

Measuring Instruments Line-Up

*Providing the best
measurement system solution*



Electronic Transmitters



Ultrasonic Flowmeters



Gas Analyzers



Gas Analyzer Systems



Recorders



Temperature Controllers

Rely on Fuji Electric, because we know all about measurement.

Product Panorama

Sensors

[Pressure]



Panel Instruments

[Digital Thermostat]



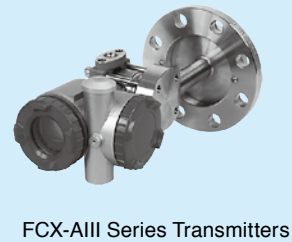
[Differential Pressure/Flow Rate]



[Water Level]



[Level]



[Ultrasonic Flowmeters]

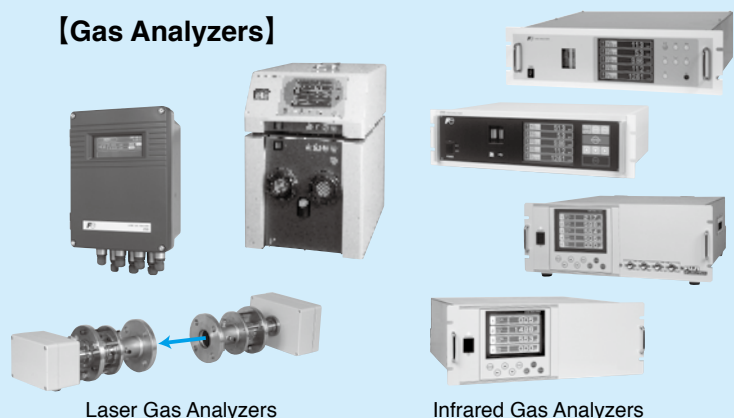


Environmental Instruments

[Gas Analyzer Systems]



[Gas Analyzers]



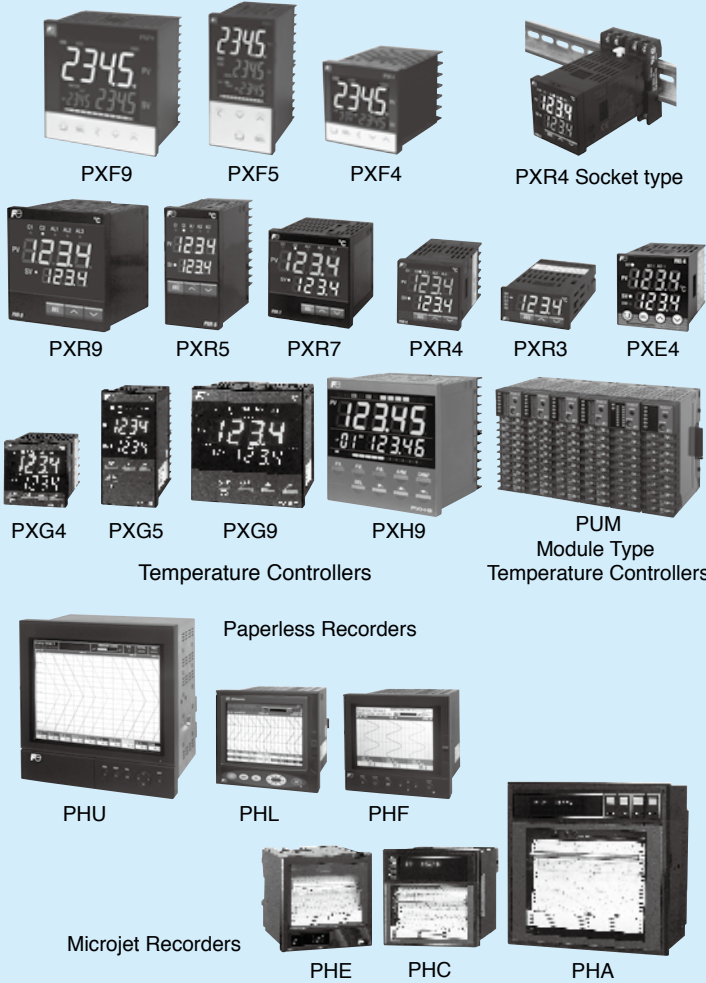
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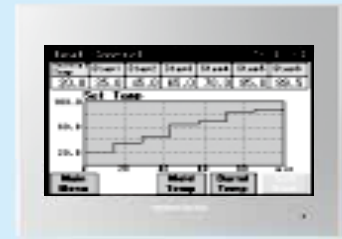
Panel Instruments

[Temperature Controllers and Recorders]

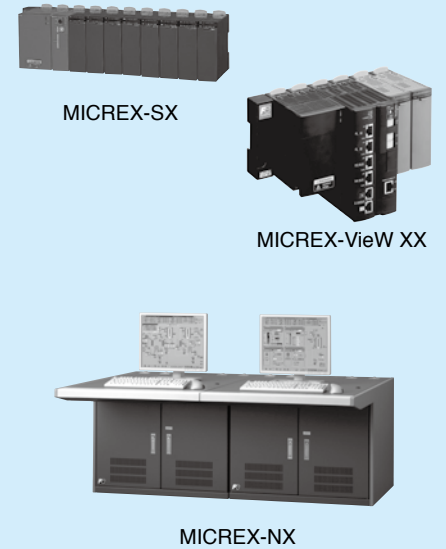


Host System

[Programmable display]

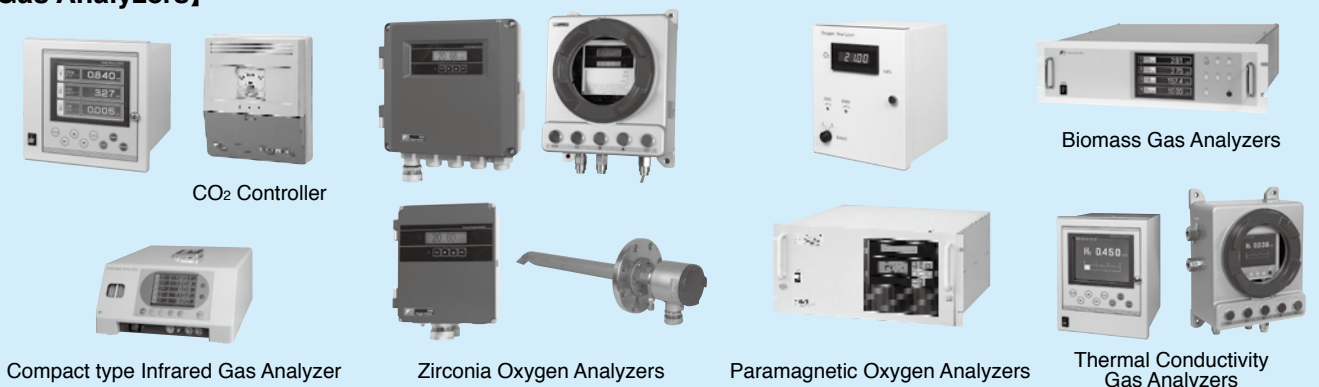


[PLC, DCS]



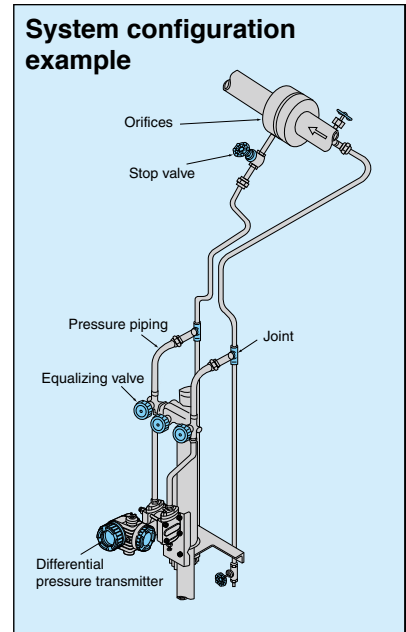
Environmental Instruments

[Gas Analyzers]



Electronic Transmitters

For highly precise and accurate measurement of flow, level, differential and other pressures



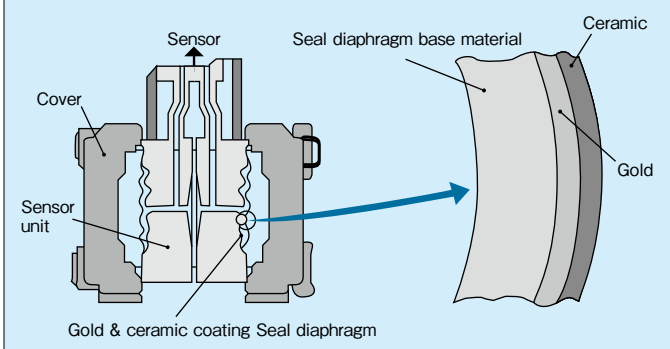
Fuji Electric has long delivered Electronic Transmitters, incorporating the micro-capacitance silicon sensor, to our customers worldwide.

The FCX-AIII series Transmitters feature compact design, high accuracy and performance, long-term stability. They also offer wide measuring range and provide a variety of diaphragm materials.

Wide range of diaphragm seals available

SUS316L (as standard), Hastelloy-C, Monel, Tantalum, Titanium, Zirconium, Hydrogen permeation prevention (Gold & ceramic coating or gold-plated SUS316L)

Hydrogen permeation barrier coating



Common features

Accuracy rating	Up to $\pm 0.065\%$ (standard) / $\pm 0.04\%$ (option)
Stability	$\pm 0.1\%$ for 10 years
Output signal (2-wire)	4 to 20mA DC (HART and Fuji protocol supported)
Power supply voltage	10.5 to 45V DC
Update rate	60 ms or less
Enclosure structure	JIS C 0920 Waterproof (equivalent to IEC IP67, NEMA6/6P)
Housing structure	Type L or T
Hazardous approvals	TIIS, ATEX, FM, CSA, IECEx, NEPSI
Ambient temperature	-40 to 85°C (excluding explosion-proof type)

Hand-held Communicator (Type: FXW)



A handy type communicator with built-in battery, designed for facilitating communication with transmitters

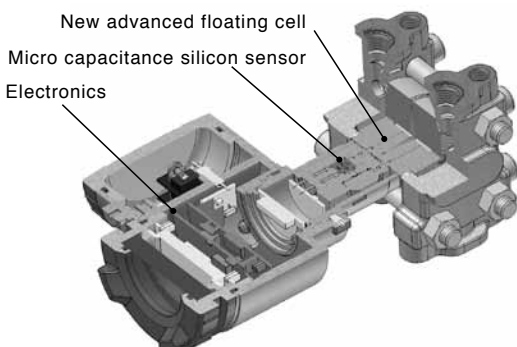
- Remote function
- Measuring range, Damping, Data indication, Engineering unit, Calibration, Self diagnosis, Model No., Tag No., Burnout direction, etc.
- Power source: rechargeable battery
- Battery life: approx. 24 hours
- Printer (optional)
- Carrying case (optional)
- Weight: approx. 500 g

Micro capacitance silicon sensor

Electrostatic capacitance type silicon sensor used for over a million transmitters. The crystal silicon material has reduced the size of the hysteresis, achieving excellent stability and reproducibility. Optimizing the configuration has helped realize output stability and long-term stability.

New advanced floating cell

The advanced floating cell protects the sensor from various severe environmental conditions, assuring stability. The downsized sensor has facilitated handling in the field and has superior properties in terms of temperature, static pressure, and excessive pressure in comparison to our conventional model.



