

Ultrasonic Flowmeters

Reliable flow measurement
for steam, liquids, and air



Innovative solutions for various applications

Clamp-on ultrasonic flowmeter for steam

Fuji Electric's proprietary high-sensitivity ultrasonic sensor and noise-reduction technology enable clamp-on flow measurement of saturated steam.

Principle: transit time difference method

Applications

Flow rate measurement of saturated steam used for heating, drying, sterilization, cleaning, and distillation at factories and buildings.



Clamp-on ultrasonic flowmeter for liquids

- Easy installation
- Integrated detector and flow transmitter
- Optional built-in pipe-surface temperature sensor and RS-485 communication for simultaneous flow and temperature monitoring.

Principle: transit time difference method with three parallel measuring paths *2

Applications

Flow measurement of ultra-pure water in semiconductor plants, paint and coating materials in painting processes, water in air-conditioning systems and drainage.



- No piping work required - cost saving
- Installation without interrupting plant operation
- Non-contact, low-maintenance sensor
- Wide selection

Principle: transit-time difference method

Applications

Flow measurement of ultra-pure water in semiconductor plants, paint and coating materials in painting processes, water in air-conditioning systems, and drainage.



Ultrasonic flowmeter for air

- No flow disturbance inside the pipe - no pressure loss
- Compatible with a wide range of pipe diameters
- Tolerant to oil mist - no need for filter such as mist separator

Principle: transit-time difference method *1

Applications

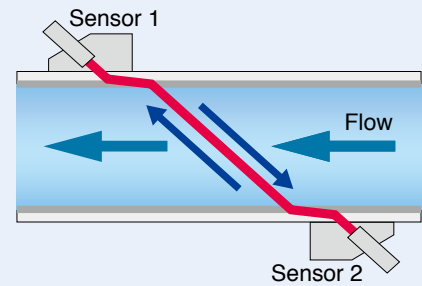
Visualization of compressed air consumption, early detection of air leakage.



Principle





Transit-time difference method

A pair of sensors is installed on the outside wall of the pipe, facing each other diagonally. The sensors emit ultrasonic pulses alternately and detect the difference in transit time, from which the flow rate is calculated.



Selection Guide

✓✓ best suitable ✓ suitable × not applicable

		[For steam] Clamp-on	S-Flow	[For liquid] Clamp-on			[For air]		
				TIME DELTA-C	TIME DELTA-C advanced type	M-Flow PW		Portable type	
Flow transmitter		FSJ	FSZ	FSV	FSV	FLR	FSC	FWD	
Detector		FSX		FSS	FSS	FSS	FSS		
									
Principle		Transit time						Transit time	
Bubble resistance		—	Good					—	
Applicable fluids	Clean, no air bubbles	×	✓✓	✓✓	✓✓	✓✓	✓✓	Air N ₂	
	Sewage, drainage	×	✓	✓	✓	✓	✓		
	High-viscosity	×	✓	✓	✓	✓	✓		
	Oil	×	✓	✓	✓	✓	✓		
	Corrosive	×	✓✓	✓✓	✓✓	✓✓	✓✓		
	Polishing slurry	×	Conditionally applicable						
	Fibrous slurry	×							
	Low-velocity	×	✓	✓	✓	✓	✓		
	Pulsating	×	×	Conditionally applicable					
	Saturated Steam	✓✓	×	×	×	×	×		
	High temperature	×	✓	✓	✓	✓	✓		
High-pressure	×	✓✓	✓✓	✓✓	✓✓	✓✓			
Pipe size (DN)		50, 65, 80, 100	8, 10, 15, 20, 25, 32, 40, 50	See Table on Page 9.			25, 32, 40, 50, 65, 80, 100, 150, 200		
Fluid temperature		120°C to 180°C	Standard: -15°C to 85°C				-10°C to 60°C		
No. of path		1	1	1	1 or 2	1	1	1	
Flow velocity range		0 ... ±30 m/s 0 ... ±50 m/s	Min 0...±0.2 m/s Max 0...±5 m/s	Min 0...±0.3 m/s Max 0...±32 m/s	Min 0...±0.3 m/s Max 0...±32 m/s	Min 0...±0.3 m/s Max 0...±10 m/s	Min 0...±0.3 m/s Max 0...±32 m/s	Min 0...±0.6 m³/h Max 0...±2000 m³/h	
Minimum accuracy (% of rate)		±3.0%, ±5.0%	±2.0%	±1.0%		±1.5% (±1.0% version available)	±1.0%	±2.0%	
Response time		0.2 s	0.5 s	≤ 0.2 s			≤ 1 s	≤ 0.5 s	
4–20 mA output		✓	✓	✓	✓	✓	✓	✓	
Pulse output		✓	✓	✓	✓	✓	—	✓	
Alarm output		✓	✓	✓	✓	✓	—	✓	
Communication		RS-485					SD card, USB port	—	
Energy consumption calculation		—	—	—	✓ *1	—	✓ *2	—	
Power supply		100–240 V AC, 50/60 Hz	20–27.5 V DC	100–240 V AC, 50/60 Hz or 20–30 V DC	100–240 V AC, 50/60 Hz	100–240 V AC, 50/60 Hz or 20–30 V DC	100–240 V AC, 50/60 Hz Built-in battery	Lithium-ion battery or 24 V DC	
Cable between detector and transmitter		≤ 30 m	—	≤ 150 m		≤ 60 m	≤ 150 m	—	
Dimensions (in mm)		240 × 247 × 134	45.5 × 120 × 42	170 × 142 × 70	240 × 247 × 134	140 × 137 × 68	210 × 120 × 65	—	
Weight		5.5 kg	0.4 kg - 0.8 kg	1.5 kg	5.0 kg	0.8 kg	1.0 kg	1.1 kg–24.1 kg	

Notes: *1. Temperature sensor is not provided.

*2. Temperature sensor and signal converter are not provided.

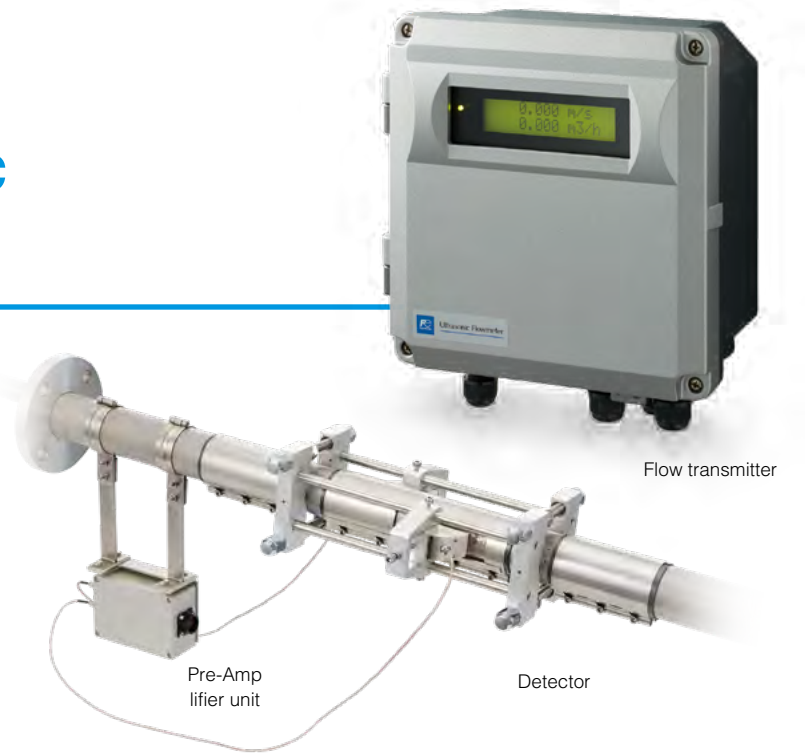
*Measurement may be unavailable depending on conditions.

