



# TECHNICAL GUIDANCE

## PORTABLE ULTRASONIC CLAMP-ON FLOWMETER

# UL610P

### GENERAL

**UL610P** is a portable type Ultrasonic flowmeter for liquid flow measurement.

Just by clamping on the ultrasonic sensors outside the process pipe, liquid flow is measured anytime and anywhere.

### FEATURES

- ❑ Battery driven and Portable  
Besides AC power supply, UL610P is operated by rechargeable battery (24 hours).
- ❑ For almost all sizes and material of pipes  
Covering size 13-5000mm (Opt. 300-5000mm)  
Iron, stainless steel, PVC, other plastics, different lining materials.
- ❑ Any liquids can be measured.
- ❑ Easy storage and carrying  
All necessary parts for measurement are stored in hard plastic box for easy storage and transfer.
- ❑ High function  
Status data, error message and battery alarm in addition to flowrate and totalization are equipped with display function. And various output functions (Current, Pulse and Interface RS232) are also applicable.
- ❑ Pipe wall temperature measurement
- ❑ Measured data storage and easy transfer to PCs
- ❑ Piping setting data memory function  
The data such as outside diameter of piping, thickness and material can be memorized up to 20 points at maximum.



### MAIN APPLICATIONS

- 1) Accuracy confirmation of existing flowmeters  
Just bring UL610P to subject pipe line and check the flow rate. This can confirm accuracy of existing flowmeters. Thus, this portable flowmeter can be used for regular maintenance work.
- 2) Flow measurement of process without flowmeters  
Many pipelines require installing the flowmeters. However price is expensive.  
In such a case, UL610P is available for many places by one unit.
- 3) Checking of pump capacity  
It is convenient to check the flow characteristic of a pump.
- 4) Temporary flow measurement  
UL610P is useful when flow measurement is required at several places only at plant commissioning.
- 5) Since sensors do not contact liquid, there is no concern about corrosion. Lining piping is also supported.

**STANDARD SPECIFICATION**

**Data of pipeline**

Pipe  
 Inside diameter : 13~260mm (Opt. ~5000mm)  
 Pipe thickness : < 75mm  
 Pipe material : Metal and plastic, coated and lined pipeline  
 (Coating and liner fully bonded to pipeline)

Fluid : Ultrasonic conductive, clean and homogeneous liquids  
 Temperature : -25~+200 °C  
 Reynolds number : Re > 10000  
 Solids and gas contents : < 3% by volume

Accuracy  
 Flow velocity  $\geq 1\text{m/s}$  :  $\pm 2.0\%$  of measured value  
 Flow velocity < 1m/s :  $\pm 0.02\text{m/s}$   
 The lowest flow velocity of guaranteed accuracy : 0.05m/s

Required straight run  
 Upstream : Min. 20D  
 Downstream : Min. 10D  
 [D: Nominal diameter]

**Sensors**

Sensor type

Sensor type	A	B	C	D
	Standard		Option	
Inside diameter(mm)	13~89	90~260	300~600	700~5000
Standard installation	Reflex mode	Reflex mode	Diagonal mode	Diagonal mode
Temperature (°C)	-20~200	-20~200	-20~200	*-20~80

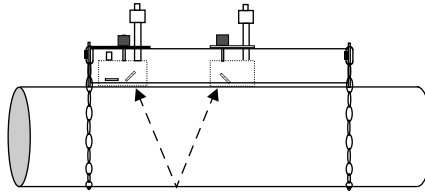
\*When using the sensor type D, piping temperature measurement function is not available.