Absolute Pressure Transmitter (Type: FKH)



Span, Operating pressure

Span limit (kPa abs)	Operating pressure (kPa abs)
8.125 to 130	0 to 130
31.25 to 500	0 to 500
187.5 to 3000	0 to 3000

- Diaphragm material SUS316L
- Process connections NPT1/2 (can be converted to Rc1/4, Rc1/2, or NPT1/4 with optional adapters)

Pressure Transmitter (Type: FKP)

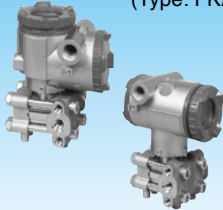


Span, Operating pressure

Span limit (kPa)	Operating pressure (MPa)
8.125 to 130	-0.1 to 0.13
31.25 to 500	-0.1 to 0.5
187.5 to 3000	-0.1 to 3
625 to 10000	-0.1 to 10

- Diaphragm material SUS316L
- Process connections NPT1/2 (can be converted to Rc1/4, Rc1/2, or NPT1/4 with optional adapters)

Absolute Pressure Transmitter (Type: FKA)

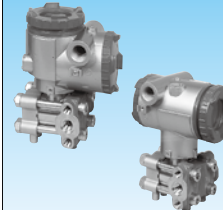


Span, Operating pressure

Span limit (kPa abs)	Operating pressure (kPa abs)
1.6 to 16	0 to 16
1.6 to 130	0 to 130
5 to 500	0 to 500
30 to 3000	0 to 3000

- Diaphragm material SUS316L, Hastelloy-C, Monel, Tantalum

Pressure Transmitter (Type: FKG)

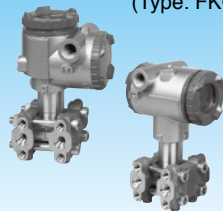


Span, Operating pressure

Span limit (kPa)	Operating pressure (MPa)
1.3 to 130	-0.1 to 0.13
5 to 500	-0.1 to 0.5
30 to 3000	-0.1 to 3
100 to 10000	-0.1 to 10
500 to 50000	-0.1 to 50

- Diaphragm material SUS316L, Hastelloy-C, Monel, Tantalum, Gold plated SUS316L, Gold and ceramic coating

Differential Pressure (flow) Transmitter (Type: FKC)

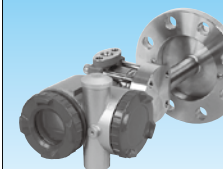


Span, Operating pressure

Span limit (kPa)	Operating pressure (MPa)
0.1 to 1	-0.1 to 3.2
0.1 to 6	-0.1 to 10
0.32 to 32	-0.1 to 10/16/42
1.3 to 130	-0.1 to 10/16/42
5 to 500	-0.1 to 10/16/42
30 to 3000	-0.1 to 16/30

- Diaphragm material SUS316L, Hastelloy-C, Monel, Tantalum, Gold plated SUS316L, Gold and ceramic coating

Level transmitter (Type: FKE)



Span (kPa)

0.32 to 32
1.3 to 130
5 to 500

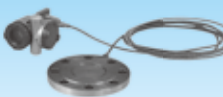
Flange size and rating

- ANSI/JPI 150LB, 300LB (1.5 in or 2 in or 3 in or 4 in for each)

Diaphragm material

- SUS316L, Hastelloy-C, Monel, Tantalum, Titanium, Zirconium, Gold plated SUS316L

Remote Seal Type Pressure Transmitter (Type: FKB)



Span (kPa)

1.3 to 130
5 to 500
30 to 3000
100 to 10000
500 to 50000

Flange size and rating

- ANSI/JPI 150LB, 300LB, 600LB (1/2 in or 3/4 in or 1.5 in or 2 in or 3 in or 4 in for each)
- Screw type/Wafer type

Diaphragm material

- SUS316L, Hastelloy-C, Monel, Tantalum, Titanium, Zirconium, Gold plated SUS316L

Remote Seal Type Differential Pressure Transmitter (Type: FKD)



Span (kPa)

0.32 to 32
1.3 to 130
5 to 500

Flange size and rating

- ANSI/JPI 150LB, 300LB, 600LB (1/2 in or 3/4 in or 1.5 in or 2 in or 3 in or 4 in for each)
- Wafer type

Diaphragm material

- SUS316L, Hastelloy-C, Monel, Tantalum, Titanium, Zirconium, Gold plated SUS316L

Equalizing Valve Oval Flange (Type: FFN, FFP)



Equalizing valve is available in direct coupling version or version with pressure piping.

Type	Description	Operating pressure
FFN3G, F	Direct coupling type equalizing valve	16MPa
FFN3J	Equalizing valve with pressure piping	16MPa
FFN4J	Equalizing valve with pressure piping	42MPa
FFP5	Oval flange	16MPa
FFP6	Oval flange	42MPa

Ultrasonic Flowmeters & Water Level Transmitter

Easy and non-intrusive installation on existing pipe!



<Features>

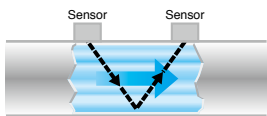
- Clamp-on sensor can be mounted outside the pipe
- Fast response within a second
- Independent of fluid temperature and pressure
- Wide range of models meet various needs
- Ultrasonic flowmeter for air also available

<Ultrasonic flowmeter line-up>

- Portable type (FSC)
- Standard type TIME DELTA-C (FSV)
- Hybrid type Duosonics (FSH)
- Compact type M-Flow (FLR)
- Advanced type (FSV)
- Ultrasonic Flowmeter for Air (FWD)

Transit-time (V method) measuring principle

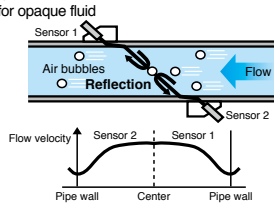
With ultrasonic pulses propagated diagonally between the upstream and downstream sensors, flow rate is measured by detecting the time difference generated by the flow.



Hybrid type measuring principle

- Ultrasound pulses are transmitted into a liquid, and flow velocity profile is found and the flow rate is measured by using the characteristics that Doppler frequency of the echo from reflectors such as air bubbles and particles in the liquid changes according to flow velocity.
- Suitable for opaque fluid

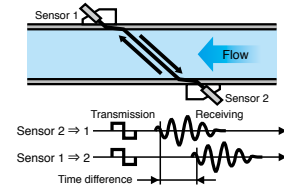
Pulse doppler method



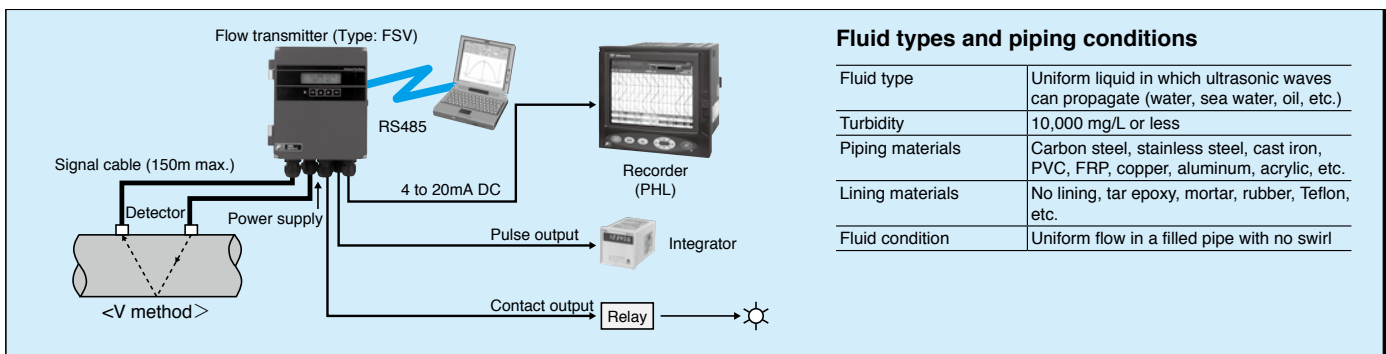
Automatically switched depending on fluid condition

Transit-time method

- Ultrasound pulses are propagated slanted both from the upstream and downstream, and flow rate is measured by detecting the time difference generated with the flow.
- Suitable for clean fluid

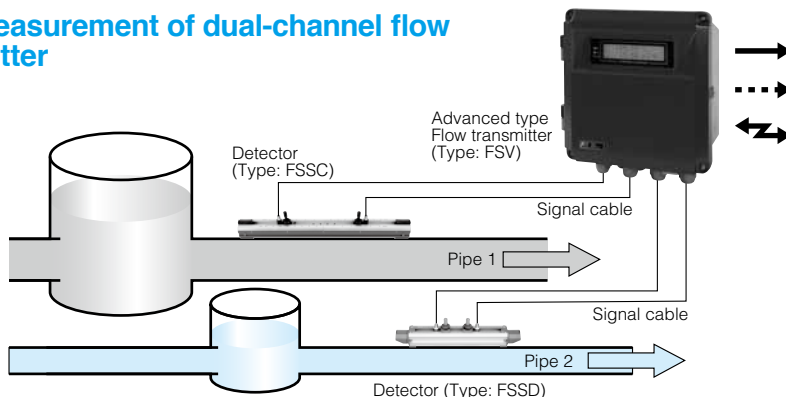


System configuration example



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

Portable Type Ultrasonic Flowmeter

(Type: FSC, FSS)

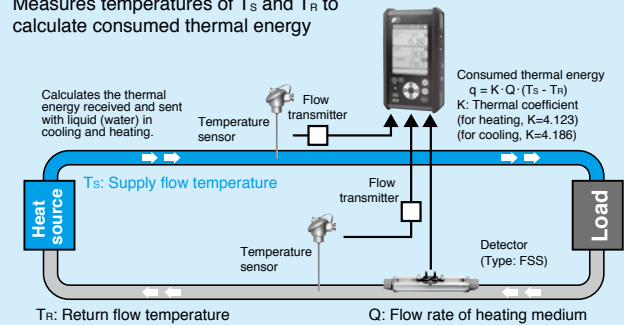


New portable flowmeter with data storage function on SD memory card.