Clamp-on type for measuring
saturated steam flow rate

Clamp-on ultrasonic flowmeter for steam

Flow transmitter: FSJ Detector: FSX

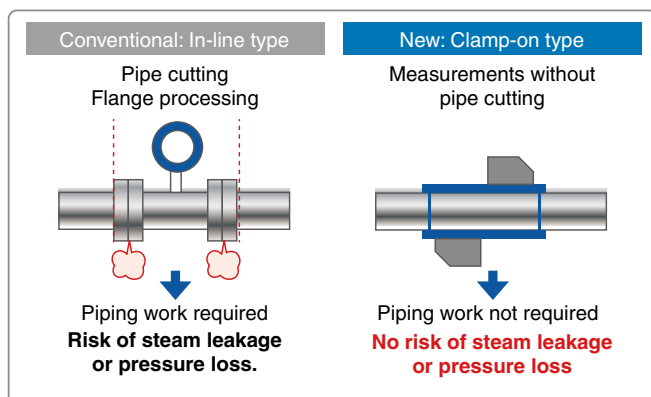
Provides clear visualization
of steam flow and works with
EMS to optimize usage
and improve energy savings



- Installation without shutting down the steam line - No piping work required
- Effective use of steam energy without pressure loss
- Lower maintenance costs thanks to the absence of moving parts

Transit time difference method

Installation requires no pipe cutting or flange work, and can be performed without stopping production. With no modifications to the steam line, there is no risk of leakage.

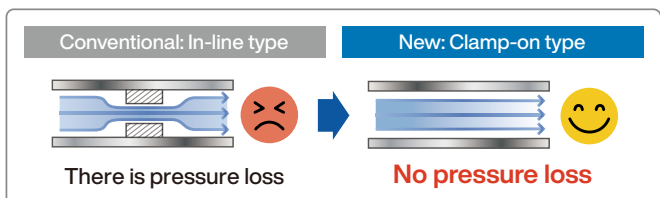


Less maintenance cost

With no moving parts, routine maintenance - such as
cleaning - is minimized.

No pressure loss

The ultrasonic sensors do not obstruct the steam flow,
ensuring zero pressure loss.

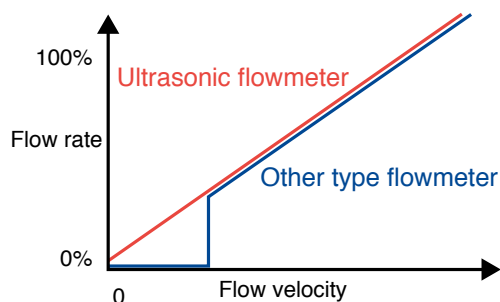


Convertible to mass flow rate

The measured volumetric flow and a fixed density
value can be converted to mass flow rate. Density
correction is also possible by measuring the pressure
(4–20 mA DC) and temperature (RTD) of the saturated
steam and using them as external analog inputs.

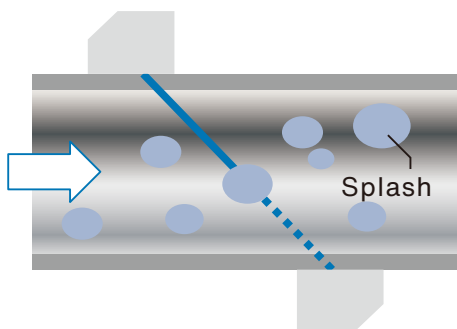
Enables measurements at low flow rates

The ultrasonic flowmeter can measure accurately at low flow rates, even down to zero flow.

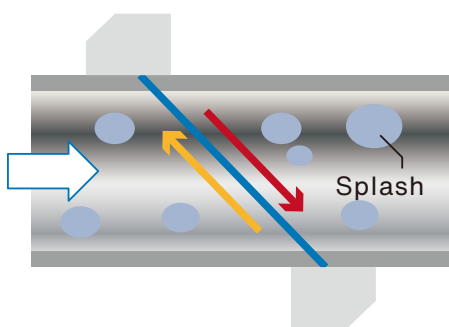


Algorithm dedicated for steam measurement

With conventional analog processing, measurement may fail due to disturbances caused by condensate splash.



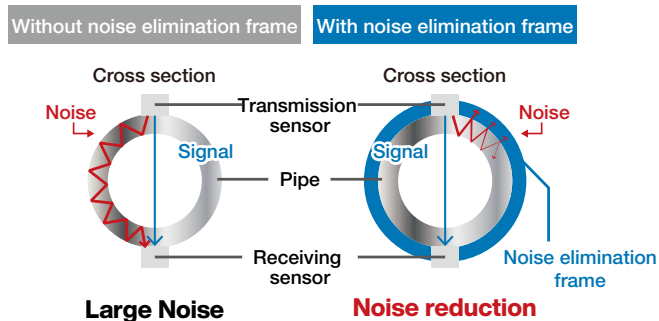
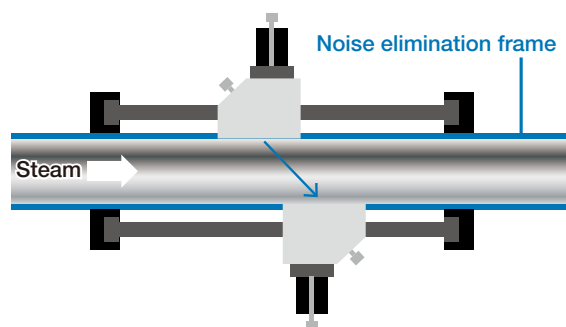
Fuji's proprietary digital algorithm ensures stable ultrasonic transmission and synchronized processing of received signals.



Ensures a sufficient signal level by summing rate signals

Noise-elimination frame

The heat-resistant rubber frame installed on the pipe surface reduces noise and allows precise adjustment of the ultrasonic signal.



Specifications

Item	Specifications
Mounting method	Clamp-on type
Measurement fluid	Saturated steam
Measuring method	Transit time difference
Flow velocity	0 to ± 50 m/s
Accuracy	For required straight pipe length (upstream: 20 D or longer; downstream: 10 D or longer) Flow velocity 0 to 10 m/s: ± 0.3 m/s (50 A), ± 0.4 m/s (65, 80, 100 A) Flow velocity above 10 to 30 m/s: $\pm 3\%$ of rate (50 A), $\pm 4\%$ of rate (65, 80, 100 A) Flow velocity above 30 to 50 m/s: $\pm 5\%$ of rate
Required straight pipe length	Upstream: 20 D or longer; downstream: 10 D or longer
Piping material	Carbon steel, stainless steel
Pipe diameter	50 mm, 65 mm, 80mm, 100 mm
Pipe thickness	2.8 to 4.5 mm
Fluid temperature	120 to 180°C
Fluid pressure	0.1 to 0.9 MPa (G)
Moisture and splash	Wetness: 0%, there should be no splashing
Input (For mass flow rate conversion)	Current input (4 to 20 mA DC) $\times 1$: Pressure measurement Temperature input (Pt100) $\times 1$: Temperature measurement
Output	Current output (4 to 20 mA DC) $\times 1$ Contact output $\times 2$
Mass flow rate conversion	fixed value input (density) · temperature input · pressure input
Communication	RS-485
Power supply/consumption	100 to 240 V AC, 20 VA
Degree of protection	IP67 (with connectors fitting)
Ambient temperature	-20 to +60°C
Ambient humidity	95% RH or less
Grounding	Class D grounding with ground resistance of 100 Ω or less

*Measurement may be unavailable depending on conditions.

