Fuji Electric

Innovating Energy Technology

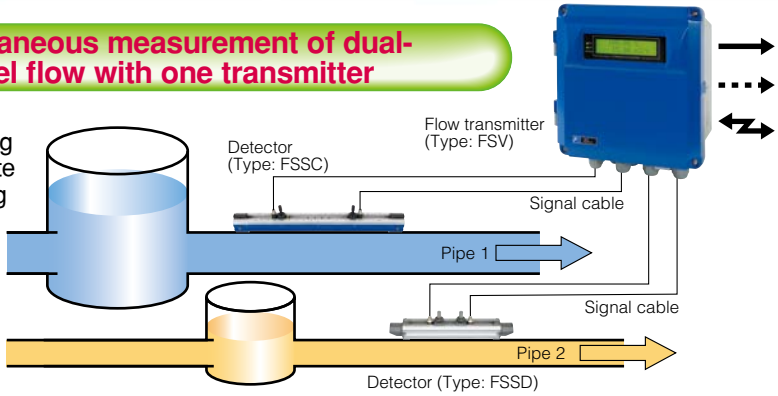
Advanced type

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

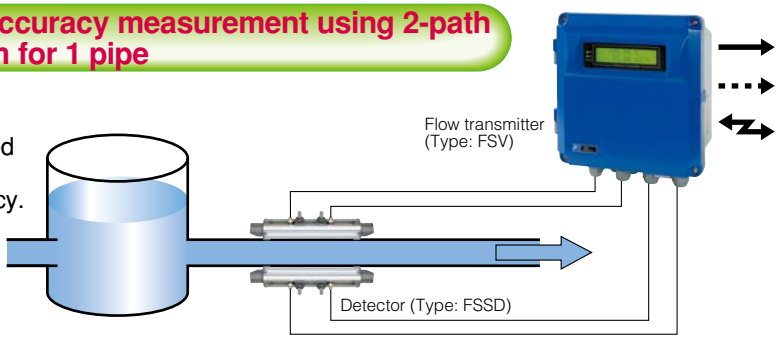
Capable of measuring flow rate in 2 separate pipes, and calculating average, totalized value, and difference.



- 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

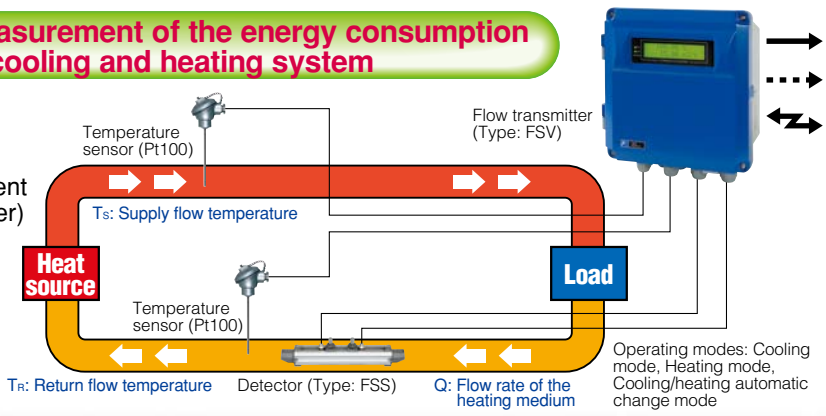
Non-uniform liquid flow can be averaged by 2-path system to provide high accuracy.



- 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.



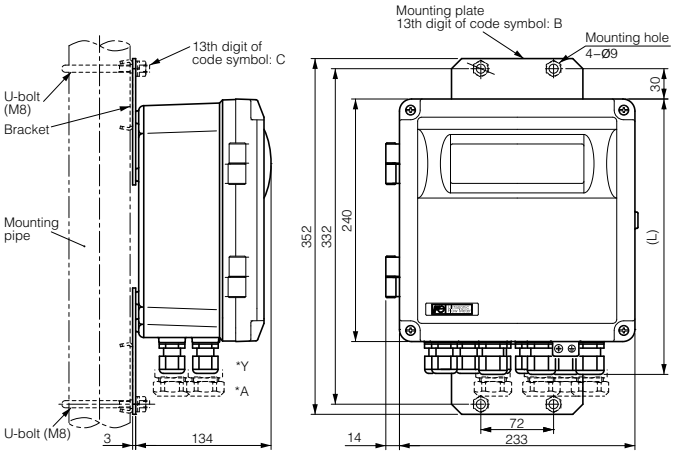
- Analog output
  (4 to 20mA DC) 2 points
  Selectable up to 2 items from the list below.
  (1) Flow rate of the heating medium
  (2) Consumed energy
- Contact pulse output
  (4 points)
  Totalized energy, temperature alarm, changeover of cooling/heating, etc.
- RS-485 (MODBUS) communication

21A1-E-0024

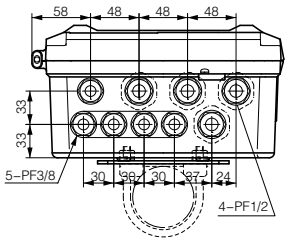
■ Specification: Flow transmitter for energy measurement

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) = $K \cdot Q \cdot \lvert T_S - T_R \rvert$ K: Thermal coefficient (for heating K = 4.123) (for cooling K = 4.186) T_S: Supply flow temperature T_R: Return flow temperature Q: Flow rate of the heating medium
Totalized value indication *unit is selectable	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 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)



10th digit of code symbol	Wire connection port	L	Applicable cable diameter	
			PF1/2	PF3/8
*Y	Waterproof gland	273	Ø6 to 12	Ø5 to 10
*A	Waterproof gland with union (for plica tube PV-5#17)	294	Ø14 max.	



■ 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

FSV 4 5 6 7 8 – 9 10 11 12 13 : 1 2 L

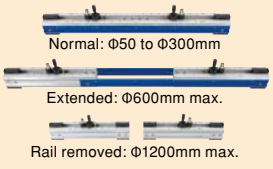
Digit	Description
4	<Display> Japanese English
5	<Communication> None RS-485 (MODBUS)
6	<Use> 2-path/2-channel Single path/energy calculation
7	<Power supply voltage> 100 to 240VAC 50/60Hz
8	<Modification No.>
9	<Case structure> IP67
10	<Wire connection port> Waterproof gland Waterproof gland with union (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 fromØ13 to Ø6000mm

Small diameter type (Type: FSSD)
Fluid temperature: 100°C max.
Pipe size: Φ13 to Φ100mm

Compact type (Type: FSSA)
Fluid temperature: 100°C max.
Pipe size: Φ25 to Φ225mm

Extendable rail type (Type: FSSC)
Fluid temperature: 120°C max.
Pipe size: Φ50 to Φ1200mm



High temperature type (Type: FSSH)
Fluid temperature: 200°C max.
Pipe size: Φ50 to Φ400mm

Large diameter type (Type: FSSE)
Fluid temperature: 80°C max.
Pipe size: Φ200 to Φ6000mm

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