Detector type	Small (φ13 to 300mm) Expandable (φ50 to 1200mm) High temperature (φ50 to 400mm) Large (φ200 to 6000mm)
Velocity	0 to ±0.3...±32m/s
Display function	Sensor spacing calculation, instantaneous value, total value, trend graph, logger, waveform, etc.
Data storage	SD memory card (up to 8GB)
Tolerance	1.0% of rate
Power supply voltage	Built-in rechargeable battery (Battery life: 12 hours)
Others	PC loader software (equipped as standard)
Option	Flow velocity profile display, printer

Consumed energy calculation function

Measures temperatures of T_S and T_R to calculate consumed thermal energy



Ultrasonic Flowmeters

Ultrasonic Flowmeter TIME DELTA-C

(Type: FSV, FSS)

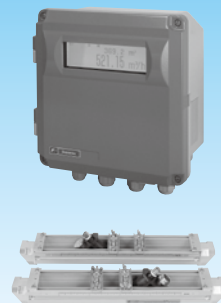


- Small and lightweight (IP66 type front dimension: 142x170mm)
- Highly bubble resistant

Detector type	Compact (φ25 to 225mm) General (φ50 to 1200mm) Small diameter (φ13 to 100mm) High-temperature (φ50 to 400mm) Large diameter (φ200 to 6000mm)
Velocity	0 to ±0.3...±32m/s
Display function	Sensor spacing calculation, instantaneous value, total value, etc.
Output signal	4 to 20mADC, Total pulse output RS485
Power supply voltage	100 to 240VAC, 50/60Hz or 10 to 30VDC
Accuracy	1.0% of rate
Enclosure	IP66 or IP67

Hybrid Type Duosonics

(Type: FSH, FSW)



- Pulse doppler method + transit time method
- Automatic switching according to flow condition

Detector type	Small diameter (φ50 to 100mm) Compact (φ100 to 200mm) Medium (φ200 to 500mm) Large (φ500 to 1000mm)
Velocity	0 to ±0.3...±4m/s
Display function	Graphic LCD (with back light) Instantaneous value, total value, etc.
Output signal	4 to 20mADC, Total pulse output RS485/RC232C Velocity profile (optional)
Power supply voltage	100 to 240VAC, 50/60Hz or 20 to 30VDC
Accuracy	0.5 to 1.0% of rate

Ultrasonic Flowmeter M-Flow PW

(Type: FLR, FSS)

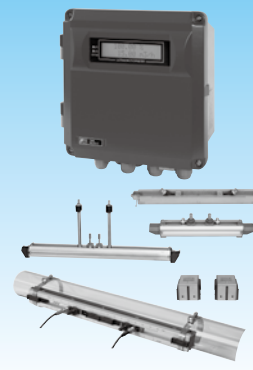


- Small and lightweight (front dimension: 140x130mm)
- Highly bubble resistant

Detector type	Compact (φ25 to 225mm) General (φ50 to 1200mm)
Velocity	0 to ±0.3...±10m/s
Display function	Sensor spacing calculation, instantaneous value, total value, etc.
Output signal	4 to 20mADC, Total pulse output RS485 communication
Power supply voltage	100 to 240VAC, 50/60Hz or 20 to 30VDC
Accuracy	1.5% of rate (1.0% of rate version available)
Cable length	60m max. (between sensor and transmitter)

Advanced Type Ultrasonic Flowmeter

(Type: FSV, FSS)



- Consumed energy calculation
- Simultaneous flow measurement of 2 pipes with one transmitter
- High accuracy measurement by 2-path system for 1 pipe

Detector type	Compact (φ25 to 225mm) General (φ50 to 1200mm) Small diameter (φ13 to 100mm) High-temperature (φ50 to 400mm) Large (φ200 to 6000mm)
Velocity	0 to ±0.3...±32m/s
Output signal	4 to 20mADC, Total pulse output, RS485
Accuracy	1.0% of rate
Power supply voltage	100 to 240VAC, 50/60Hz

Ultrasonic Flowmeter for Air

(Type: FWD)



- No pressure loss with no obstructions inside pipe
- Pipe size: 25mm to 200mm

Connection method	φ25mm: Rc1 φ32mm: Rc1-1/4 φ40 to φ80mm: Wafer connection φ100 to φ200mm: JIS10K flange
Target gas	Air (mainly factory air) Nitrogen (not for pipes larger than 100mm dia.)
Accuracy	2% of rate (depending on flow rate)
Power supply voltage	24VDC or built-in battery (battery life 10 years) (no output signal when using built-in battery)
Display	Instantaneous flow-rate, accumulated volume, pressure, temperature
Normal conversion	provided as standard

Water Level Transmitter

Water Level Transmitter

(Type: FQK)



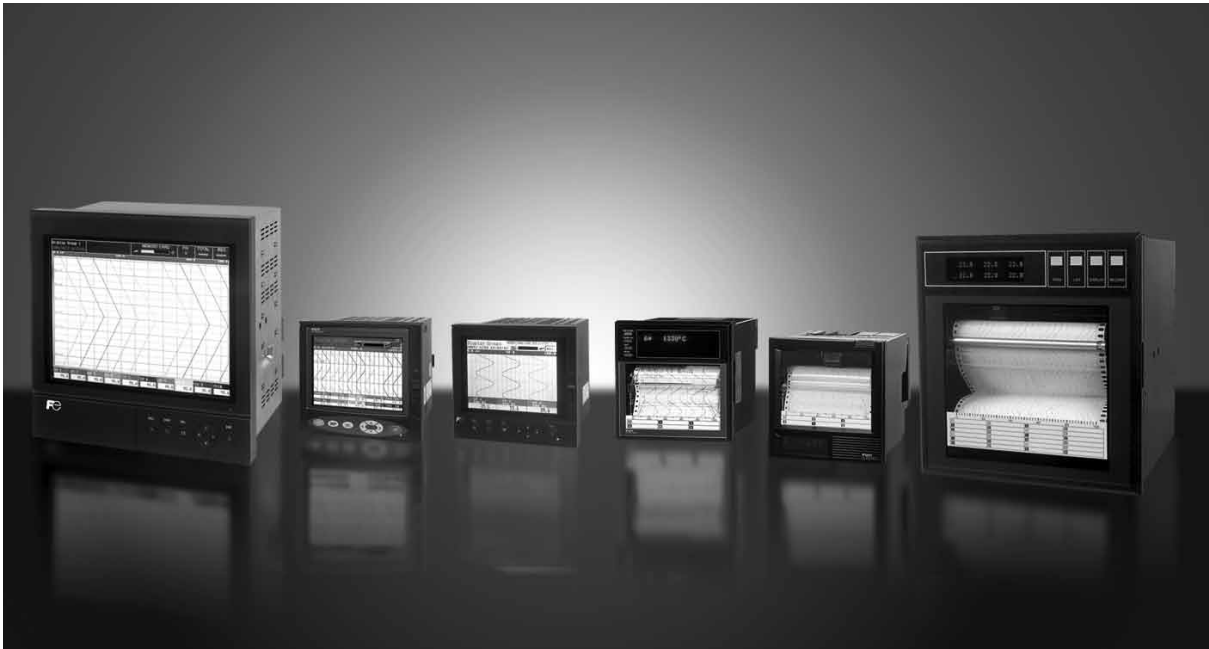
The micro-capacitance silicon sensor of the detector suspended in water detects the water pressure applied to the diaphragm and convert it into a current output signal.

Measurement range	0 to 1.5...50m
Output signal	4 to 20mADC (2-wire)
Power supply voltage	24VDC (10.5 to 32V)
Tolerance	±0.2%
Arrestor	Included
Detector	SUS316 or for sewage water
Hollow cable	PVC or PE covering
Hollow cable length	Up to 100m
Option	Detector stand, chain

Recorders

On **Paper** or **Memory card**?

Our solutions include both paperless and inkjet recorders.



Industrial recorders are used to record process values such as temperature, pressure, flow rate in various industrial plants. Fuji Electric provides 100mm/180mm wide color inkjet recorders, and paperless recorders capable of storing data of

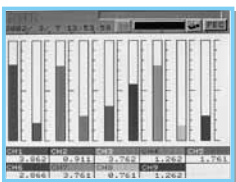
approx. 4 years in a memory card. The paperless recorders can accept up to 36 inputs and allows you to view data in a wide variety of formats, including a bar graph, digital display, event summary, historical trend, etc.

Paperless Recorders

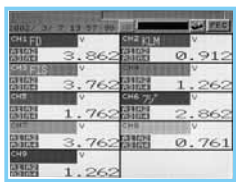
- Data of 4 years worth can be stored in a Memory card



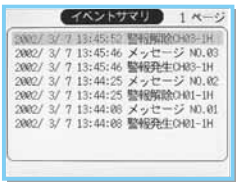
- Wide variety of display mode



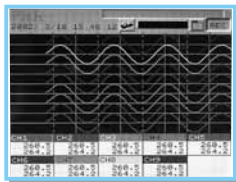
Bar graph



Digital display



Event summary display



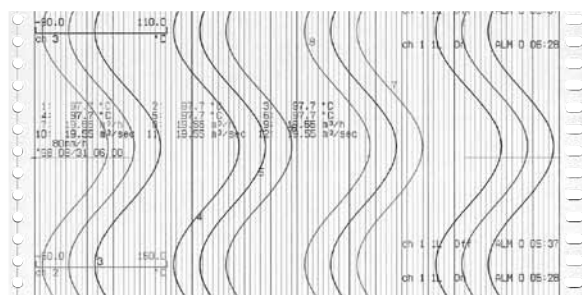
Historical trend display

- Ethernet and RS485 communication available

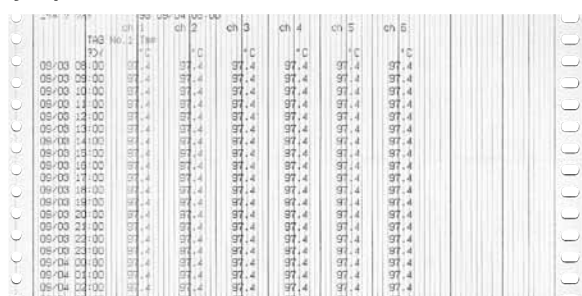
Inkjet Recorders

- 6-color high quality trace

Trend recording



Daily report/totalization





Paperless Recorders

PHL: front dimension 144 x 160mm

Paperless Recorder (Type: PHL)



- Real-time data indication - Large capacity data storage in Compact Flash	
Input points	9 or 18
Input signal	Thermocouple (12 types), RTD (2 types), DC voltage/current
Scan rate	100ms
Calculation function	Integration, F-value calculation, difference calculation, square root extraction
Display	5.7in TFT color LCD (320 x 240 dots)
Display contents	Trend, bar graph, digital, historical trend, event summary, tag amount of memory used, analog meter, parameter settings
Recording medium	Compact Flash card (2GB max.) Storage capacity: approx. 4 years at display refresh cycle of 30 sec.
Data save cycles	1 seconds to 12 hours
Data format	ASCII or Binary (ASCII format data can be directly read by Microsoft Excel.)
PC Support software	Data viewer software Loader software for parameter setting/change
Power supply voltage	100 to 240 V AC 50/60Hz
Outer dimensions	160x144x185mm (panel mount)
Mass	Approx. 1.5kg
Option	Alarm output (10 points)/ DI (5), portable type alarm output (18)/ DI (5)/ RS485, Ethernet

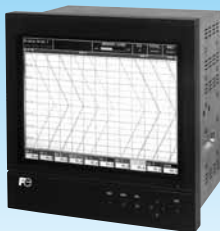
Paperless Recorder (Type: PHF)



- 3 or 6 inputs - Ethernet communication (optional)	
Input points	3 or 6
Input signal	Thermocouple (12 types), RTD (2 types), DC voltage/current
Scan rate	100ms
Calculation function	Difference calculation, square root extraction
Display	5.7 STN color LCD (320 x 240 dots)
Display contents	Trend, bar graph, digital, historical trend, event summary, tag, amount of memory used, parameter settings
Recording medium	Compact Flash card (2GB max.)
Data format	ASCII or Binary
PC Support software	Data viewer software Loader software for parameter setting/change
Power supply voltage	100 to 240V AC 50/60Hz
Outer dimensions	160x144x185mm (panel mount)
Mass	Approx. 1.5kg
Option	Alarm output (10 points)/ DI (5), Ethernet

PHU: front dimension 300 x 300 mm

Paperless Recorder (Type: PHU)