**Materials**

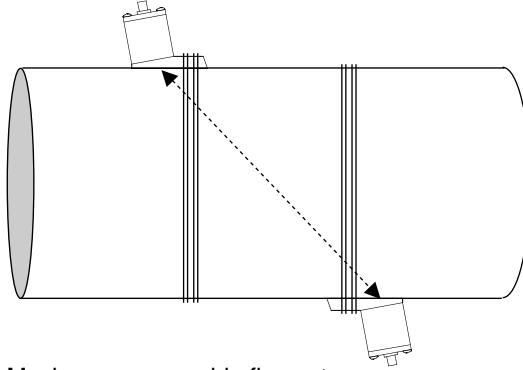
Sensor housing : Polyetheretherketone (PEEK)  
 Guide rail : Aluminium alloy  
 Protection category : IP65 (equivalent to NEMA4/4X)  
 Cable length (Sensor~Converter)  
 : Sensor cables 3m x 3 provided

**Sensor installation**

[Reflex mode] Sensor type A, B, C



[Diagonal mode] Sensor type D



Maximum measurable flow rate :

Nominal dia. mm	*Flow rate m³/h	Sensor type	Sensor installation
15	4	A standard	Reflex mode
50	47	A standard	Reflex mode
80	85	A standard	Reflex mode
100	175	B standard	Reflex mode
125	220	B standard	Reflex mode
150	270	B standard	Reflex mode
200	365	B standard	Reflex mode
250	450	B standard	Reflex mode
300	1500	C Option	Reflex mode
600	3000	C Option	Reflex mode
1000	10000	D Option	Diagonal mode
5000	60000	D Option	Diagonal mode

\*Flow rate may be changed a little, depending on piping specifications.

### Converters

- Power supply : Integrated rechargeable battery  
(24h continuous operation on 15h recharging)
- AC adapter : AC90~257V, 50/60Hz,  
Power consumption : 9VA  
Charging output : DC9V, 1A
- Display:  
Display function : Flowrate, Totalizer, Message of output and errors, Pipe wall temperature or Battery level
- Unit;  
Flow : m<sup>3</sup>/h, m<sup>3</sup>/min, m<sup>3</sup>/s, L/min, L/s, Gallon/min, K Gallon/h  
Flow velocity : m/s, ft/s  
Totalizer : m<sup>3</sup>, L, Gallon, US Gallon  
Temperature : °C  
Language : English or German
- Current output  
Current : 4-20mA, 0-20mA or 0-16mA  
Max.load : 750 Ω
- Pulse output  
Amplitude : 5V  
Pulse rate for Q = 100% : 1 pulse/s or 100pulse/s  
Max. load : 1k Ω
- Interface : RS232C
- Time constant : 3~100s
- Low flow cutoff : Selectable 0~1m/s
- Dimensions : 275x150x55mm  
Weight: Approx : 1.5kg
- Carrying case  
Material : Hard plastic  
Protection category : IP65 (equivalent to NEMA4/4X)  
Ambient temperature : - 0~60°C (Operating)  
-25~60°C (Storage)

### Parts & accessories

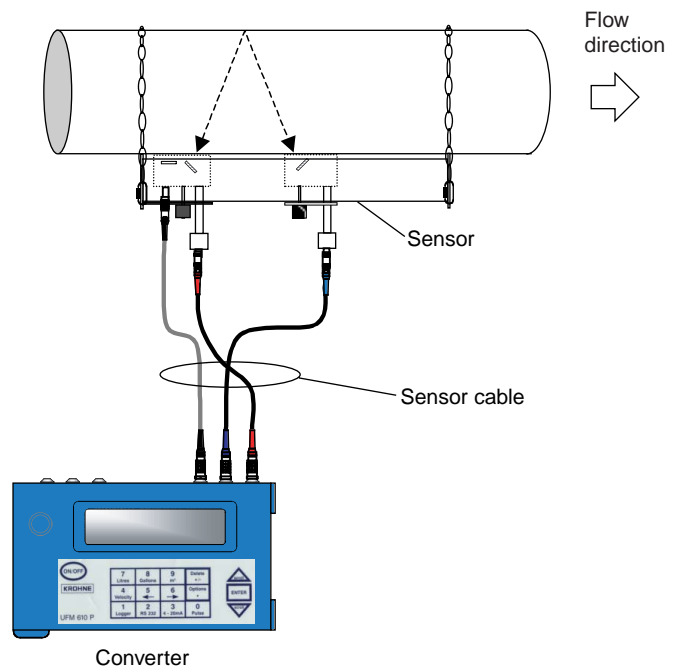
Item	Quantity
Converter	1
Guide rail assembly "A" for sensor pipe ID 13~89mm	1
Guide rail assembly "B" for sensor pipe ID 90~260mm	1
Guide rail for use in diagonal mode	1
Large pipe chain	4
Sensor cables	3x3m
Cables (4-20mA/Pulse output)	1
Cables (RS232C)	1
Sensor grease	1
Power supply with adapters	1
Instruction manual	1
Carrying case	1

