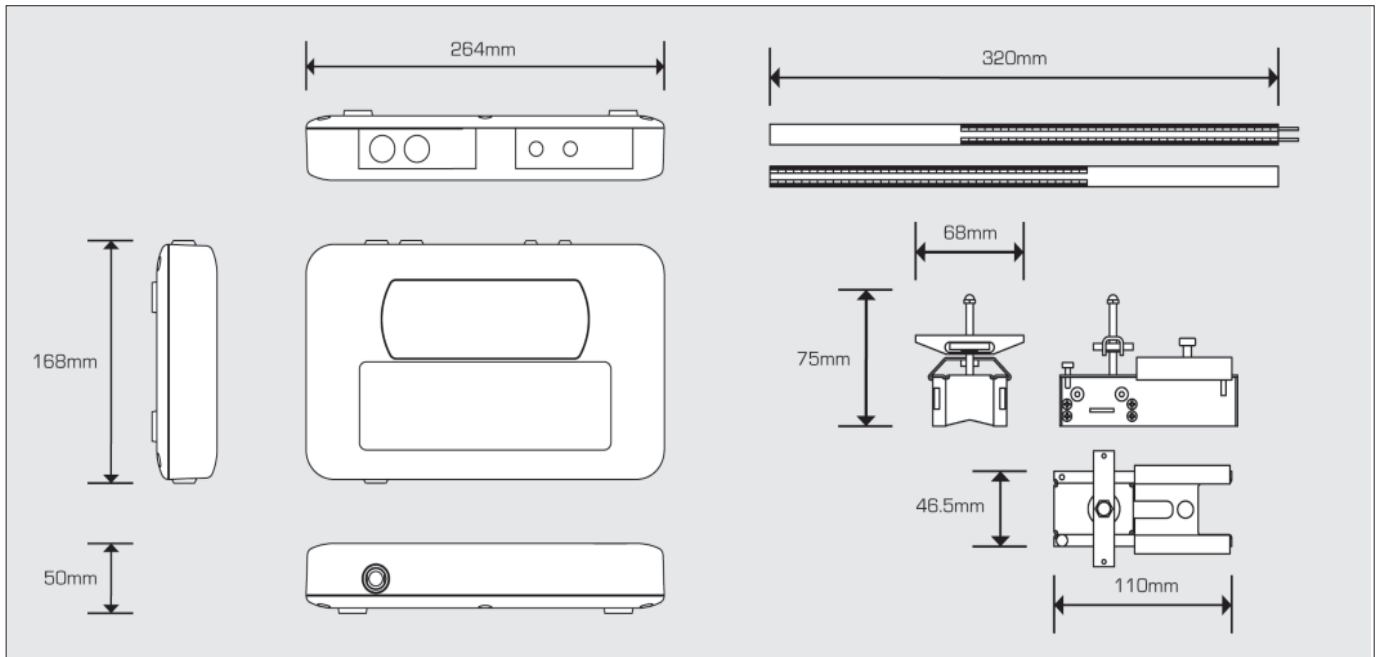
PF-220. A

Portable Ultrasonic Liquid Flowmeter
according to Transit Time Difference Method

Transducers:

- A = with transducers A for
pipe diameters 13...115 mm
- B = with transducers B for
pipe diameters 50...1000 mm

**Dimensions of housing
and guide rail:**





PF-330

Portable Ultrasonic Liquid Flowmeter according to Transit Time Difference Method

Description:

The portable ultrasonic liquid flow meters of the PF series measure the flow in a closed pipe according to the transit-time difference method without the need for any mechanical parts to be inserted through the pipe wall.

Two ultrasonic transducers are mounted to the pipe with a fastening rail.

In the course of commissioning, individual data of the measuring point, like for example the medium, pipe material, pipe diameter, wall thickness etc. is entered into the transmitter. The ideal separation distance of the two transducers is then calculated by the transmitter in response to the entered data concerning the pipe and fluid characteristics.

In the measuring mode the transducers work alternating as emitter and receiver. The transit time of the ultrasound between the transducers is measured once in flow direction and once against the flow direction. Because the ultrasound transmitted in the same direction as the liquid flow is faster than against it, a time difference which is directly proportional to the flow velocity of the liquid and independent of the individual features of the fluid results.

The PF-330 is capable to transmit the recorded flow data as analog output or pulse output and also in alphanumeric text or graph on the built-in LCD backlit graphic display as flow rate or velocity together with totalized values.

The internal battery of the PF-330 allows up to 20 hours of operating time depending on the output utilisation and back-light usage. The internal logger can store up to 98000 measured values. By use of the provided Windows® based software the logged data can be output directly to a PC using the RS232/USB interface or stored in the instrument's non-volatile memory for downloading at a later time.

Range of application:

- Building services
- Leak detection
- Filter sizing and inspection
- Hydraulik system testing
- Balancing systems
- Pump verification
- Fuel oil measurement
- Ultrapure water
- Heavy fuel oil
- and much more...

- **Measurement through the pipe**
- **Non-contacting**
- **Easy to install**
- **For pipes up to 5000 mm**
- **Operating temperatures up to 200°C**
- **Reynoldsnumber correction**
- **Cost effective**
- **Ideally suited for difficult media**

Technical specifications:

accouterment

PF-330.AB:

- evaluation unit with backlit graphic display
- built-in datalogger with 98K memory
- 0/4...20 mA-output
- 5 Volt pulse output
- RS232 and USB (both on board)
- language options:
German, English, French,
Dutch, Italian, Norwegian,
Portuguese, Russian, Spanish
- transducers A or
pipe outer diameter 13...115 mm
temperature range -20°C up to +135°C
- transducers B for
pipe outer diameter 50...2000 mm
temperature range -20°C up to +135°C
- extra strong IP67 carrying case from
PP foam inlay and
double walls, cable,
instruction manual, ancillary equipment
- transducer guide rails with all mounting
hardware
- test piece for confirmation of correct
system operation
- WINDOWS® based software package
which works with 95/98/2000/XP/Vista
operating systems

If the PF-330. A or the PF-330.B is ordered, the measuring system comes only with the one correlative transducer pair. The rest of the equipment is similar.

Ordering codes:

Ordering number:

PF-330.AB

Portable Ultrasonic Liquid Flowmeter
according to Transit Time Difference Method

Transducers:

- A = with transducers A for
pipe diameters 13...115 mm
- B = with transducers B for
pipe diameters 50...2000 mm
- AB = with both transducers A and B

Flow range: 0,1...20 m/s, bi-directional

Data logger: 98000 memory points, up to 20 recording blocks with different names, data is displayed either as graph or as text in graphic display in Real Time or from the memory and can be transmitted to a WINDOWS®-based PC via RS232 or USB interface.

Accuracy: ± 0,5% up to ± 2% of measuring value for flow velocities > 0,2 m/s and pipe inner diameters > 75 mm

± 3% of measuring value for flow velocities > 0,2 m/s and pipe inner diameters < 75 mm

Electrical specifications:

Outputs: 0/4...20 mA opto-isolated,
5 V pulse output, max. 1 pulse/second

Display: 64 x 240 Pixel

Exposition: continuous display of battery status, signal strength, time, date and flow information (counter and flow)

Keypad: 16 keys

Supply voltage: rechargeable battery or line voltage 110...240 VAC ± 10%

Battery capacity: 20 hours

Line voltage: 110...240 VAC, 50 Hz ± 10%

Approval: CE

Options: - transducers D for 1500...5000 mm with temperature range -20°C...+80°C

- transducers A and B in high temperature design -20°C...+200°C

Dimensions of housing and guide rail:

