

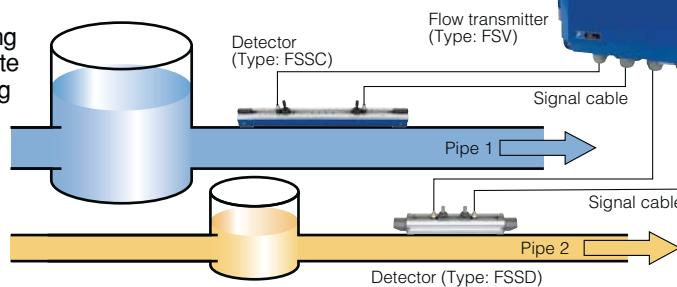
Advanced type

# Ultrasonic flowmeter TIME DELTA-C

**Dual-channel/dual-path measurement and energy calculation... now available!**

## 1 Simultaneous measurement of dual-channel flow with one transmitter

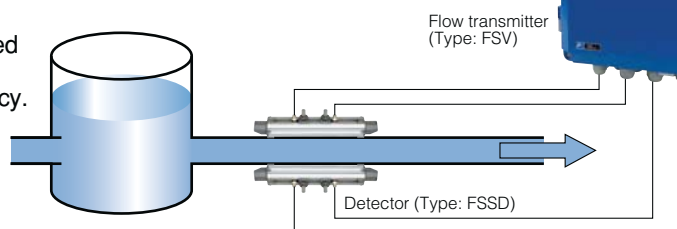
Capable of measuring flow rate in 2 separate pipes, and calculating average, totaled value, and difference.



- **Analog output**  
(4 to 20mA DC) 2 points  
Selectable up to 2 items from the list below.  
(1) Path 1 flow rate  
(2) Path 2 flow rate  
(3) Average value  
(4) Added value  
(5) Subtracted value
- **Contact pulse output**  
(4 points)  
Totalized flow, alarm etc.
- **RS-485 (MODBUS) communication**

## 2 High-accuracy measurement using 2-path system for 1 pipe

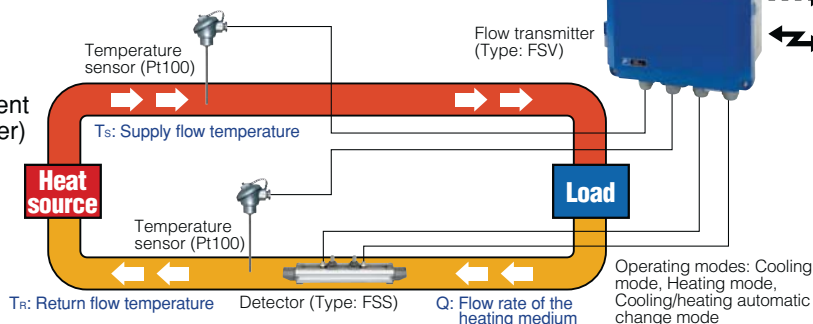
Non-uniform liquid flow can be averaged by 2-path system to provide high accuracy.



- **Analog output**  
(4 to 20mA DC) 2 points  
Selectable up to 2 items from the list below.  
(1) Average value  
(2) Path 1 flow rate  
(3) Path 2 flow rate
- **Contact pulse output**  
(4 points)  
Totalized flow, alarm etc.
- **RS-485 (MODBUS) communication**

## 3 Measurement of the energy consumption in cooling and heating system

Calculates the thermal energy received and sent with liquid (water) in cooling and heating.



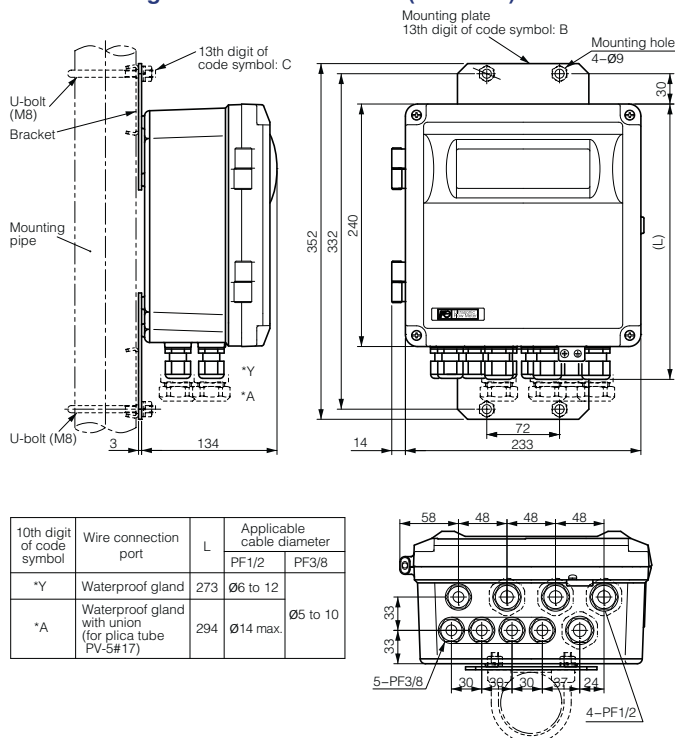
- **Analog output**  
(4 to 20mA DC) 2 points  
Selectable up to 2 items from the list below.  
(1) Flow rate of the heating medium  
(2) Consumed energy
- **Contact pulse output**  
(4 points)  
Totalized energy, temperature alarm, changeover of cooling/heating, etc.
- **RS-485 (MODBUS) communication**

Operating modes: Cooling mode, Heating mode, Cooling/heating automatic change mode

## ■ Specification: Flow transmitter for energy measurement

Input signal	1) Two input signals from resistance bulb (Pt100, 3-wire) (One for supply and one for return temperature) 2) Flow velocity signal from detector of return side
Analog output signal	4 to 20mA DC, 2 points Flow rate of return side, consumed energy
Digital output	Isolated open collector output, 4 points Totalized energy, temperature alarm, changeover of cooling/heating, forward and reverse totalization, alarm, acting range, flow switch, totalization switch assignable arbitrarily
Calculation formula	Calculates the thermal energy received and sent with liquid (water) in cooling and heating. Consumed energy (q) = K · Q ·  T <sub>S</sub> - T <sub>R</sub>   K: Thermal coefficient (for heating K = 4.123) (for cooling K = 4.186) T <sub>S</sub> : Supply flow temperature T <sub>R</sub> : Return flow temperature Q: Flow rate of the heating medium
Totalized value indication	8-digit numerals (decimal point is counted as 1 digit), two-line display Thermal energy flow: MJ/h, GJ/h, BTU/h, kBTU/h, MBTU/h, kWh, MWh
*unit is selectable	Totalized energy: MJ, GJ, BTU, kBTU, MBTU, kW, MW
Operation mode	Cooling mode, Heating mode, Cooling/heating automatic change mode
Temperature input	Resistance bulb (Pt100, 3-wire), input range: -40 to +200°C
Temperature indication	°C or K

## ■ Outline diagram of flow transmitter (unit: mm)



## ■ Specification: Flow transmitter for 2-channel measurement

Input signal	Flow velocity signals from two detectors
Analog output signal	4 to 20mA DC, 2 points Selectable up to 2 items from the list below. (1) Path 1 flow rate (2) Path 2 flow rate (3) Average value (4) Added value (5) Subtracted value
Digital output	Isolated open collector output, 4 points Forward and reverse totalization, alarm, acting range, flow switch, totalization switch assignable arbitrarily
Flow rate indication	8-digit numerals (decimal point is counted as 1 digit), two-line display

## ■ Common specification

Detector	Type	Applicable pipe size (inner diameter) (mm)	Fluid temperature range (°C)	Mounting method
	FSSA	25 to 225	-20 to +100	V method
	FSSC	50 to 1200	-40 to +120	V or Z method
	FSSD	13 to 100	-40 to +100	V method
	FSSE	200 to 6000	-40 to +80	V or Z method
	FSSH	50 to 400	-40 to +200	V or Z method
Applicable pipe material	Plastic, etc. Metal pipe (SS, steel pipe, copper pipe, aluminum pipe, etc.)			
Response time	0.5 sec. (0.2 sec. depending on setting)			
Accuracy rating	±1.0% of rate			
Power supply voltage	100 to 240VAC 50/60Hz			

## ■ Code symbol for flow transmitter

Digit	Description	FSV
4	<Display> Japanese English	4 5 6 7 8
5	<Communication> None RS-485 (MODBUS)	9 10 11 12 13
6	<Use> 2-path/2-channel Single path/energy calculation	
7	<Power supply voltage> 100 to 240VAC 50/60Hz	
8	<Modification No.>	
9	<Case structure> IP67	
10	<Wire connection port> Waterproof gland Waterproof gland with union (for plica tube)	
11	<Dampproofing> None Provided	
12	<Parameter setting and tag> None Setting provided Setting provided + tag Tag	
13	<Mounting method> Wall mount Pipe mount	

## Easy installation on existing pipe! Pipe diameters from Ø13 to Ø6000mm

### Small diameter type

(Type: FSSD)

Fluid temperature: 100°C max.  
Pipe size: Ø13 to Ø100mm



### Compact type

(Type: FSSA)

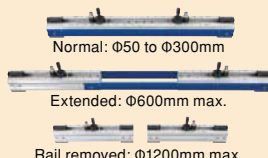
Fluid temperature: 100°C max.  
Pipe size: Ø25 to Ø225mm



### Extendable rail type (Type: FSSC)

Fluid temperature: 120°C max.

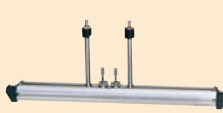
Pipe size: Ø50 to Ø1200mm



### High temperature type

(Type: FSSH)

Fluid temperature: 200°C max.  
Pipe size: Ø50 to Ø400mm



### Large diameter type

(Type: FSSE)

Fluid temperature: 80°C max.  
Pipe size: Ø200 to Ø6000mm



# Fuji Electric

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