Clamp-on type Ultrasonic Flowmeter S-Flow

Flow transmitter: FSZ08 - FSZ15 - FSZ25 - FSZ40

Easy installation, space savings

- Reduces labor and installation costs
- No grease required
- Comes standard with RS-485 communication



Flow transmitter
with detector

Reduces labor hours and installation costs

The clamp-on design requires no pipe modification and can be installed without stopping equipment. No sensor-distance adjustment is needed - anyone can install it simply by tightening the screws.



Clamp-on installation without pipe modification.



Easy installation with a simple screwdriver.

Easy to set up

Configuration is simple with just three buttons. Turn it on, set four parameters, and start measuring immediately.



Conventional settings

Sensor type

Mounting method
(V and Z methods)

Pipe materials

Pipe thickness

Pipe outer diameter

Fluid to measure

S-Flow Settings

Pipe materials

Pipe thickness

Pipe outer diameter

Fluid to measure

No grease required

Easy installation with no grease required - for setup or maintenance.

Compact, integrated design

The flow transmitter and detector are integrated to achieve a compact design. Compared with a conventional FLR flow transmitter, the size is reduced by approximately 76%.

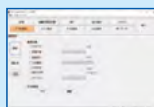


Comes standard with RS-485 communication

RS-485 communication allows simultaneous output of instantaneous flow rate, integrated flow, temperature, and other data. Parameters can also be configured using the loader software.

The loader software allows users to:

- Set parameters
- Load data
- Display flow rate trends
- View alarm information



Specifications

Item	Specifications	
Main unit type	FSZ08	8A, 10A
	FSZ15	15A, 20A
	FSZ25	25A, 32A
	FSZ40	40A, 50A

Item	Specifications
Configuration	Single-path system using an integrated flow transmitter and detector
Mounting method	Clamp-on type
Measurement method	Transit-time measurement method
Fluid to measure	Homogeneous liquid where the ultrasonic signal can be transmitted
Measurement range	0 ... ± 0.2 ... ± 5 m/s
Accuracy	Velocity 1 m/s to 5 m/s: $\pm 2\%$ of rate Velocity less than 1 m/s: ± 0.02 m/s
Required straight pipe length	Upstream side 10D, downstream side 5D (D: Pipe inner diameter).
Pipe materials	Metal (stainless steel, steel pipes, copper pipes) Plastic (PVC, PP, PVDF)
Pipe thickness	1.2 mm to 4.9 mm
Fluid temperature	-15 to +85°C (May vary depending on ambient temperature)

Item	Specifications
Response time	0.5 seconds
Output signal	4 to 20 mA DC: 1 point Contact: 2 points
Communication function	RS-485
Display	LED 4-digit 2-row display
Degree of protection	IP65/IP67
Ambient temperature	-15 to +60°C
Ambient humidity	95%RH or less with no dew condensation
Power supply and power consumption	20 to 27.5 V DC 2.5 W or less
Pipe thickness	FSZ08: 400 g FSZ15: 500 g FSZ25: 600 g FSZ40: 800 g
Temperature measurement (Optional)	Pipe surface temperature measurement

Reduced maintenance costs

Clamp-on ultrasonic flowmeters for liquid applications

Flow transmitter: FSV (IP66) - FSV (IP67) - FLR - FSC

No piping work - Cost saving

- Easy installation without interrupting the process
- Non-contact, low-maintenance sensor

Flow transmitters



FSV (IP66)



FSV (IP67)



FLR



FSC



Minimal influence from fluid pressure and temperature

The sensors placed on upstream and downstream emit ultrasonic pulse in turn, and detect the transit time difference of the pulse to calculate the flow rate. Highly accurate measurement can be obtained regardless of the type of fluid.

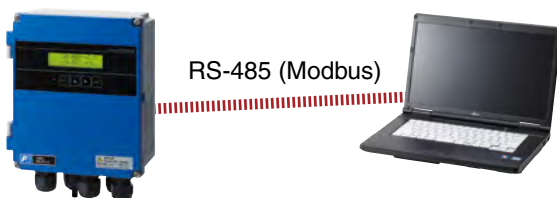


Fast response mode delivers ≤ 0.2s response Time

Enables quick corrective action.

Convenient configuration and data management from PC

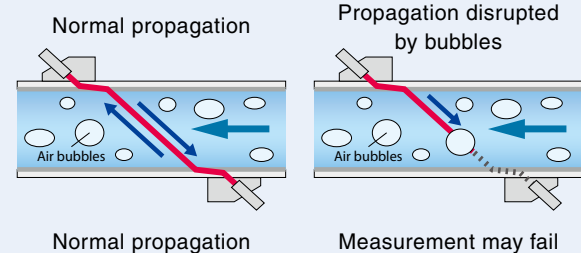
The free parameter loader software enables parameter configuration and data acquisition on a PC.



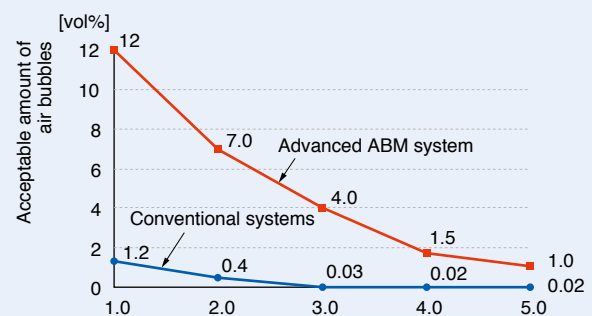
Superior bubble resistance

Fuji Electric's advanced anti-bubble technology reduces signal interference.

Signal averaging






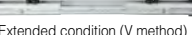
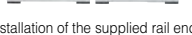


Averaging 128 or 256 measurements produces highly precise signals.



*Flowmeters indicate the volumetric flow rate which includes air bubbles.

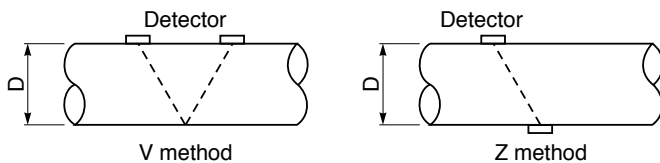
Clamp-on detectors for liquid applications

For pipe diameters from 13 mm to 6000 mm

	Appearance	Type	Fluid temperature [°C]	Mounting method	Pipe inner diameter (mm) and material												Transmitter type	
					13	25	50	100	200	250	300	400	600	1000	3000	6000		
For small diameter pipes		FSSD	-40 to 100	V	13	Px, P, M										100	FSC,FSV	
Easy mounting type		FSSA	-20 to 100	V	25	P, M					225							FLR,FSV
Extendable rail type	 Standard (V method)	FSSC	-40 to 120	V	50	P, M							600				FSC,FLR,FSV	
	 Extended condition (V method)			50	Px			300										
	 Installation of the supplied rail end (Z method)			Z		200	P, M						1200					
						200	Px		400									
For high-temperature fluids		FSSH	-40 to 200	V	50	Px, P, M			250								FSC,FSV	
				Z		150	Px, P, M			400								
For large pipes		FSSE	-40 to 80	V		200	Px, P, M							3000		FSC,FSV		
				Z		200	Px, P, M										6000	

Pipe materials: Px: PP, PVDF / P: Plastic (PVC, etc.) / M: Metallic piping (steel, copper, aluminum, etc.)

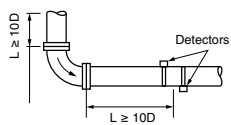
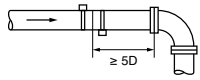
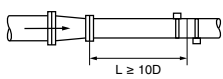
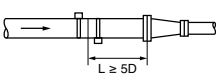
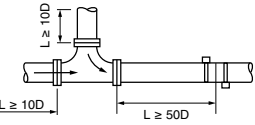
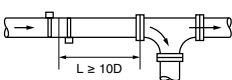
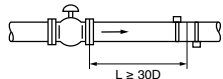
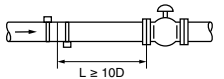
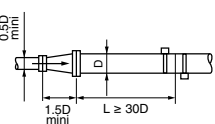
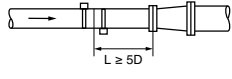
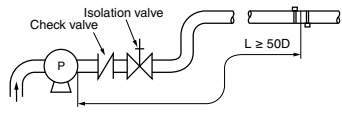
Mounting method : V method or Z method



Use the Z-method when:

- There is not enough space around the pipe for the V-method
- The fluid has high turbidity
- Scale has built up inside the pipe

Piping requirements

	Upstream	Downstream		Upstream	Downstream
90° bend			Tapered pipe		
T-shaped pipe			Valves	 When adjusting flow rate using an upstream valve	 When adjusting flow rate using a downstream valve
Expanding pipe			Pump		

(D: inside diameter of pipe)

High accuracy and wide measuring range

TIME DELTA-C

Flow transmitter: FSV Detector: FSS

High accuracy: $\pm 1.0\%$ of rate

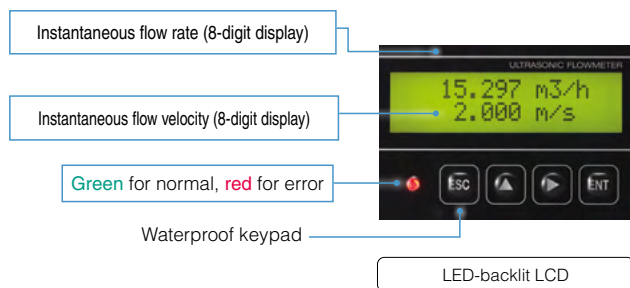
For details, refer to the data sheet.

Wide range of detectors for pipes 13–6000 mm

Including the extendable detector for pipe diameters from 50 mm to 1200 mm.

Backlit LCD and front panel operation

Front keys allow you to configure parameters, enter piping conditions, and calculate sensor spacing without opening the cover.



Specifications

	Model	Diameter (mm)	Fluid temperature (°C)
Detector	FSSA	25 to 225	-20 to 100
	FSSC	50 to 1200	-40 to 120
	FSSE	200 to 6000	-40 to 80
	FSSD	13 to 100	-40 to 100
	FSSH	50 to 400	-40 to 200
Measurement range	0 ... ± 0.3 ... ± 32 m/s		
Response time	≤ 0.2 s		
Output signal	4–20 mA DC, pulse output, alarm output		
Communication	RS-485 (Modbus) option		
Accuracy	$\pm 1.0\%$ of rate (depending on flow velocity and pipe diameter)		
Power supply voltage	100–240 V AC or 20–30 V DC		
IP enclosure	IP66 or IP67		
Cable between detector and transmitter	≤ 150 m		

Three configuration options to suit your application

TIME DELTA-C advanced type

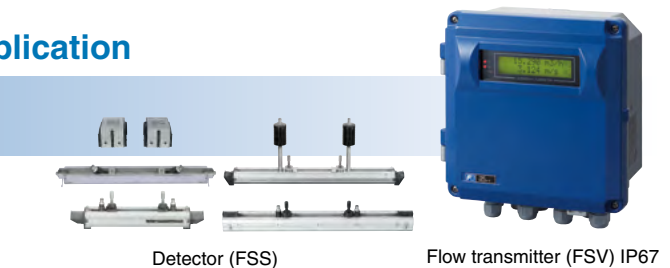
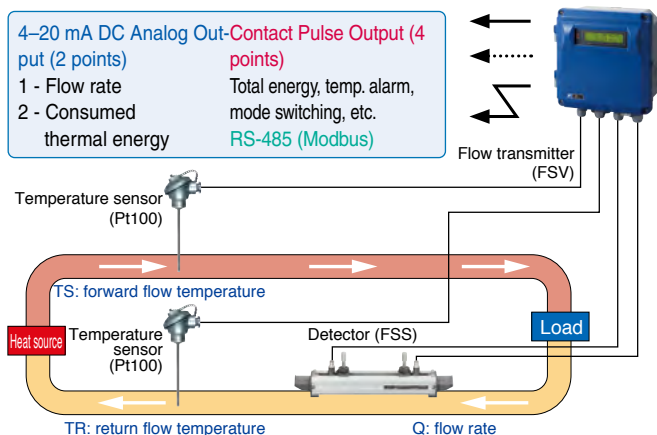
Flow transmitter: FSV Detector: FSS

Select one of the following functions when you order.

Consumed energy calculation

Provides highly accurate measurement even when flow is uneven.

The transmitter calculates consumed thermal energy from the forward and reverse flow temperatures and the flow rate.



Two measuring paths for one pipe

Provides highly accurate measurement even when flow is uneven.

Simultaneous flow measurement of two pipes with one transmitter

Reduces installation costs.

Specification

Consumed energy calculation version		
4–20 mA output (2 pt)	Flow rate, consumed energy	
Contact output (4 pt)	Total energy, mode switching, temp, alarm, etc.	
Two pipes measurement version		
4–20 mA output (2 pt)	Path 1, path 2, average, total, subtraction	
Contact output (4 pt)	Total flow rate, instantaneous flow rate, alarm, etc.	
Two-path for one pipe version		
4–20 mA output (2 pt)	Path1, path 2, average	
Contact output (4 pt)	Total flow rate, instantaneous flow rate, alarm, etc.	
Detector	FSS	Ø13 mm to 6000 mm
Measurement range	0 ... ±0.3 ... ±32 m/s	
Accuracy	±1.0 % of rate (depending on flow velocity and diameter)	
Power supply voltage	100–240 V AC, 50/60 Hz	

Compact and lightweight

M-Flow PW

Flow transmitter: FLR Detector: FSS



Detector (FSSC)



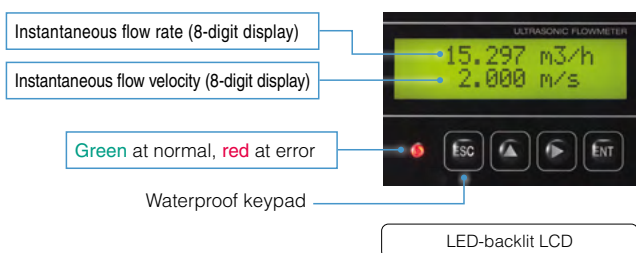
Detector (FSSA)



Flow transmitter (FLR)

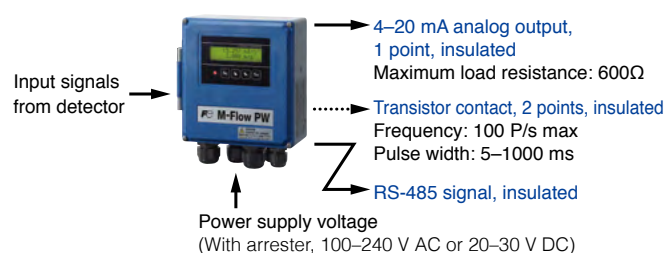
Backlit LCD and front panel operation

Front keys allow you to configure parameters, enter piping conditions, and calculate sensor spacing without opening the cover.



Analog and digital communication

Equipped with an analog output terminal, two transistor contacts, and an optional RS-485 communication interface.