- Accept 9 to 36 inputs - Large display	
Input points	9, 18, 27, 36
Input signal	Thermocouple (12 types), RTD (2 types), DC voltage/current
Scan rate	100ms/9, 18points, 200ms/27, 36points
Calculation function	Integration, F-value calculation, difference calculation, square root extraction
Display	12in TFT color LCD (800 x 600 dots)
Display contents	Trend, bar graph, digital, historical trend, event summary, tag amount of memory used, analog meter, parameter settings
Recording medium	Compact Flash card (1GB max.)
Data save cycles	1 seconds to 12 hours
Data format	ASCII or Binary (ASCII format data can be directly read by Microsoft Excel.)
PC Support software	Data viewer software Loader software for parameter setting/change
Power supply voltage	100 to 240 V AC 50/60Hz
Outer dimensions	300x300x221mm (panel mount)
Mass	Approx. 6.2 kg (full option)
Option	Digital I/O 16 points, relay contact output 10 or 20 points, open collector output 16 points, Ethernet



Inkjet Recorders

Microjet Recorder 180mm wide (Type: PHA)



- 180mm wide, 6-color inkjet recording - Programmable parameters allow flexible configuration	
Chart width	180mm
Input points	Continuous recording: 6, 12 Intermittent recording: 6, 12
Input signal	Thermocouples (12 types), RTD (2 kinds), DC voltage/current
Scan rate	320ms
Recording cycle	Continuous recording: 3 to 90sec. Intermittent recording: 30sec.
Display	Fluorescent (20 characters x 2 lines)
Calculation	Square root extraction, subtraction, scaling, input filter, etc.
Report generation	Daily report, totalization
Power supply voltage	100 to 240VAC 50/60Hz or 24VDC
External dimensions	288 x 288 x 199mm
Option	Communication function, alarm output, chart paper illumination lamp, external control

Microjet Recorder 100mm wide (Type: PHC)



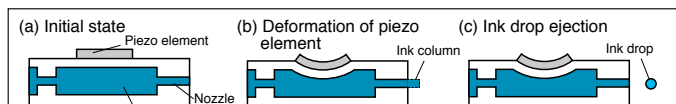
- 180mm wide, 6-color inkjet recording - Programmable parameters allow flexible configuration	
Chart width	100mm
Input points	Continuous recording: 3, 6 Intermittent recording: 6
Input signal	Thermocouples (12 types), RTD (2 kinds), DC voltage/current
Scan rate	160ms (1 to 3 inputs) 320ms (6, 12 inputs)
Recording cycle	Continuous recording: 3 to 90sec. Intermittent recording: 30sec.
Display	Fluorescent (20 characters x 2 lines)
Calculation	Square root extraction, subtraction, scaling, input filter, etc.
Report generation	Daily report, totalization
Power supply voltage	100 to 240VAC 50/60Hz or 24VDC
External dimensions	144 x 144 x 199mm
Option	Communication function, alarm output, chart paper illumination lamp, external control

Microjet Recorder-E 100mm wide (Type: PHE)



- 100mm wide, 6-color inkjet recording - Factory configuration model	
Chart width	100mm
Input points	Continuous recording: 1, 2 Intermittent recording: 6
Input signal	Thermocouples (12 types), RTD (2 kinds), DC voltage/current
Scan rate	0. 2sec. (1 to 2 continuous recording) 30sec./all points
Recording cycle	Continuous recording: 2 to 40sec. Intermittent recording: 30sec.
Display	6-digit LED
Power supply voltage	100 to 120VAC 50/60Hz or 200 to 240VAC 50/60Hz
External dimensions	144x144x175mm (continuous recording type)
Option	Alarm output, external control

■ Mechanism of inkjet printing



With voltage applied to the piezo elements, the shape of the elements changes as shown in the diagram, and ink particles are ejected from the tip of the nozzle. These particles are very small and fast, and draw a series of very small dots of about 0.3mm diameter on the chart paper. These small dots are combined together to form characters and trace lines for clear visible recording.

Temperature Controllers

We have all you need for temperature control in our comprehensive product families.

Color LCD type PXF



PXF9 (96 x 96mm)



PXF5 (48 x 96mm)



PXF4 (48 x 48mm)

Low-cost type PXR



Economy type PXE



PXE (48 x 48mm)

Multi-function type PXG



PXG4 (48 x 48mm)

PXG5 (48 x 96mm)

PXG9 (96 x 96mm)

High speed and accurate PXH



PXH (96 x 96mm)

Socket type



PXR4 (48 x 48mm)

On/off contact output < Digital Thermostat >



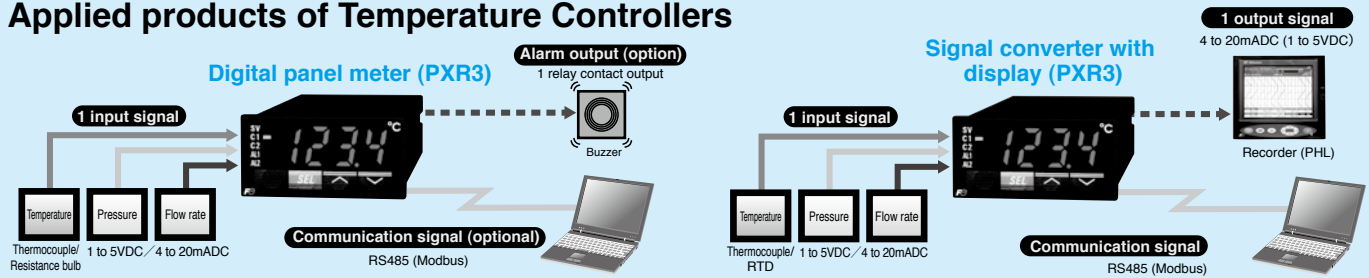
PAS3 (24 x 48mm)

Current Detector for heater break alarm



CTL

Applied products of Temperature Controllers



Multi-loop module type Temperature Controller <PUM series>

Variations

Control Module (PUMA/B)



Analog Input/Output Module (PUMV)



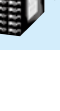
Event Input/Output Module (PUME)



CC-LINK Communication Module (PUMCL)



PLC Communication Module (PUMCM)



PROFIBUS Communication Module (PUMCP)



Ethernet Communication Module (PUMCE)



Smart!

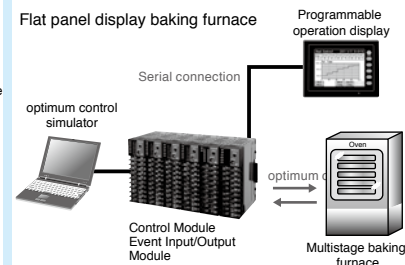
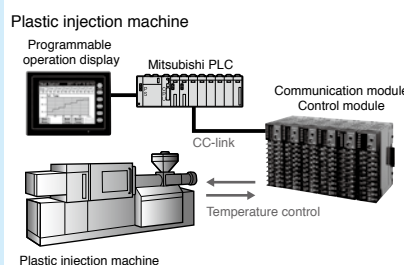
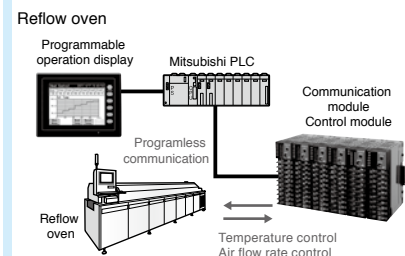
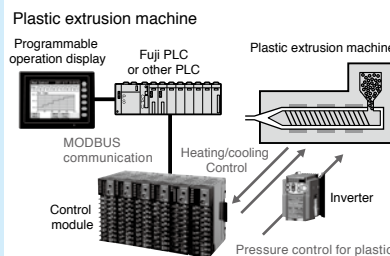
- Heater break alarm CT (8 points)
- Programless host communication

User friendly!

- Detachable terminal
- Simple loader operation

Fast!

- High-speed data communication [230.4kbps]
- Hi-speed data sampling



■ Functions

Type		Set point control type							
		PXF4, 5, 9	PXR3	PXR4 socket	PXR4, 5, 7, 9	PXE4	PXG	PXH	PAS3
Front size mm	48x24		○						○
	48x48	○		○		○			
	48x96	○			○		○		
	72x72				○				
	96x96	○			○		○	○	
Indication accuracy		±0.2%	±0.5%	±0.5%	±0.5%	±0.5%	±0.3%	±0.1%	±3°C
Control cycle		0.05 sec.	0.5 sec.	0.5 sec.	0.5 sec.	0.2 sec.	0.2 sec.	0.05 sec.	2 sec.
External terminal structure		M3 screw terminal	Plug-in terminal	Socket	M3 screw terminal	M3 screw terminal	M3 screw terminal	M3 screw terminal	Plug-in terminal
24V DC power supply		○	○	○	○		○		
Fuzzy control		○	○	○	○	○	○		
Heating/cooling control		○	○	○	○		○		
Self tuning		○	○	○	○		○		
Auto/manual switchover		○					○	○	
Remote SV input		○			○		○	○	
Re-transmission output		○	○		○		○	○	
Communication		○	○			○	○	○	
Motorized valve control		○					○	○	
Transmitter power supply							○	○	
Remote set point		○	○		○		○	○	
Ramp/soak		64 steps	8 steps	8 steps	8 steps		16 steps	64 steps	
LCD display		○							○
Heater burnout alarm		○			○				
Front water-proof structure		○	○	○	○	○	○	○	○

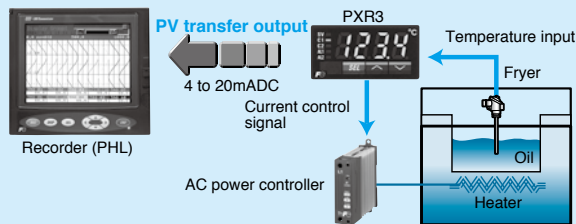
■ Common functions (some are not applicable for all models)

- Auto-tuning PID
- Input signal (thermocouple, resistance thermometer, DC voltage/current)
- Control output (relay contact output, SSR/SSC drive output, 4 to 20mA DC current output)
- Heating/cooling control (excluding some models)
- Alarm relay output (optional)

■ Re-transmission output (optional)

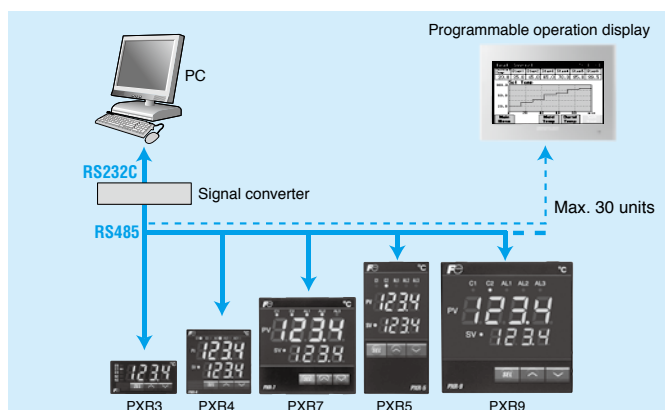
A cost corresponding to one temperature sensor can be reduced just by connecting a PV transfer signal to a recorder.

- Output type: any one of process value (PV), set value (SV), control output (MV) and PV-SV (DV).



■ Communication function (optional)

Communication with PC, programmable operation display, and PLC is available via an RS-485 interface.

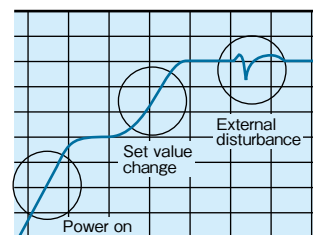


■ PID + self-tuning, PID + fuzzy control

Auto-tuning and self-tuning functions enable calculation of optimal PID parameters. In addition, fuzzy control function is offered as standard to prevent overshoot and suppress undershoot due to disturbance. These functions ensure optimal control for various application.

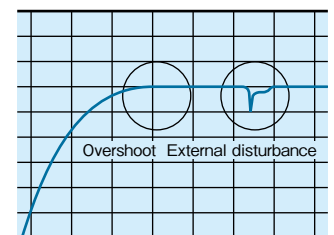
● Self-tuning

Tuning is made automatically to re-optimize PID parameters at the following situation: at power on, when set value is changed, or during external disturbance.



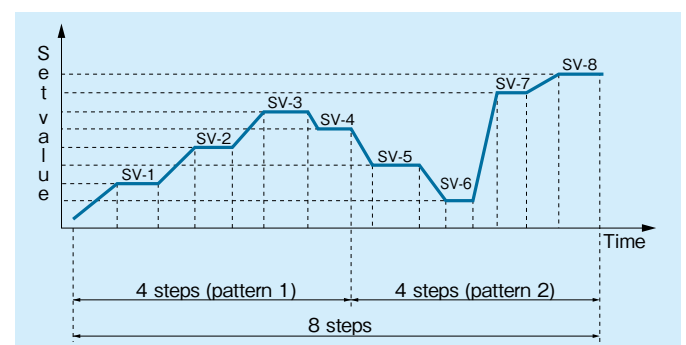
● Fuzzy control

Suppress overshoot without wasting start-up time. Also, quickly reverts to set points at the event of external disturbances.



■ Ramp/soak function (optional)

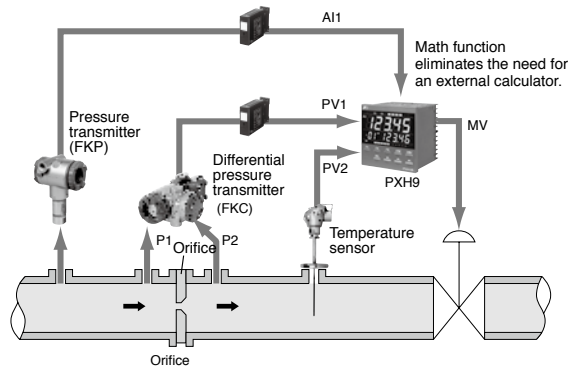
Temperature rise/fall pattern is controlled by setting a heat pattern having a gradient. (8-step for PXR, 16-step for PXG, 64-step for PXF and PXH)



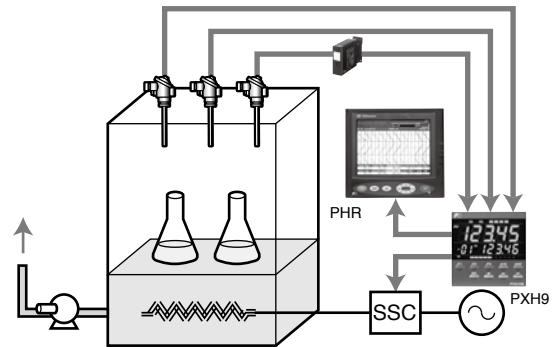
Application Examples of Temperature Controllers

PXH

Controlling the flow rate of dry gas

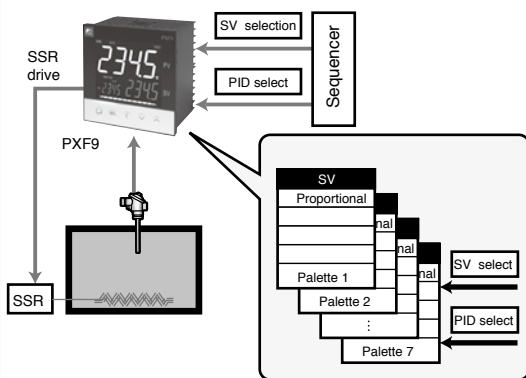


Low selection control

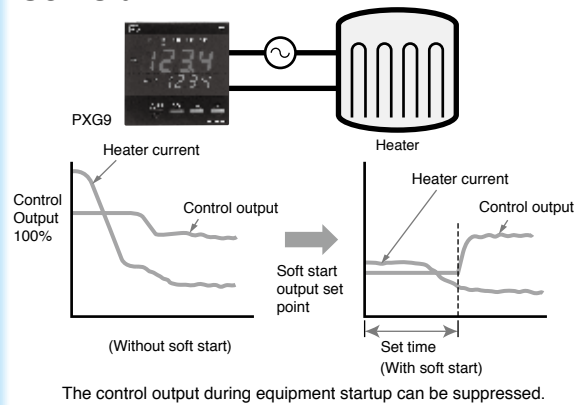


PXF
PXG

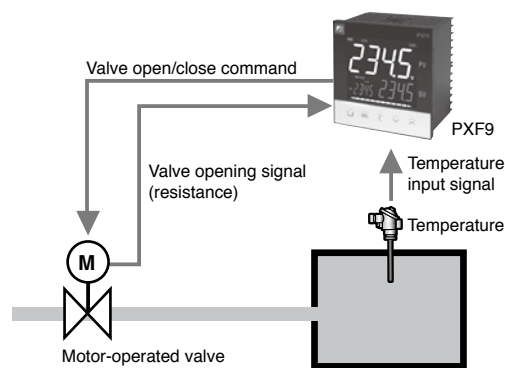
PID Palette and SV select



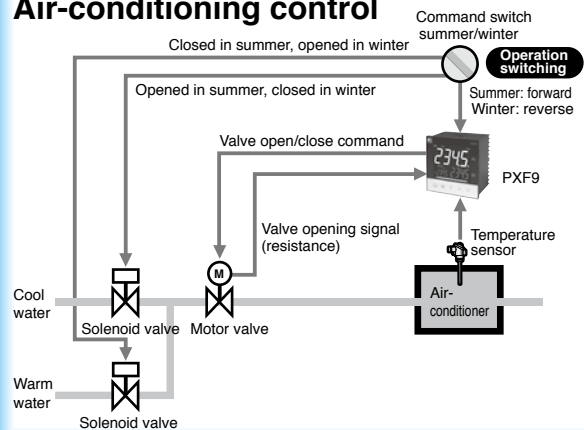
Soft start



Position feedback control



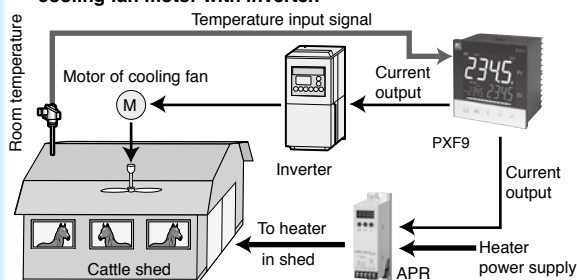
Air-conditioning control



PXF
PXR

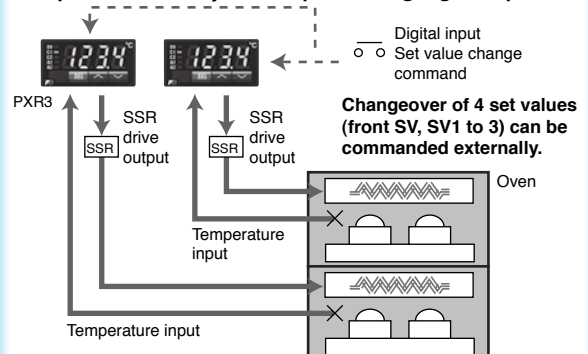
Energy saving in cattle shed

- Both heating and cooling are controlled with only one temperature controller utilizing its 2 control outputs.
- Power consumption can be curbed by controlling a cooling fan motor with inverter.



Temperature control of oven

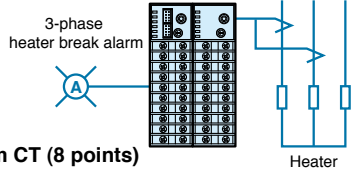
Operators can adjust a setpoint using digital inputs.



Module type Temperature Controllers

- Designed to be easily built into your equipment
- High-performance combined with detachable terminal structure, various control functions, and high-speed data communication
- Dedicated PC loader software facilitates parameter setting and checking control status.

Smart!



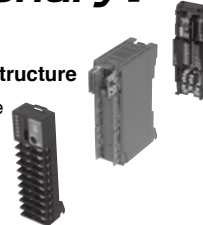
Heater break alarm CT (8 points)

A break in a three-phase heater can be detected by using 2 points CT per channel.

User friendly!

Detachable terminal structure

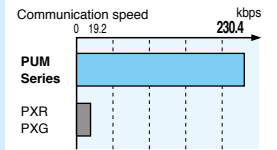
The terminal is attachable and detachable without using a screw driver. Wiring time for maintenance is reduced substantially.



Fast!

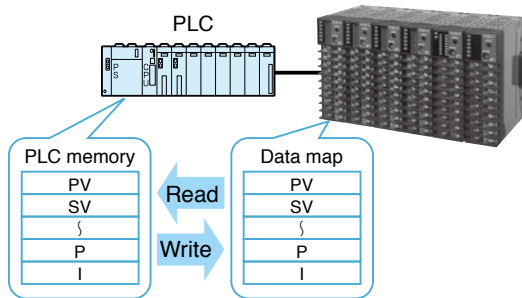
Programless communication with upper device

You can rest easy with the multi-loop controller thanks to hi-speed communication of 230.4kbps with no time-lag.



Programless communication with upper device

High-speed communication is possible because it is only assigned important data.



Simple loader

Simple loader is available to change all module parameter setting without changing each loader connection. With "favorite function," the frequently-used parameters can be edited preferentially.



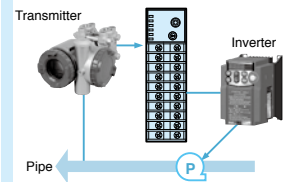
Easy to attach to DIN rail

Locking tabs on rear side enable DIN rail mount and inter-module connection

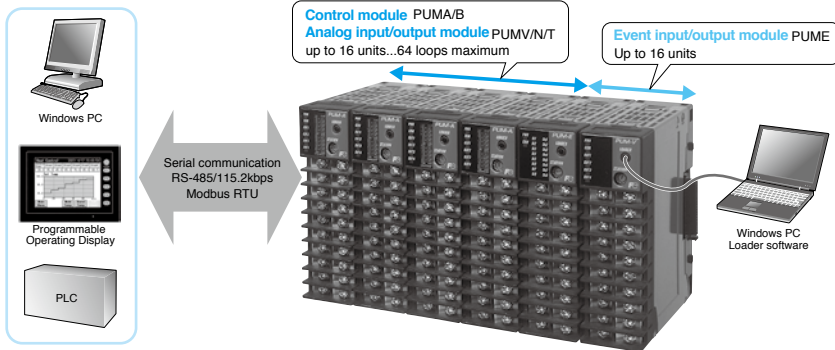


High-speed sampling time

200msec sampling time enable it to apply to not only temperature measurement but also process measurement such as pressure control, flow control, etc.



