

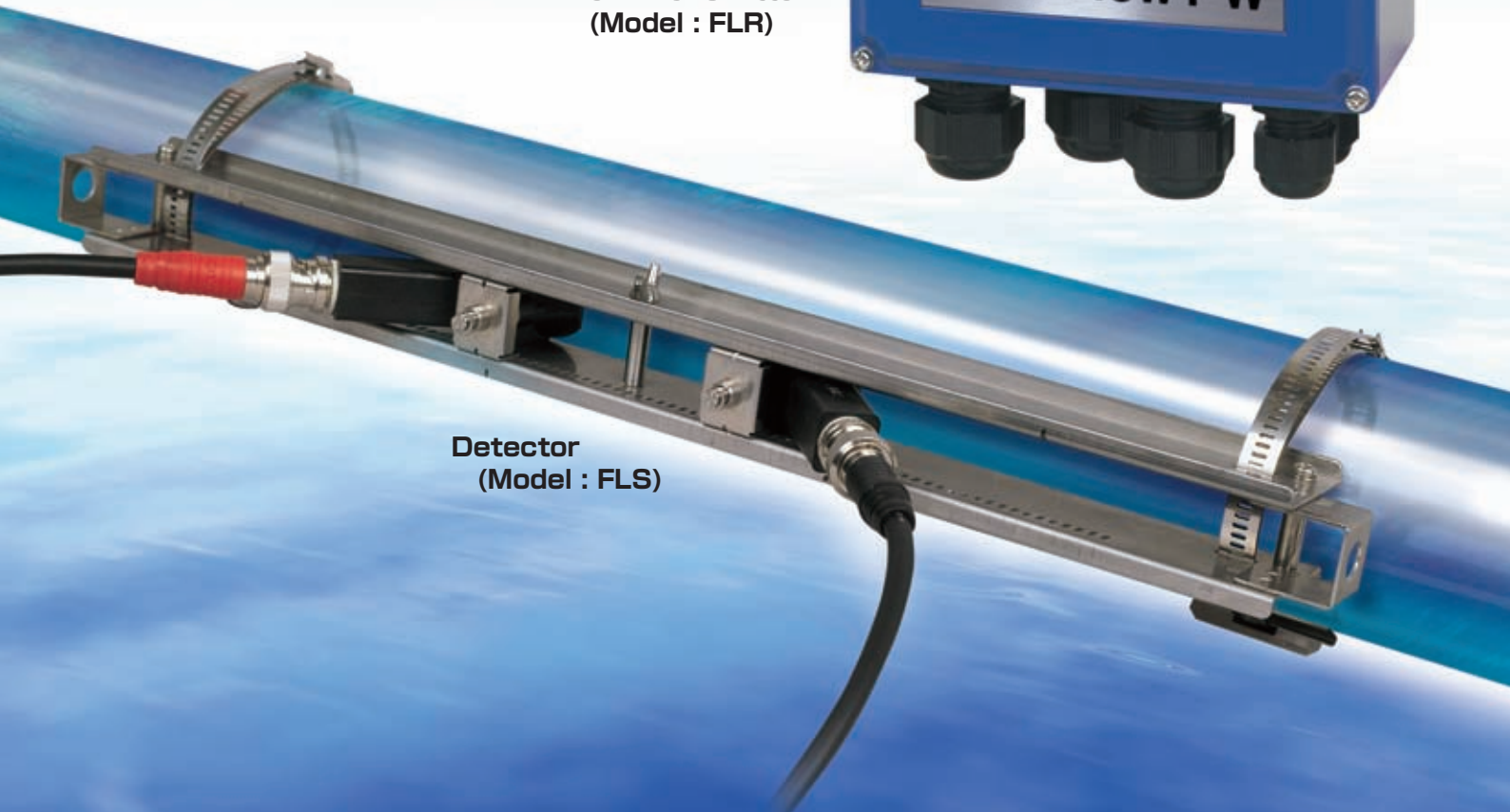
# Ultrasonic Flowmeter M-Flow PW

**Small size**  
**140 × 130mm**

**Flow Transmitter**  
(Model : FLR)



**Detector**  
(Model : FLS)



## Affluent experience in Ultrasonic flow measurement

Fuji Electric has over 25 years experience in development and manufacturing of ultrasonic flowmeters.

More than 30,000 units have been installed all over the world.

We are introducing M-Flow PW Ultrasonic Flowmeter, which is middle class model of our ultrasonic flowmeter line up.

The M-Flow PW is ideal for clean liquids containing no air bubbles such as pure water.

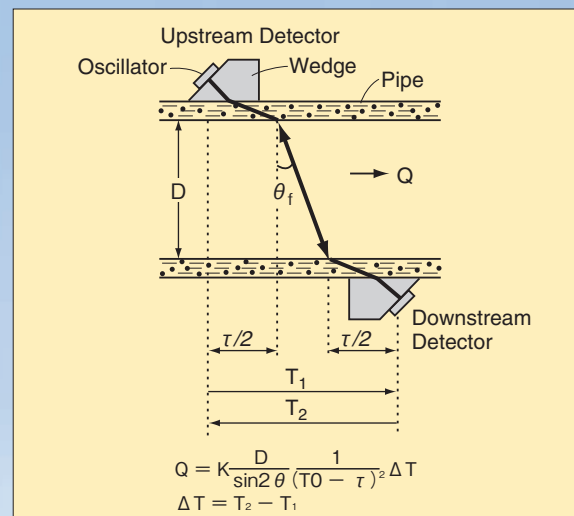


## Basic Measuring Principle "TRANSIT-TIME Method"

This ultrasonic flowmeter measures flow rate by utilizing the TRANSIT-TIME Method.

Simply, two ultrasonic detectors are mounted on the pipe exterior. Each transmits an ultrasonic pulse to the opposite detector. The difference in the transit time of the two waves is used to calculate the flow velocity.

Compared to the other popular principle, "Doppler", "TRANSIT-TIME" has better performance in accuracy and measurable flow range.



## Wide-Range of Applications

### ● Semiconductor Manufacturing

Install on pure water feed lines / pure water manufacturing.

### ● Water Treatment

Locate water leaks or determine flow direction in service pipes.

### ● District Heating

Measurement of cooling water and heating water.

### ● Food and Beverage

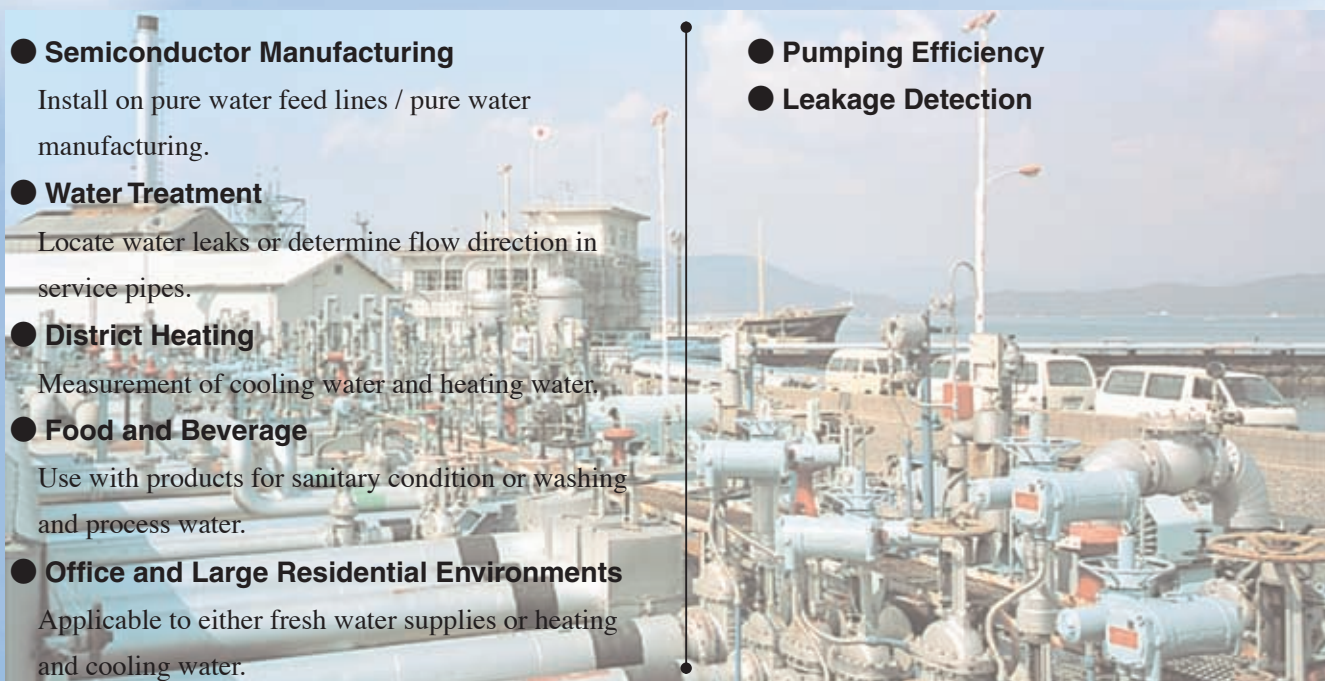
Use with products for sanitary condition or washing and process water.

### ● Office and Large Residential Environments

Applicable to either fresh water supplies or heating and cooling water.

### ● Pumping Efficiency

### ● Leakage Detection





# Features

Our technical breakthrough based on years of experience and the adoption of the latest digital technology, enabled Fuji's ultrasonic flowmeters to provide remarkable features;

## ■ Small size and light weight

Dimensions : 140 (H) × 130 (W) × 69 (D) mm

Mass : 0.8kg (Transmitter) , 0.3 / 0.4 / 0.6kg (Detector)

## ■ Quick response :

High speed calculation of 0.2 sec applicable for short batch process

## ■ Not influenced by fluid's temperature / pressure change

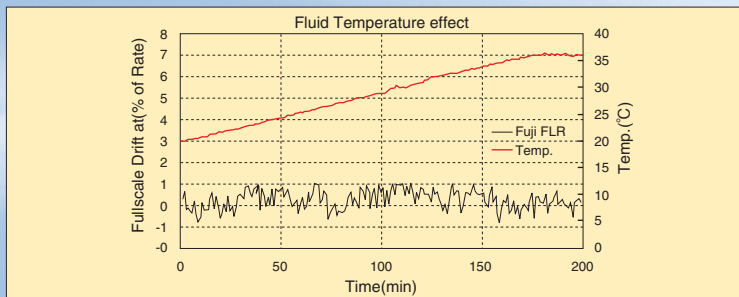
Adoption of "Sound Velocity Measurement system."

### Sound Velocity Measurement System<sup>PAT.</sup>

-Auto Calculation of unknown sound velocity

-Auto-Temp./Press. Compensation

Sound velocity of measured fluid is influenced while pressure and temperature change. "Sound Velocity Measurement System<sup>PAT.</sup>" realizes temp./press. compensation which is essential for precise flow velocity measurement, by measuring sound velocity of measured fluid at every measuring cycle.



## ■ Easy mounting clamp-on sensor

## ■ Easy operation by external keypads

## ■ Multilingual : English / German / French / Spanish supported

## ■ Plastic housing with IP65

## ■ Communication function (option) :

RS-485/ RS-232C

## ■ Synchronization (option) :

Cross-talk or acoustic interference eliminated.