Compact design

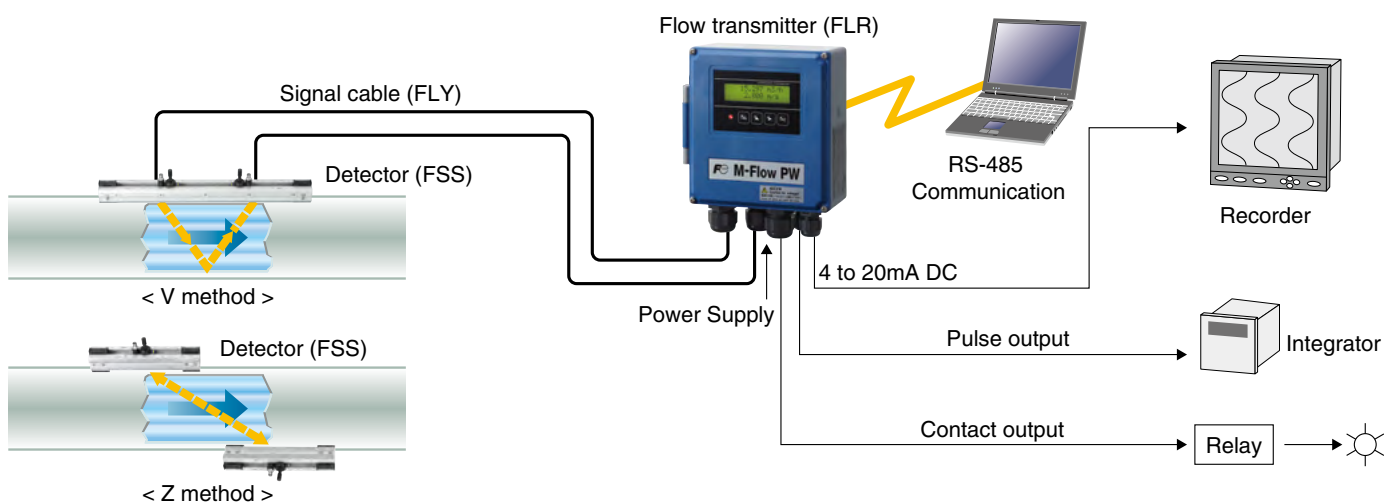
At W13 × H14 × D6.9 cm, it is only one-quarter the volume of conventional models and can be easily installed in small spaces.



Specification

Detector	Model	Diameter (mm)	Fluid temperature (°C)
	FSSA	25 to 225	-20 to 100
	FSSC	50 to 1200	-40 to 120
Measurement range	0 ... ±0.3 ... ±10 m/s		
Response time	≤ 0.2 s		
Output signal	4-20 mA DC, pulse output, alarm output		
Communication	RS-485 (Modbus) option		
Accuracy	±1.5% of rate (1.0% of rate is available on request)		
Power supply voltage	100-240 V AC or 20-30 V DC		
IP enclosure	IP65		
Cable between detector and transmitter	≤ 60 m		

Example of system configuration



Non-contact and low maintenance sensor

Portable Type

Flow transmitter: FSC Detector: FSS or FSD

Easy measurement anytime and anywhere

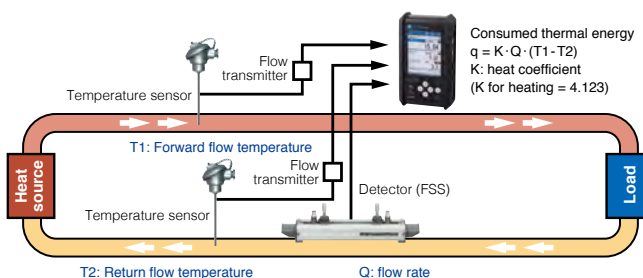
A portable, battery-powered design allows measurements to be taken anytime and anywhere.



Consumed energy calculation

A function for calculating the thermal energy exchanged by fluids in air-conditioning systems.

The transmitter computes consumed thermal energy using the forward flow temperature, the return flow temperature, and the flow rate.



Carrying case



Carrying case

The dedicated case holds all the necessary equipment including:

- Flow transmitter
- Detector (FSS or FSD)
- Signal cable
- Analog I/O cable
- Strap
- Acoustic coupler (silicone grease)
- CD-ROM (instruction manual, and strap loader software)
- AC power adapter
- Power cable
- Mounting belt
- USB cable

Data management on PC

Data stored on the SD card can be transferred to your PC via a USB cable.

Loader software included
Parameter setting screen



Improved image quality

Contrast ratio is twice that of the previous model.
Offers 80° horizontal and vertical viewing angles.



Old model



New model

The configurable display shows waveforms, logger data, and more. Supports multiple display languages, including English, Chinese, and German.

Accessories for comfortable operation (option)

Hand strap.
Helps you hold the transmitter.



Stand.
Helps you hold the transmitter securely.



Holds the transmitter at a clear, easy-to-read angle.

Easy-to-mount detector

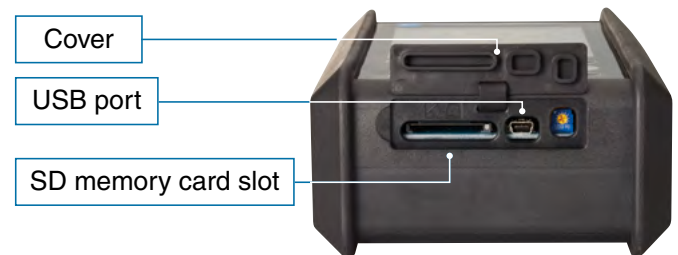
The detector can be mounted without any tools, allowing measurements to start immediately.



Data storage on SD card

The transmitter automatically saves measured data to an SD card at a user-specified logging interval. Data can also be transferred to a PC via the USB port.

For example, a 512 MB card can store up to two years of data (30-second logging, 14 data types). SD cards up to 8 GB are supported.



12 Hours of continuous operation with built-in battery

The FSC supports long periods of outdoor measurement thanks to its built-in rechargeable battery.

Specification

	Model	Diameter (mm)	Fluid temperature (°C)
Detector	FSSA	25 to 225	-20 to 100
	FSSD	13 to 100	-40 to 100
	FSSC	50 to 1200	-40 to 120
	FSSH	50 to 400	-40 to 200
	FSSE	200 to 6000	-40 to 80
Measurement range	0 ... ± 0.3 ... ± 32 m/s		
Response time	≤ 1 s		
Analog output	4–20 mA DC		
Analog input	4–20 mA DC (two points) or 4–20 mA DC and 1–5 V DC (one point for each)		
Accuracy	± 1.0 % of rate (depending on flow velocity)		
Power supply voltage	Built-in rechargeable battery (battery life: 12 hours)		
SD card (option)	512 MB (stores 2 years' worth data)		
Others	Parameter loader software (provided as standard)		

Ideal for compressor control

Ultrasonic flowmeter for air

Débitmètre : FWD

Non-intrusive design free from pressure loss

- For pipe diameters from 25 to 200 mm
- No oil-mist separator required



Flow transmitters - Product variation FWD



For small
diameter pipes

Diameter:
25 mm, 32 mm
Process Connection:
ø25 mm: Rc1
ø32 mm: Rc 11/4



For medium
diameter pipes

Diameter:
40, 50, 65, 80 mm
Process Connection:
Wafer (between
JIS10K flanges)



For large
pipes

Diameter:
100, 150, 200 mm
Process Connection:
JIS10K flange

No energy loss

The non-intrusive ultrasonic design eliminates pressure loss.

Tolerant to oil mist

With no moving parts, the FWD is highly robust and requires no filters.