#### \*Options

Guide rail assembly "C" for sensor pipe ID300~600mm	1
Guide rail assembly "D" for sensor pipe ID700~5000mm	1

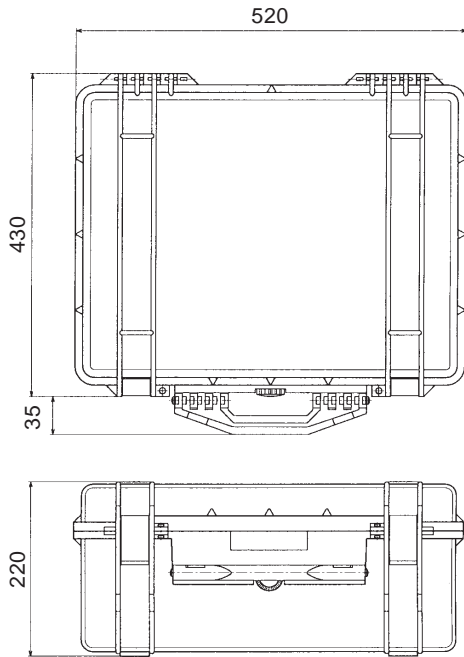
Sensor D is with ratchet fixed band.

### WIRING



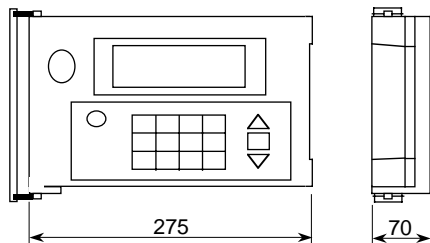
**DIMENSION**

[Carrying case]



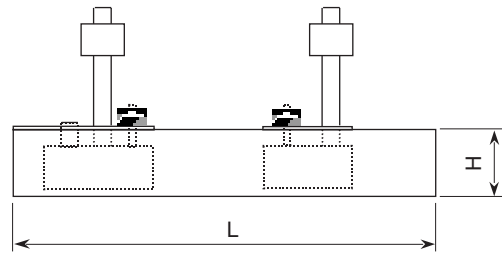
Weight : Approx. 10.5kg  
(A set of standard goods)

[Converter]

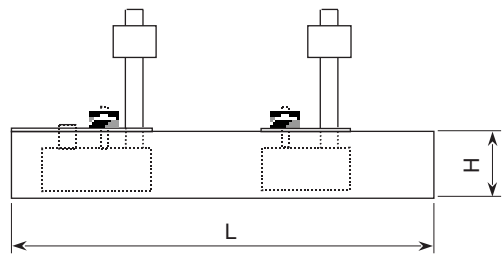


Weight : Approx. 1.5kg

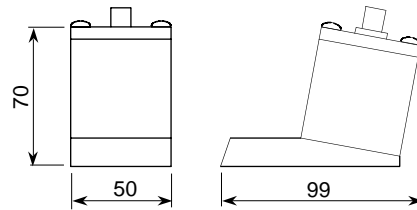
[Sensor]



Sensor A



Sensor B, C



Sensor D

Weight : Approx. 1kg  
for 2 pieces

Sensor	Dimension (mm)		Weight (kg)
	L	H	
A	250	38	0.4
B	375	50	0.65
C			

\* Specification is subject to change without notice.

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