Basic system Control module + Event/Analog input/output module



Control Module (PUMA/B)

2 or 4 loop



Enhanced Communication Module (PUMCP) PROFIBUS



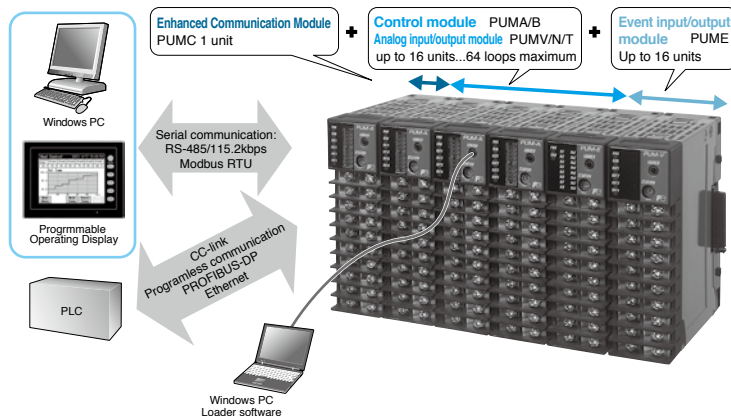
Enhanced Communication Module (PUMCL) CC-link



Event Input/Output Module (PUME) 8 DI & 8 DO



Extended system Basic system + Enhanced communication module



Enhanced Communication Module (PUMCM) Programless communication with Mitsubishi PLC



Analog Input/Output Module (PUMV/N/T) 4 AI & 4 AO



Ethernet Communication module (PUMCE)



Gas Analyzers

What is your measuring task?

We offer solutions to meet your gas analysis needs - environmental monitoring, energy-saving, and process control.



Gas Analyzers

Fuji Electric developed the first infrared gas analyzer in Japan using mass-flow sensors. Since then, we have supplied customers with various types of gas analyzers to support environmental preservation and control efforts. These efforts include measurement of atmospheric pollution and detection of low-density SO_x and NO_x, generated by incinerating facilities and boilers. Fuji Electric gas analyzers are commonly used to monitor the atmosphere to help maintain a clean natural environment.



Gas analyzers

The 5-component analyzer capable of simultaneously measuring concentration of NO_x, SO₂, CO, CO₂, and O₂ contained in flue gas is housed in space-saving enclosure and can be maintained from front side.

Our new product, insertion type laser gas analyzer for stack gas is the first analyzer in Japan which can measure HCl, NH₃, O₂, H₂O, CO, CO₂, and CH₄.

■ Typical Applications

	Application Fields and Plants	Target Gases	Applicable Model Types
Atmospheric pollution	Waste incinerators	SO ₂ , NO _x , CO, CO ₂ , O ₂	ZSQ, ZSU, ZSJ
	Desulfurization and denitration of exhaust gas	SO ₂ , NO _x , O ₂ , HCl, NH ₃	ZSU, ZSS, ZSJ
	General incinerator (including boilers)	SO ₂ , NO _x , O ₂ , HCl	ZSU, ZSS, ZSJ
	Diesel power generation	SO ₂ , NO _x , O ₂	ZSU, ZSV, ZSJ
	Vehicle exhaust gas	CO, HC, CO ₂ , O ₂	ZKE
Biochemistry (microbes)	Fermentation	Methanol, CO ₂	ZRJ, ZSV, ZRE, ZPA
	Incubator	CO ₂ , O ₂	ZFP9, ZKM, ZSV, ZRE, ZPA
Fruit and vegetable storage and ripening		CO ₂ , O ₂	ZFP9, ZKM, ZSV
Enzyme lab	gas separation	CO ₂ , Ar, He, CO, O ₂	ZAV, ZAJ, ZAF, ZRE, ZPB, ZPG
Steel/Thermal treatment	Shaft furnaces, converters	CO, CO ₂ , H ₂ , O ₂	ZAF, ZAJ, ZRJ, ZRE, ZPB
	Heating furnace	CO, CO ₂ , O ₂	ZKM, ZRJ, ZFG
	Gas generator	CO ₂	ZRJ, ZFG, ZRE, ZSV, ZPA
	Carburizing furnace, annealing furnace	CO, CO ₂ , O ₂	ZRJ, ZFG, ZRE, ZSV, ZPA
	Nitrogenation ovens	NH ₃	ZSS
Energy saving	Boiler and Furnaces	O ₂ , CO ₂ , CO	ZKM, ZRE, ZSV, ZPA
			ZSU, ZSB, ZRJ, ZSV, ZSJ
Ceramic industry	Tunnel kiln	CO, O ₂	ZAJ, ZRJ, ZRE, ZSV, ZPA
	Coal calcining	CO	ZRJ, ZRE, ZPA
	Cement	CO, CO ₂ , O ₂	ZKG, ZRJ, ZRE, ZAJ, ZPA
Water and sewerages	sewer systems sludge incinerators (exhaust gas)	SO ₂ , NO _x , CO, N ₂ O, O ₂	ZSU
Agriculture/horticulture	Facility gardening	CO ₂	ZFP9, ZSV
	Photosynthesis studies	CO ₂	ZFP9, ZRJ, ZSV, ZRE, ZPA
Environment	Concentration in tunnel	CO	ZSA
	Parking lot	CO, CO ₂	ZSA, ZFP9, ZPB, ZPG
	Building management, air conditioning	CO ₂	ZFP9

CO/O₂ Gas Analyzer for stack gas (Type: ZSQ)



- **Applications**
Incinerators
- **Measurable components and ranges**
CO (0 to 200...2000 ppm)
O₂ (0 to 25%)
- **Measuring principle**
Infrared, zirconia
- **Display**
LCD with back light
- **Japanese pattern approval No.**
SAC984, SE981
- **Outer dimensions**
1550x730x650mm
- **Structure**
For outdoor/indoor applications
- **Mass**
Approx. 140kg

Gas analyzer for stack gas (1 to 5-Component Analyzer) (Type: ZSU)



- **Applications**
Boilers, incinerators, etc.
- **Measurable components**
SO₂, NO_x, CO, CO₂, O₂
Simultaneous measurement (N₂O + CH₄ possible)
- **Measuring principle**
Double-beam infrared, zirconia, paramagnetic
- **Display**
LCD with back light
- **Japanese pattern approval No.**
SAS992-1 SE981 SF011
SAC992-1 SAN991-1
- **Outer dimensions**
1710x800x615mm
- **Structure**
For outdoor/indoor applications
- **Mass**
Approx. 300kg

Gas analyzer for stack gas (7-component analyzer) (Type: ZSU-7)



- **Applications**
Boilers, incinerators, etc.
- **Measurable component**
NO_x, SO₂, CO, CO₂, O₂, HCl, Dust
- **Measuring principle**
Infrared, zirconia, laser, electrostatic induction
- **Display**
LCD with back light
- **Japanese pattern approval**
NO_x, SO₂, CO, O₂
- **Outer dimensions**
1780x1215x700mm
- **Structure**
For outdoor/indoor applications

Gas analyzer for stack gas (1 to 5-component analyzer) (Type: ZSJ)



- **Applications**
Boilers, incinerators, etc.
- **Measurable components**
NO_x, SO₂, CO, CO₂, O₂
- **Measuring principle**
Single-beam infrared, zirconia, paramagnetic
- **Display**
LCD with back light
- **Japanese pattern approval**
NO_x, SO₂, CO, O₂
- **Outer dimensions**
1710x800x615mm
- **Mass**
300kg

In-situ Zirconia Oxygen Analyzer (Type: ZSB)



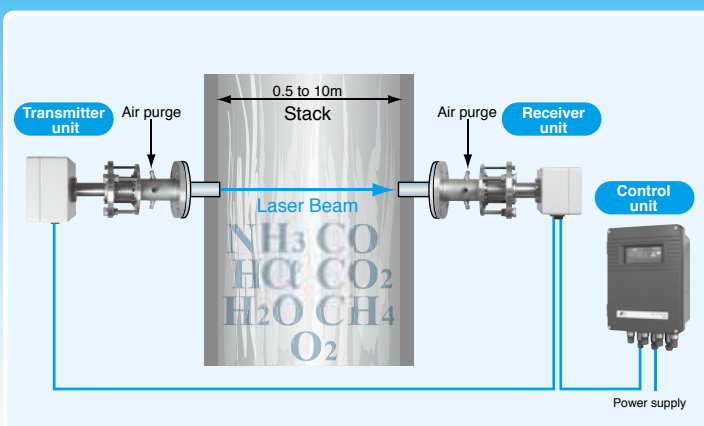
- **Applications**
Industrial boilers and furnaces, etc.
- **Measurable component and range**
O₂ (0 to 2...50vol% manual configuration)
- **Reproducibility**
±0.5% FS
- **Response time**
10 sec. for 90%
- **Automatic calibration and manual/auto blow-down functions**
- **Outer dimensions**
1500x530x550mm (self-standing)
700x400x180mm (wall-mounting)

Compact Type Infrared Gas Analyzer (Type: ZSVF)



- **Applications**
Heat-treatment furnaces, research facilities on biogas or plant cultivation, etc.
- **Measurable components with minimum ranges**
NO_x (0 to 500ppm)
SO₂ (0 to 500ppm)
CO₂ (0 to 200ppm)
CO (0 to 200ppm)
CH₄ (0 to 1000ppm)
O₂ (0 to 5%) built-in paramagnetic or galvanic sensor
- **Repeatability**
±0.5% FS
- **Number of measurable components**
up to 5

Direct Insertion Laser Gas Analyzer (Type: ZSS)



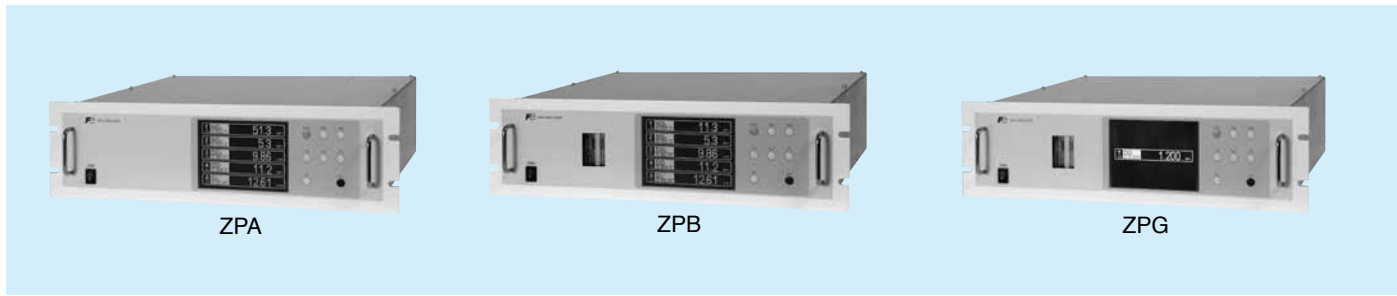
NH₃, HCl, H₂O, O₂, CO, CO₂, and CH₄ gas concentrations can be measured at high speed by directly installing transmitter unit and receiver unit in the stack.

- **Applications**
Incinerators, denitration facilities, heat-treatment furnace
- **Measuring method**
Cross-stack system (path system)
- **Measurable components and ranges**
- **Laser class**
CLASS 1M
- **Display**
LCD with back light
- **Output signal**
4 to 20mADC or 0 to 1VDC
- **Response speed**
1 to 5 sec. or 1 to 2 sec.
- **Zero drift**
±2.0%FS for 6 months

Target gas	Minimum range
HCl	10 ppm
HCl+H ₂ O (*1)	50 ppm (HCl)
NH ₃	15 ppm
NH ₃ +H ₂ O (*1)	50 ppm (NH ₃)
O ₂	4 vol%
CO	2.0 vol%
CO ₂	2.0 vol%
CO+CO ₂	2.5 vol%
CH ₄	100 ppm
CO+O ₂	CO: 200ppm O ₂ : 5vol%

*1) Range for H₂O is fixed at 50vol%.