Battery-powered version available

A lithium-ion battery version (10-year life) is available, simplifying installation considerably.

Flow rate conversion

The measured flow rate can be converted to a standard-condition flow rate (0°C, 1 atm) or to user-defined conditions.

Bi-directional flow measurement

The FWD measures bi-directional flow, making it suitable for facility-to-facility transfer lines and loop piping systems.

Specification

Pipe diameter (mm)	25, 32, 40, 50, 65, 80, 100, 150, 200
Power supply voltage	24 V DC $\pm 10\%$ or built-in lithium-ion battery (approx. 10-year battery life at 20°C)
Target fluid	Air (mainly factory air) or N ₂ (pipe diameter 25–80 mm)
Fluid temperature	-10°C to 60°C, RH 90% or less
Operating pressure	<1 MPa (gauge pressure)
Output signal	4–20 mA DC, pulse output (2 points) * Not available in battery-powered version.
Straight run requirements	ø25 mm and 32 mm: $\geq 20D$ on inlet side and $\geq 5D$ on outlet side ø40–200 mm: $\geq 10D$ on inlet side and $\geq 5D$ on outlet side
Installation location	Indoor or outdoor (IP64 equivalent)

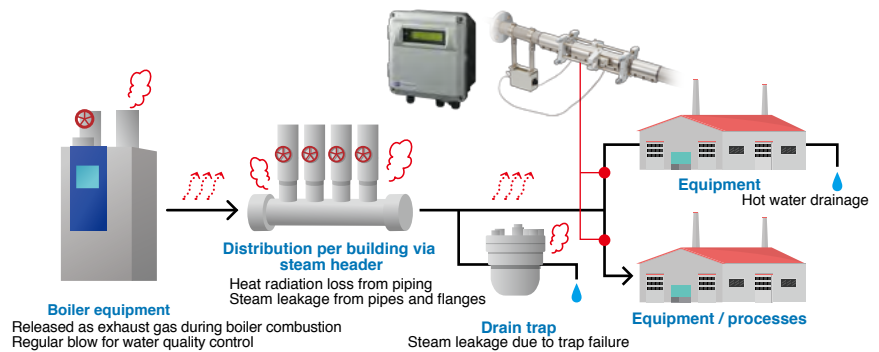
Range (actual flow rate) Accuracy	Diameter (mm)	Range (m ³ /h)	Accuracy	
			$\pm 5.0\%$ of rate	$\pm 2.0\%$ of rate
	25	$\pm 0.6\text{--}35$	$\pm 0.6\text{--}3.5$ m ³ /h	$\pm 3.5\text{--}35$ m ³ /h
	32	$\pm 1.1\text{--}65$	$\pm 1.1\text{--}6.5$ m ³ /h	$\pm 6.5\text{--}65$ m ³ /h
	40	$\pm 1.3\text{--}80$	$\pm 1.3\text{--}8$ m ³ /h	$\pm 8\text{--}80$ m ³ /h
	50	$\pm 2.5\text{--}150$	$\pm 2.5\text{--}15$ m ³ /h	$\pm 15\text{--}150$ m ³ /h
	65	$\pm 4\text{--}240$	$\pm 4\text{--}24$ m ³ /h	$\pm 24\text{--}240$ m ³ /h
	80	$\pm 5\text{--}300$	$\pm 5\text{--}30$ m ³ /h	$\pm 30\text{--}300$ m ³ /h
	100	$\pm 10\text{--}500$	$\pm 10\text{--}50$ m ³ /h	$\pm 50\text{--}500$ m ³ /h
	150	$\pm 24\text{--}1200$	$\pm 24\text{--}120$ m ³ /h	$\pm 120\text{--}1200$ m ³ /h
	200	$\pm 40\text{--}2000$	$\pm 40\text{--}200$ m ³ /h	$\pm 200\text{--}2000$ m ³ /h

Applications

Recommended model: FSJ

Saturated steam monitoring

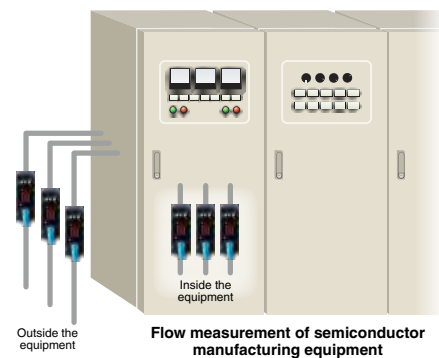
It facilitates energy savings and improves usage efficiency by measuring steam flow rates to detect heat dissipation losses and steam leaks.



Recommended model: S-Flow

Flow control of semiconductor manufacturing equipment

In addition to pure-water production, cleaning processes, and equipment cooling, it can also be installed in confined equipment (such as cabinets) where pipes are tightly packed, allowing easy installation in narrow spaces. It contributes to reliable flow control in semiconductor manufacturing lines.



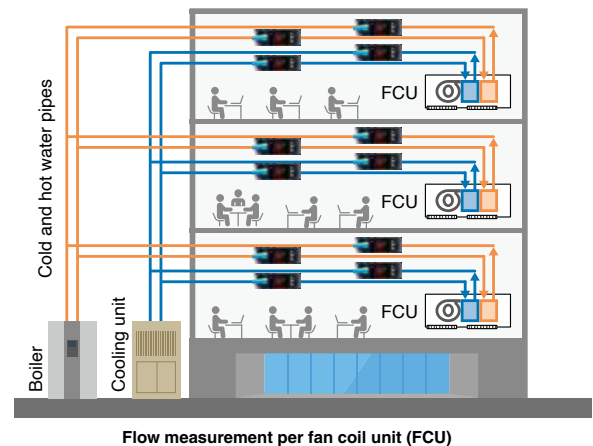
Recommended model: S-Flow

Flow monitoring of water in building HVAC networks

It can be installed on cold- and hot-water piping throughout the building.

By measuring the flow rate, it optimizes the operation of fan coil units (FCUs) and improves the efficiency of air handling units (AHUs), especially in large spaces.

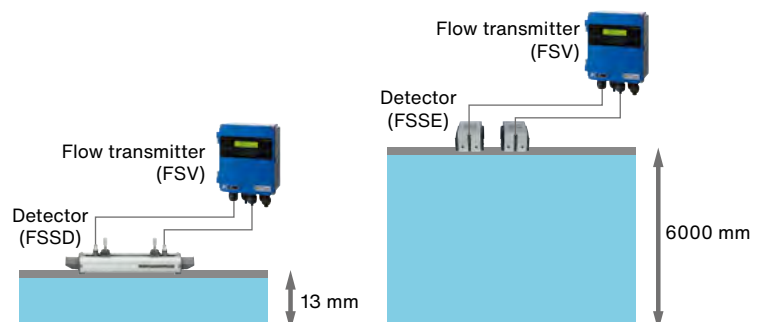
Flow-rate monitoring enhances energy efficiency and contributes to significant energy savings.



Recommended model: TIME DELTA-C

For Large Diameter Pipes up to 6000 mm

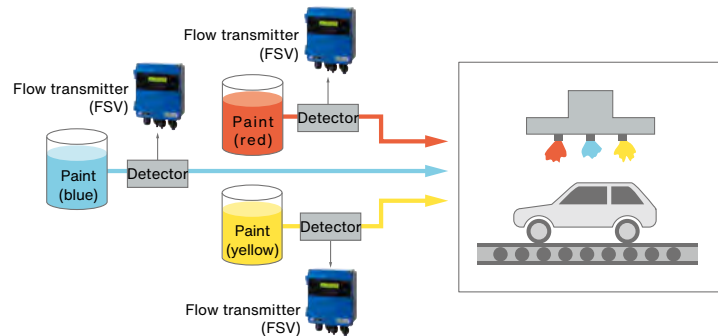
The price of clamp-on ultrasonic flowmeters is stable regardless of pipe diameters, and lower than that of electromagnetic flowmeters if the pipe diameter is 200 mm or larger.