## Flow Transmitter (Model : FLR)



**Middle class  
Model  
appropriate  
for Machine  
Mounting**

## Detector (Model : FLSE12)



## Detector (Model : FLSE22)



## Detector (Model : FLSE31)



## Detector (Model : FLSE41)

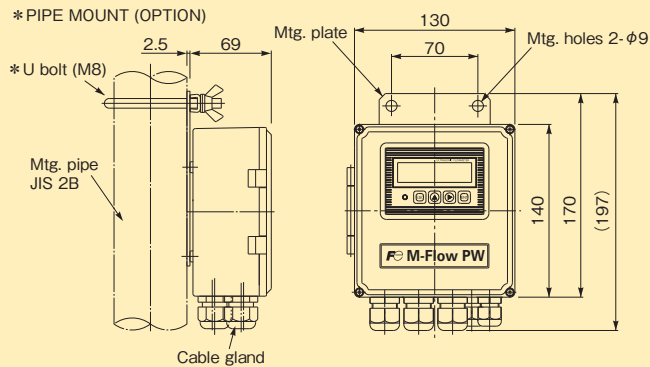


# Specification

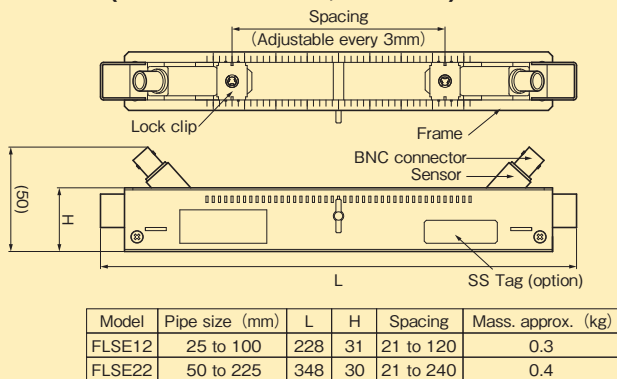
Model	FLR (Flow Transmitter), FLS (Detector)			
Type of detector applicable inside & diameter fluid temperature	Small dia detector (type : FLSE12) : $\phi 25$ to $\phi 100$ mm (V method) ( $-20$ to $+100^{\circ}\text{C}$ or $+120^{\circ}\text{C}$ ) Small detector (type : FLSE22) : $\phi 50$ to $\phi 225$ mm (V method) ( $-20$ to $+100^{\circ}\text{C}$ or $+120^{\circ}\text{C}$ ) Small detector (type : FLSE31) : $\phi 50$ to $\phi 300$ mm (V method) ( $-20$ to $+80^{\circ}\text{C}$ ) Small detector (type : FLSE41) : $\phi 300$ to $\phi 600$ mm (Z method) ( $-20$ to $+80^{\circ}\text{C}$ )			
Measurement range	Flow rate 0 to $\pm 0.3\text{m/s}$ ... $\pm 10\text{m/s}$			
Measured fluid	Clean liquids that pass ultrasound and do not contain air bubbles.			
Accuracy Straight length of pipe shall be 10D up stream, 5D down stream.	Pipe material	Pipe diameter	Velocity : 2m/s or higher	Velocity : Less than 2m/s
	Plastic	Less than $\phi 50$ mm	$\pm 2.5\%$ of rating	$\pm 0.05\text{m/s}$
		$\phi 50$ to $\phi 600$ mm	$\pm 1.5\%$ of rating	$\pm 0.03\text{m/s}$
Metal	$\phi 50$ to $\phi 600$ mm	$\pm 2\%$ of rating	$\pm 0.04\text{m/s}$	
Response	Dead time : 0.2s or less, Time constant : 0.1s			
Display	16digits, 2lines (LCD with backlight)			
Analog output	4 to 20mA DC, 1point			
Digital output	Open collector : 1point, Relay contact : 1point			
Communication interface (option)	RS-232C or RS-485			
Cable length	30m max.			
Ambient temperature	Flow Transmitter : $-20^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ Singal cable : $-20^{\circ}\text{C}$ to $+100^{\circ}\text{C}$ Detector : $-20^{\circ}\text{C}$ to $+60^{\circ}\text{C}$			
Display function	<ul style="list-style-type: none"> <li>Actual scale display of instantaneous flow rate and flow velocity</li> <li>Actual scale display of normal / reverse total volume</li> <li>Self-diagnosis by 2-color LED</li> </ul>			
Display language	English, French, German or Spanish selectable			
Automatic range selection	Automatic forward 2-range selection			
Temp./press. compensation	Sound Velocity Measurement System <sup>PAT</sup>			
Power supply	100 to 120V AC or 200 to 240V AC 50/60Hz or 20 to 30V DC			
Enclosure protection	IP65 for both transmitter and detector (When water-proof BNC connector is provided)			

## Outline Diagram (Unit : mm)

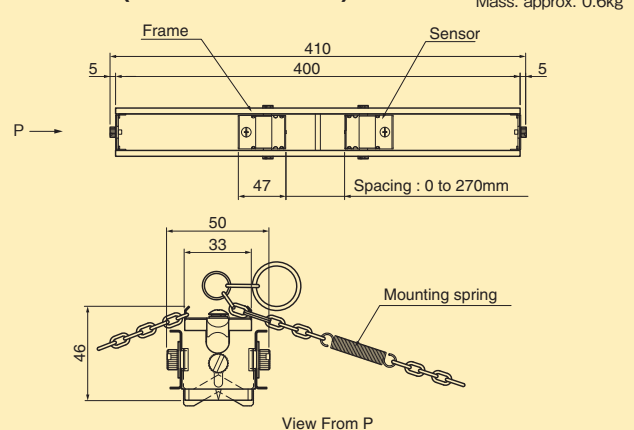
### Flow Transmitter (Model : FLR)



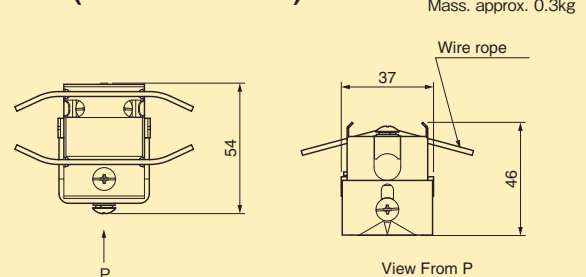
### Detector (Model : FLSE12, FLSE22)



### Detector (Model : FLSE31)



### Detector (Model : FLSE41)



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