Family offering ranging from low-concentration (0-5 ppm) measuring to drift-less types in the single beam system!



- Wide measurement range: from 0-5 ppm to 100% in series
- Excellent zero-point stability: $\pm 0.5\%$ FS/week or lower (ZPB, ZPG)
- Continuous and simultaneous concentration measurement of up to 5 gases (ZPA, ZPB)
- Compact and lightweight:
133 (H) \times 483 (W) \times 382 (D) mm; < 13kg
- Simple measuring unit for low maintenance
- Built-in magnetic/galvanized oxygen sensor (optional)

<Minimum measuring range>

Target gas	Standard type (Type: ZPA)	Drift-less type (Type: ZPB)	Low-concentration measurement type (Type: ZPG)
NO	0 to 200 ppm	0 to 50 ppm	0 to 10 ppm
SO ₂	0 to 200 ppm	0 to 50 ppm	0 to 10 ppm
CO ₂	0 to 100 ppm	0 to 50 ppm	0 to 5 ppm
CO	0 to 200 ppm	0 to 50 ppm	0 to 5 ppm
CH ₄	0 to 500 ppm	–	–
H ₂ S	0 to 500 ppm	–	–
O ₂	0 to 5 vol%	0 to 5 vol%	0 to 5 vol%

	Standard type		Drift-less type		Low-concentration measurement type		
Appearance							
Basic model	ZPA		ZPB		ZPG		
Measuring method	Non dispersive infrared absorption (single beam system), magnetic/galvanized/external zirconia oxygen analyzer						
Max No. of components	5 (including O ₂)				2 (including O ₂)		
Measurable components and ranges	Minimum range	Maximum range	Minimum range	Maximum range	Minimum range	Maximum range	
	No.	0 to 200 ppm	0 to 5000 ppm	0 to 50 ppm	0 to 5000 ppm	0 to 10 ppm	0 to 100 ppm
	SO ₂	0 to 200 ppm	0 to 10vol%	0 to 50 ppm	0 to 5000 ppm	0 to 10 ppm	0 to 100 ppm
	CO ₂	0 to 100 ppm	0 to 100vol%	0 to 50 ppm	0 to 25vol%	0 to 5 ppm	0 to 50 ppm
	CO	0 to 200 ppm	0 to 100vol%	0 to 50 ppm	0 to 5000 ppm	0 to 5 ppm	0 to 50 ppm
	CH ₄	0 to 500 ppm	0 to 100vol%	–	–	–	–
	H ₂ S	0 to 500 ppm	0 to 5000 ppm	–	–	–	–
	O ₂ (built-in galvanized analyzer)	0 to 10vol%	0 to 25vol%	0 to 10vol%	0 to 25vol%	0 to 10vol%	0 to 25vol%
	O ₂ (built-in magnetic analyzer)	0 to 5vol%	0 to 100vol%	0 to 5vol%	0 to 100vol%	0 to 5vol%	0 to 100vol%
None		100 to 95vol%	–	–	–	–	
O ₂ (external zirconia analyzer)	0 to 5vol%	0 to 25vol%	0 to 5vol%	0 to 25vol%	0 to 5vol%	0 to 25vol%	
No. of measurement ranges	Up to 2 ranges per component						
Repeatability	Within $\pm 0.5\%$ FS						
Linearity	Within $\pm 1\%$ FS						
Zero drift	Within $\pm 2\%$ FS/week (less than 0-500 ppm, within $\pm 2\%$ FS/day for NO and SO ₂)		Within $\pm 0.5\%$ FS/week				
Span drift	Within $\pm 2\%$ FS/week		Within $\pm 2\%$ FS/week (T ₉₀)				
Response time (within 90%)	Within 10-30 sec. (may vary with measurement range)		Within 30 sec. (T ₉₀) [Loss time may vary (Td=5-20 sec.) according to the gas switching timing through the operation of sample switching]				
Analog output	4 to 20mA DC or 0 to 1V DC						
Communication function (optional)	RS-485 (Modbus) (9-pin D-sub output) half-duplex, start-stop synchronization system						
Display	Backlit LCD (Japanese, English, or Chinese available)						
Atmospheric pressure correction (optional)	Built-in option available						
Reference gas	Unnecessary		Necessary [Dry N ₂ , dry air, or sample gas (component eliminator is necessary)]				
Surrounding temperature/humidity	-20 to 60°C		90vol% or lower (no condensation)				
Power supply voltage	100 to 240 V AC		50/60Hz				
Outer dimensions	133 (H) \times 483 (W) \times 382 (D) mm						

Double-beam system Infrared Gas Analyzer

<5-Component Analyzer>
(Type: ZKJ)



- **Applications**
Boilers and industrial furnaces
- **Measurable components and minimum ranges**
NO (0 to 50ppm)
SO₂ (0 to 50ppm)
CO₂ (0 to 20ppm)
CO (0 to 50ppm)
N₂O (0 to 200ppm)
CH₄ (0 to 200ppm)
O₂ (0 to 5 vol%) built-in paramagnetic sensor
- **Repeatability**
±0.5%FS
- **Number of measurable components**
up to 5
- **Mass**
Approx. 22kg
- **Option** RS232C communication

Double-beam system Infrared Gas Analyzer

<1-Component Analyzer>
(Type: ZRC6)



- **Applications**
Designed to be built into sampling equipment
- **Measurable components and minimum ranges**
NO (0 to 100ppm)
SO₂ (0 to 100ppm)
CO (0 to 100ppm)
CO₂ (0 to 50ppm)
- **Repeatability**
±0.5% FS
- **Output signal**
4 to 20mADC or 0 to 1VDC simultaneous output
- **Power supply voltage**
100 to 240VAC 50/60Hz
- **Mass**
Approx. 9kg

Single-beam system Infrared Gas Analyzer

<5-Component Analyzer>
(Type: ZRE)



- **Measurable components and minimum ranges**
NO (0 to 200ppm)
SO₂ (0 to 200ppm)
CO₂ (0 to 100ppm)
CO (0 to 200ppm)
CH₄ (0 to 500ppm)
O₂ (0 to 5%)
built-in paramagnetic or galvanic sensor
- **Repeatability**
±0.5%FS
- **Number of measurable components**
up to 5
- **Outer dimensions and mass**
133×440×418mm, approx. 8kg
- **Option**
RS232C communication

Single-beam system Infrared Gas Analyzer

<4-Component Analyzer>
(Type: ZRJ)



- **Applications**
Combustion control in industrial furnaces, research facilities on plant
- **Measurable components and minimum ranges**
NO (0 to 500ppm)
SO₂ (0 to 200ppm)
CO₂ (0 to 500ppm)
CO (0 to 200ppm)
CH₄ (0 to 1000ppm)
O₂ (0 to 5%)
built-in paramagnetic or galvanic sensor
- **Repeatability**
±0.5% FS
- **Number of measurable components**
up to 4
- **Mass**
Approx. 10kg
- **Option**
RS232C communication

Single-beam system Infrared Gas Analyzer

<for heat treatment furnaces>
(Type: ZFG)



- **Applications**
CO, CO₂, and CH₄ concentration measurement in heat-treatment furnaces
- **Measurable components and ranges**
CO (0 to 0.5%)
CO₂ (0 to 0.5%)
CH₄ (0 to 1%)
- **Repeatability**
±0.5%FS
- **Number of measurable components**
up to 2
- **Mass**
Approx. 5kg
- **Outer dimensions**
211×218×257mm
- **Option**
CP (Carbon Potential) calculation

Infrared CO₂ Controller

(Type: ZFP9)



- **Applications**
Green houses, ventilation systems for building and parking lot, CA (Controlled Atmosphere) storage facilities
- **Measurable component and range**
CO₂ (0 to 0.2 ... 20%)
- **Mass flow sensor equipped**
- **Repeatability**
±0.5% FS
- **Zero drift**
±10%FS/6 months
- **Outer dimensions**
257×220×85mm
- **Mass**
Approx. 3kg

Thermal Conductivity Gas Analyzer

(Type: ZAF)



- **Applications**
Air separation plants, semiconductor equipment, baking furnace
- **Measurable components and ranges**
H₂ (0 to 3.....100%) He (0 to 5.....100%)
Ar (0 to 10.....100%) CH₄ (0 to 20.....100%)
CO₂ (0 to 10.....100%)
- **Repeatability**
±1% FS
- **Outer dimensions**
240×192×192mm
- **Mass**
Approx. 5kg
- **Option**
RS232C communication, auto-calibration, linearized output, concentration alarm output

Flameproof Type Thermal Conductivity Gas Analyzer

(Type: ZAFE)



- **Applications**
Air separation plants, semiconductor equipment, baking furnace
- **Measurable components and ranges**
H₂ (0 to 3.....100%) He (0 to 5.....100%)
Ar (0 to 10.....100%) CH₄ (0 to 20.....100%)
CO₂ (0 to 10.....100%)
- **Repeatability**
±1% FS
- **Outer dimensions**
470 x 354 x 211mm
- **Mass**
Approx. 22kg
- **Option**
RS232C communication, auto-calibration, linearized output, concentration alarm output
- **Explosion-proof standards**
NEPSI

Portable Type Infrared Gas Analyzer

(Type: ZSVS)



- **Applications**
Heat treatment furnaces
- **Measurable components and ranges**
CO₂ (0 to 200ppm...100%)
CO (0 to 200ppm...100%)
CH₄ (0 to 1000ppm...100%)
O₂ (0 to 5%.....25%)
- **Repeatability**
±0.5% FS
- **Output signal**
4 to 20mADC, 0 to 1VDC, RS232C communication
- **Outer dimensions and mass**
365×211×527mm / Approx. 12kg
- **Option**
CP (Carbon Potential) calculation

Paramagnetic Oxygen Analyzer

(Type: ZKG)



- **Applications**
Process control, environmental monitoring
- **Measurable component and range**
O₂ (0 to 10, 25, 50, 100%)
- **Repeatability**
±0.5% FS
- **Response time**
15 sec. for 90%
- **Output signal**
4 to 20mADC or 0 to 1VDC
- **Power supply voltage**
85 to 264VAC 50/60Hz
- **Outer dimensions**
443×220×463mm

Paramagnetic Oxygen Analyzer (Type: ZAJ)



- **Applications**
Process control, environmental monitoring
- **Measurable components and ranges**
O₂ (0 to 2...100%)
O₂ (100 to 98...0%)
- **Repeatability**
±0.5% FS
- **Response speed**
2 sec./90%
- **Communication**
RS-232C (optional)
- **Outer dimensions**
Rack-mounting type 220 x 483 x 463mm
- **Mass**
Approx. 16kg

Direct Insertion Type Zirconia Oxygen Analyzer (Type: ZFK8, ZKM)



ZKMB ZKMA
ZFK8

- **Applications**
Combustion control in boilers, heating furnaces
- **Measurable components and ranges**
O₂ (0 to 2...50% (2 ranges configurable))
- **Repeatability**
±0.5% FS
- **Response time**
4 to 7 sec. for 90%
- **Output signal**
4 to 20mADC or 0 to 1VDC
- **Converter structure**
IP66 or IP67
- **Others**
Replaceable zirconia element
Auto-calibration, HART/ RS485 communication