Recommended model: TIME DELTA-C

Paint Flow Measurement

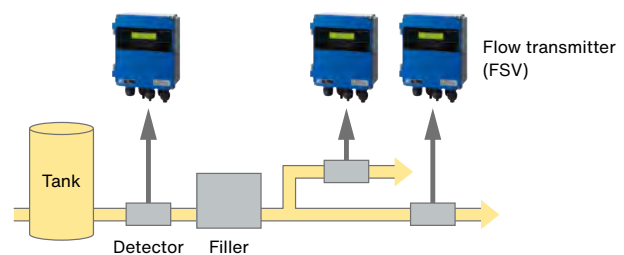
Suitable for high viscosity fluids such as paint or coating materials.



Recommended model: TIME DELTA-C

Cooking Oil Production Line

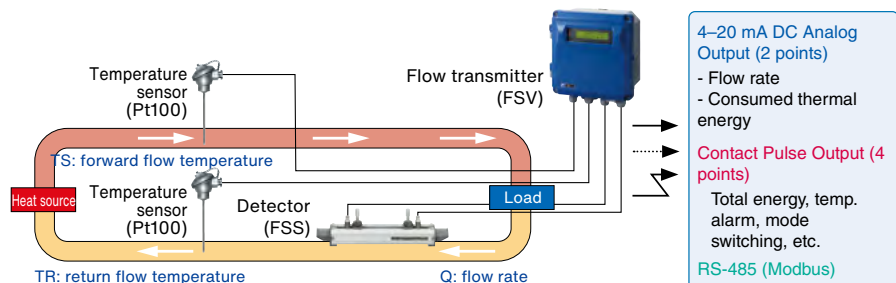
Reduced maintenance compared to mechanical flowmeters or Coriolis flowmeters.



Recommended model: TIME DELTA-C Advanced

Energy Consumption in air-Conditioning Systems

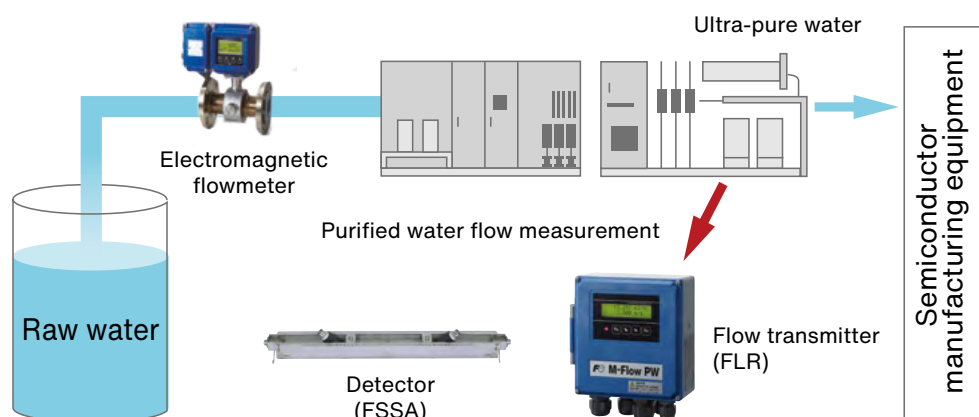
Calculates the thermal energy transferred by the fluid in air-conditioning systems.



Recommended model: M-Flow PW

Water Purifying System in Semiconductor Industry

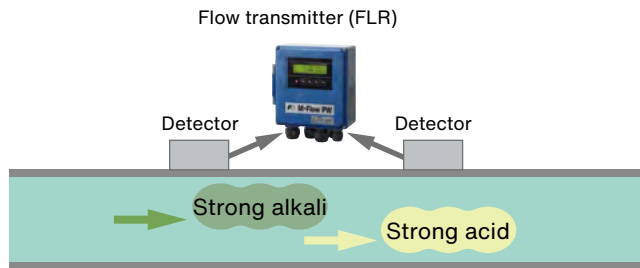
The non-contact design ensures purified water is not contaminated by metallic ions.



Recommended model: M-Flow PW

Corrosive Fluid

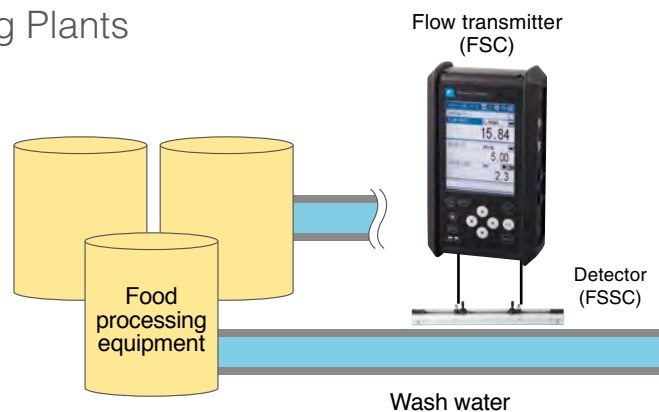
Ultrasonic flowmeters can measure flow in glass, metal, and plastic pipes - even with highly corrosive fluids.



Recommended model: Portable Type FSC

Wash Water in Food Manufacturing Plants

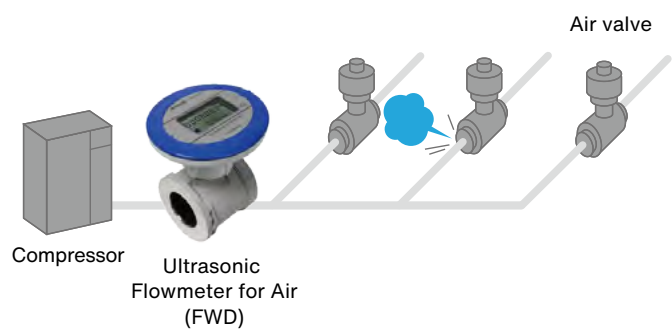
Offers easier installation and lower maintenance than mechanical or Coriolis flowmeters.



Recommended model : FWD for air

Air Leakage Monitoring

Enables air leakage detection by running the compressor with valves closed.



Fuji Electric's EMS solution

“Visualization”, “Recognition” and “Optimization”.

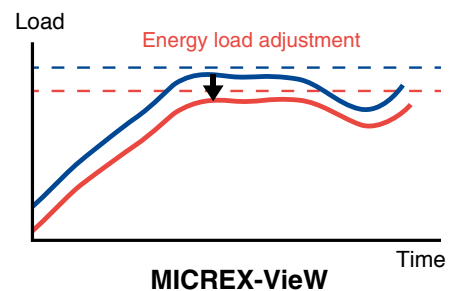
The three steps enhance your energy management solution and are based on our vision of continuous, daily improvement in energy management.

Step 1 - Visualization

Understanding energy usage

Understanding current conditions and taking immediate action

1. Assess the energy status by measuring it at key points.
2. Implement proven, practical energy-saving measures.

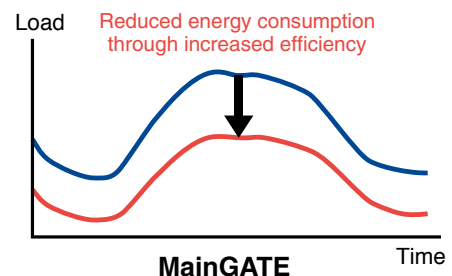


Step 2 - Recognition

Energy management

Identifying improvement points and analyzing their impact

1. Achieve improvement by eliminating waste through an energy-saving analysis environment.
2. Establish a daily improvement cycle.
3. Model energy consumption trends through data collection.

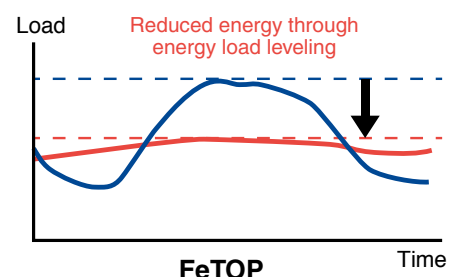


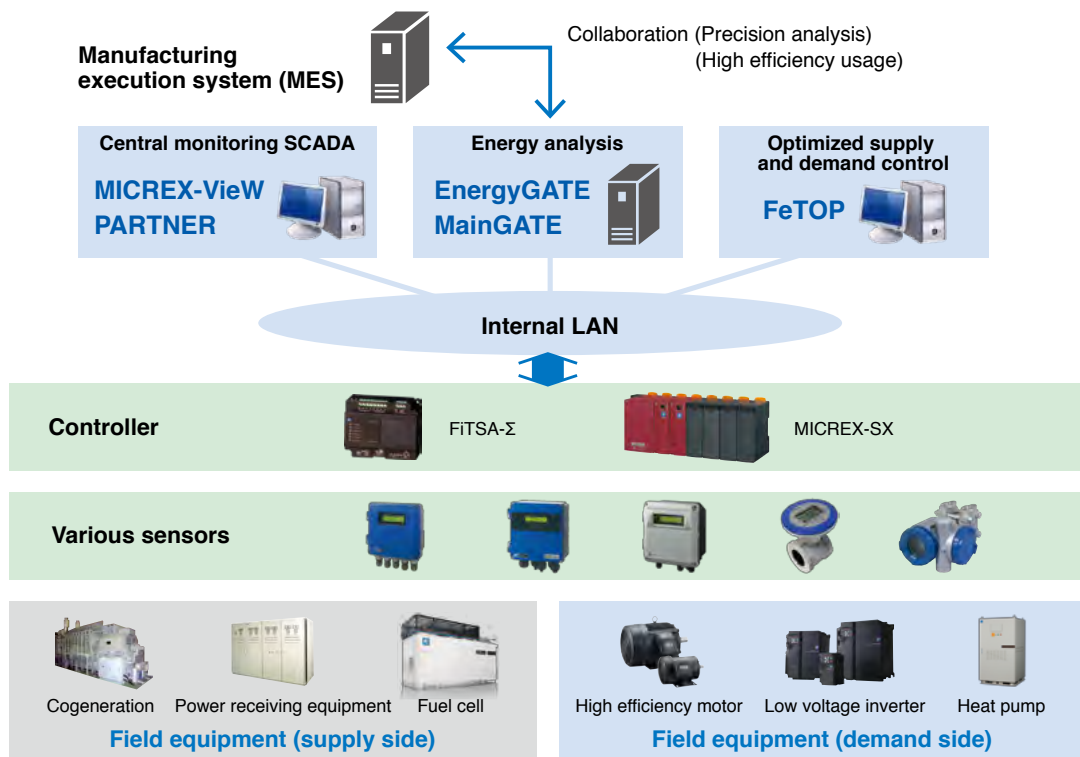
Step 3 - Optimization

Energy usage optimization

Optimized usage, management and capital investment

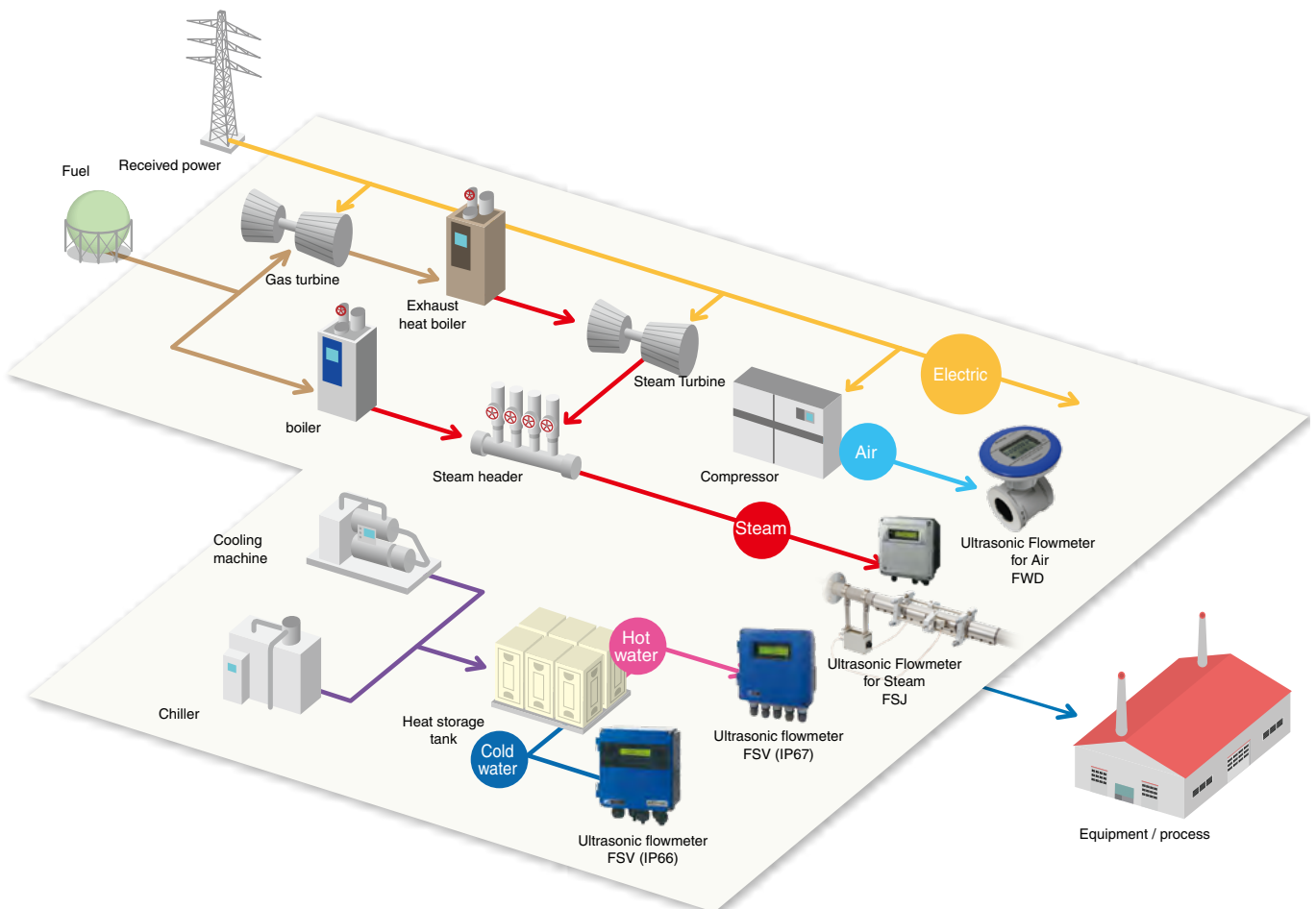
1. Further reduce energy costs by using energy-saving equipment and control technologies.
2. Achieve optimal supply control based on energy consumption models.
3. Level energy loads using power-generation and storage devices.





Energy plant configuration example

Comprehensive measurement of energy used across factory systems (electricity, water, air, steam). Reveals actual consumption patterns and drives significant energy savings through optimized operation.





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