Flameproof Type Zirconia Oxygen Analyzer (Type: ZFKE, ZKME)



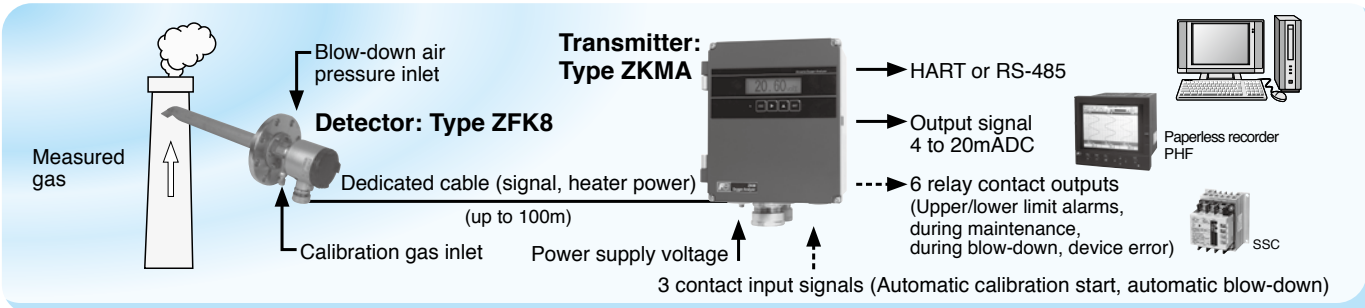
- **Applications**
Combustion control in boilers and heating furnaces with explosive atmosphere
- **Measurable component and range**
O₂ (0 to 2...50% [2 ranges configurable])
- **Repeatability**
±0.5% FS
- **Response time**
4 to 7 sec. for 90%
- **Output signal**
4 to 20mADC or 0 to 1VDC
- **Power supply voltage**
100 to 120VAC or 200 to 240VAC
- **Explosion-proof standards**
TIIIS, NEPSI
- **Others**
Sensor recovery function, replaceable zirconia sensor, Auto-calibration, RS232C/ RS485 communication

Built-in Type Zirconia Oxygen Analyzer (Type: ZFK7)



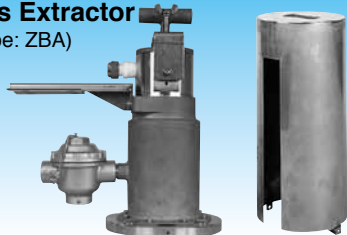
- **Usable gas analyzers**
ZRE, ZKJ, ZRJ, ZPA, ZPB, ZPG
- **Measurement range**
0 to 25%
- **Repeatability**
±0.5% FS
- **Power supply voltage**
100 to 115VAC or 200 to 240VAC
- **Response time**
Approx. 20sec.
- **Outer dimensions**
170x140x190mm

System diagram of Zirconia Oxygen Analyzer



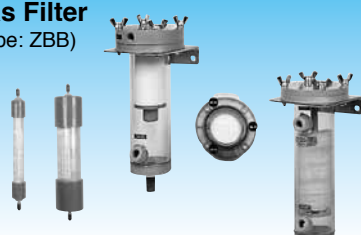
Gas Sampling Devices

Gas Extractor (Type: ZBA)



- For flue gas extraction
- Electric heating system, with built-in SUS mesh filter

Gas Filter (Type: ZBB)



- For elimination of dust and SO₂ mist from sample gas
- Mist filter, membrane filter, gas filter
- Component eliminator

Gas Cooler (Type: ZBC)



- Dehumidification of sample gas
- Electronic type
- Outlet gas dew point: 1 to 3°C
- Sample flow rate: 1.5L/min

Flowmeter and Regulator (Type: ZBD)



- Gas pressure and flow rate adjustment
- Needle Valve (ZBD2)
- Flowmeter (ZBD4, 5)
- Pressure Regulator for standard gas (ZBD6)

Gas Converter (Type: ZDL)



- Conversion of gas components
- CO→CO₂, NO₂→NO

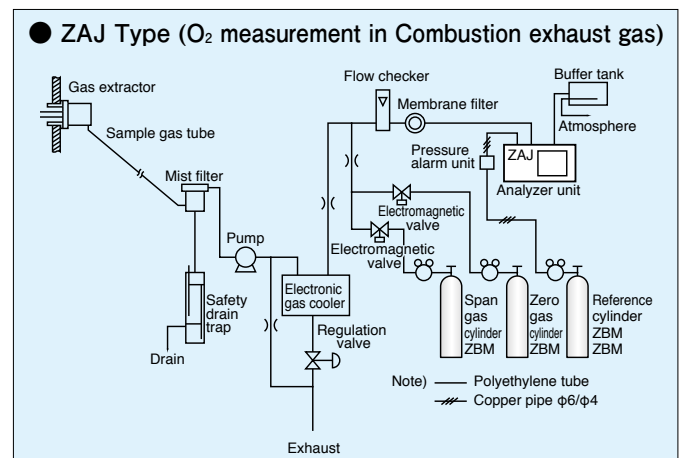
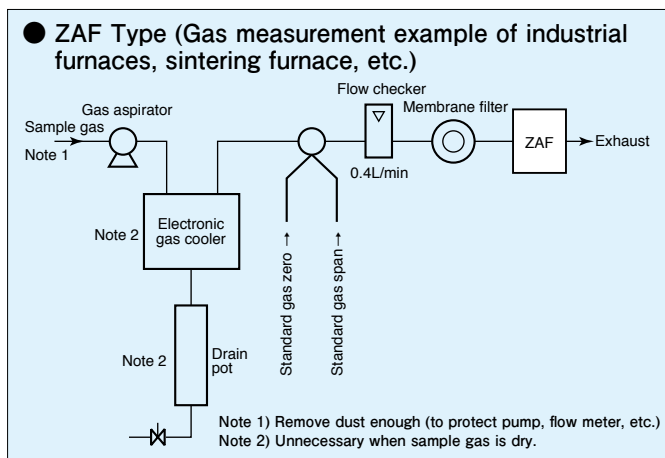
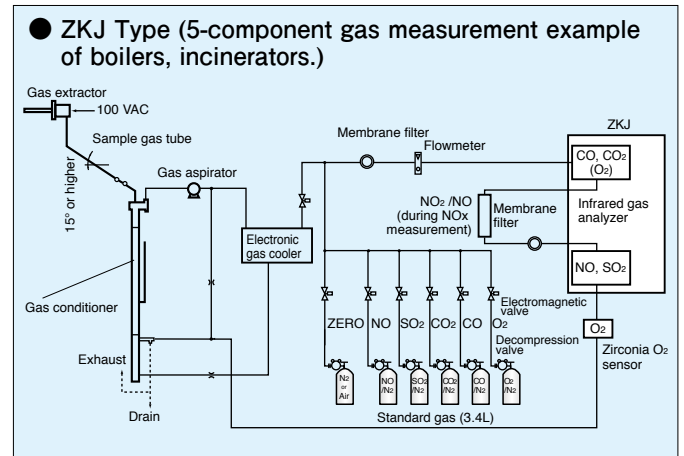
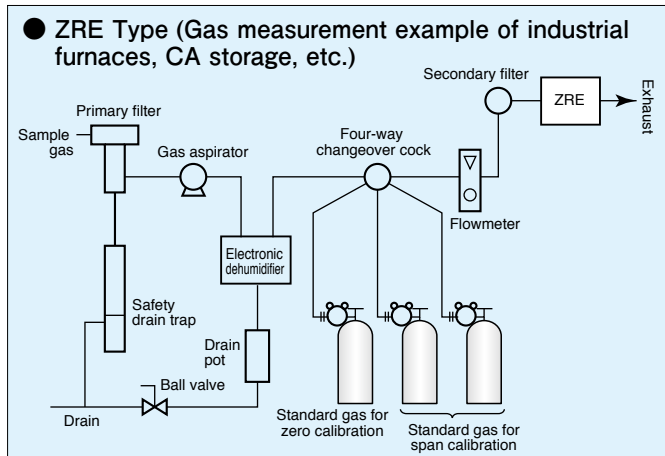
Other Sampling Devices



- Gas Drier (ZBJ)
- Flow Path Switching Valve (ZBF)
- Drain Pot, Trap (ZBH)
- Gas Aspirator (ZBG)

Gas sampling system diagram (examples)

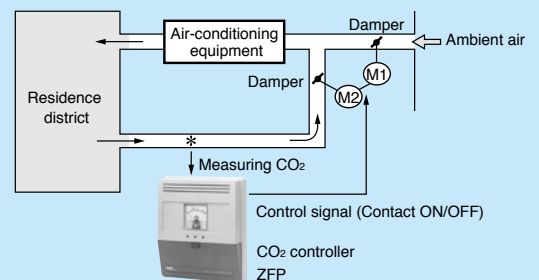
System components can be coordinated so as to match your application by utilizing our rich experience.



Application Examples

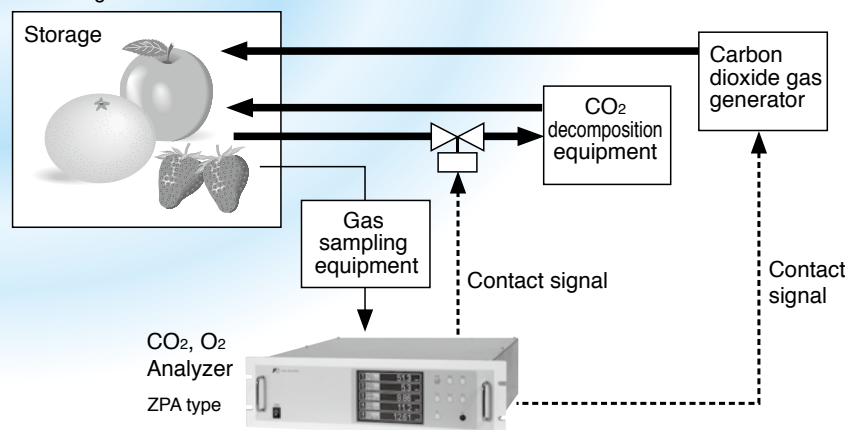
Most recommended for energy saving in air-conditioning of buildings is a CO₂ controller !

The CO₂ gas concentration in a room is required to be within 1,000 ppm by law in Japan. To meet this, the fresh outdoor air is always taken in. Control of the air intake at an appropriate level will save energy to run the air-conditioner for cooling and heating.

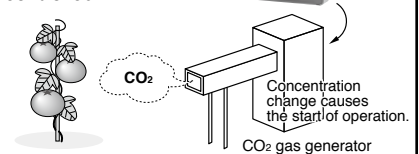


Infrared CO₂ and O₂ gas analyzer for storage of foodstuffs such as vegetable and fruit

Foodstuffs can be kept fresh by controlling the CO₂ and O₂ concentrations properly in a storage house.



To grow vegetables steadily in a greenhouse, the internal CO₂ concentration needs to be kept constant. Because this controller incorporates a CO₂ sensor and control function, the concentration of CO₂ gas emitted from the CO₂ generator installed in a greenhouse can be controlled.



Note 1: SanDisk CompactFlash is a registered trademark of SanDisk Corporation.

Note 2: SDTM is a registered trademark of SD Association.

Note 3: Windows and Excel are registered trademarks of Microsoft Corporation.

 **Caution on Safety**

* Before using products in this catalog, be sure to read their instruction manuals in advance.

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