PORTABLE TYPE
ULTRASONIC FLOWMETER (PORTAFLOW-C)

DATA SHEET

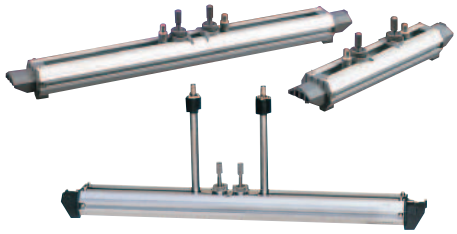
FSC, FLD/FSD

PORTAFLOW-C is a portable type ultrasonic flowmeter utilizing the transit time measuring method, using a clamp-on type detector.
It is a compact and lightweight instrument incorporating the latest electronics and digital signal processing technologies, realizing high performance and easy operation.

FEATURES

1. Compact and lightweight
   The adoption of the latest electronics and digital signal processing technologies has reduced the size and weight of the flow transmitter by 30% and 30%, respectively, in comparison with the Fuji conventional portable flowmeter (Model FSC).
2. Battery operation
   The flowmeter is designed for 12 hours of continuous operation via built-in battery which is rechargeable in 3 hours with the exclusive power adapter.
3. Full variety of detectors
   The flowmeter is suitable for various types of detectors applicable for small to large diameter pipe (ϕ13 to ϕ6000mm) and low to high temperature (–40 to +200°C).
4. High accuracy and high-speed response
   The flowmeter is designed for high accuracy (±1.0%). Response time is within 1 second.
5. Improved anti-bubble characteristic
   Anti-bubble characteristic is greatly improved by digital signal processing.
6. Excellent performance and easy operation
   Large graphic LCD that is outside but easy to read. Minimum number of function keys are used for page selection, allowing easy setting.
   The flowmeter is water resistant and tolerates exposure to rain.
7. Large capacity storage by SD memory card
   Measured data is periodically stored in SD memory card. For example, in case of 256MB, it can be saved about 1 year measurement date(In case of saving period 30 seconds, 14 kinds of saved data). Available up to 8MB(Option256MB)
8. Serial communication
   Use of a USB port allows easy connection to a personal computer. Measured date collection panel and Loader software for PC (standard) which is available for display and change of parameter (site setting) are prepared.
9. Heat quantity (calorie) measurement
   Heat quantity (calorie) may be measured by temperature input, making energy management easy for cooling and heating.
10. Graphic printer connection (option)
    Easy recording with the Integral type printer.

Flow transmitter (FSC)


Detector (FLD)

11. Flow velocity profile measurement (option)
    Flow profile may be observed in real time.

SPECIFICATIONS

Measuring objects

Measurement fluid: Uniform liquid in which ultrasonic waves can propagate.
Turbidity of fluid: 10000 mg/L or less
State of fluid: Well-developed turbulent or laminar flow in a filled pipe.
Fluid temperature: –40 to +200°C
Measuring range: 0···±0.3 to ±32m/s

Piping conditions

Applicable piping material: Select from carbon steel, stainless steel, cast iron, PVC, FRP, copper, aluminum, acrylic or material of known sound velocity.
Pipe size: Flow rate measurement
ϕ13 to ϕ6000mm
Flow velocity profile measurement
ϕ40 to ϕ1000mm
Lining material: Select from no lining, tar epoxy, mortar, rubber, Teflon, pyrex glass or material of known sound velocity.
Note) No gap allowed between the lining and the pipe.

Straight pipe length:
10D or more upstream and 5D or more downstream (D: internal pipe diameter)
Refer to Japan Electric Measuring Instruments Manufactures' Association's standard JEMIS-032 for details.

Performance specifications

Accuracy rating:

Piping diameter (inner diameter)	Flow velocity range	Accuracy
ϕ13 to ϕ25mm	2 to 32m/s	±2.5% of rate
	0 to 2m/s	±0.05m/s
ϕ25 to ϕ50mm	2 to 32m/s	±1.5% of rate
	0 to 2m/s	±0.03m/s
ϕ50 to ϕ300mm	2 to 32m/s	±1.0% of rate
	0 to 2m/s	±0.02m/s
ϕ300 to ϕ6000mm	1 to 32m/s	±1.0% of rate
	0 to 1m/s	±0.01m/s

Note) Reference conditions are based on JEMIS-032.

Flow transmitter (Type: FSC)

Power supply: Built-in battery or AC power adapter
Built-in battery: Exclusive lithium button battery (5000m Ah)
Continuous operation time, approx. 12 hours (without printer, back light OFF, output current not used and at normal ambient temperature (20°C))
Recharging time, approx. 3 hours (power adapter used)
Recharging temperature range: 0 to +40°C
Power adapter: Exclusive power adapter 90V to 264V AC (50/60Hz)
Power Consumption: Approx. 3W

LCD: Semi-transmissive color graphic display 240 × 320 (with back light)
Measurement value (instantaneous flow rate, integrated flow rate) and various settings are displayed.
Excellent visibility even outdoors in direct sunlight.

LED display: Status display when using AC power adapter.
DC IN (green): Power supply status
CHARGE (red): Battery charging underway

Operation keypad:
11 buttons
(ON, OFF, ENT, ESC, MENU, △, ▽, ◁, ▷, LIGHT, PRINT)

Power failure backup:
Measurement value is backed up by nonvolatile memory.
Clock backup with lithium battery (effective term, 10 years or more)

Response time: 1 second

Analog output signals:
4 to 20mA DC, one point (load resistance, 600Ω or less)
Instantaneous velocity, instantaneous flow rate or heat quantity (calorie) after scaling.

Analog input signal:
4 to 20mA DC, one point (input resistance, 200Ω or less)
4 to 20mA DC, one point (input resistance, 200Ω or less) or 1 to 5V DC, one point
(Total 2 points)
Used to input temperature for heat quantity measurement, etc.

SD memory card: Used for data logger function and recording screen data.
Available up to 8GB (Option256MB)
Compliant media
- SD memory card: speed class 2, 4, 6
- SDHC memory card: speed class 4, 6

Format
- FAT12: 64MB
- FAT16: 128MB to 2GB
- FAT32: 4GB, 8GB

Otherwise, reading and saving are impossible.
File format
- Date logger: CSV file
- Screen date: Bit map file

Serial communication:
USB port (device* compatible):
Mini B receptacle
Connectable number of Mini B receptacles:
1 unit
Transmission distance: 3m max.
Transmission speed: 500kbps
Data:
Instantaneous velocity, instantaneous flow rate, total value, heat quantity (calorie) value, error information, logger data, etc.
* Device: Connected plug from PC

Printer (option): To be mounted on top of transmitter unit
Thermal line dot printing
When the Chinese display is selected, printing is made in kanji characters.

Ambient temperature:
–10 to +55°C (Without printer)
–10 to +45°C (With printer)

Ambient humidity: 90%RH or less
Type of enclosure: IP64 (Without printer)
Enclosure case: Plastic case
Outer dimensions: H210 × W120 × D65mm (Without printer)
H320 × W120 × D65mm (With printer)
Weight: 1.0kg (Without printer)
1.2kg (With printer)

Various functions

Display language: Selectable from Japanese, English, German, French, Spanish or Chinese (switchable by key operation).

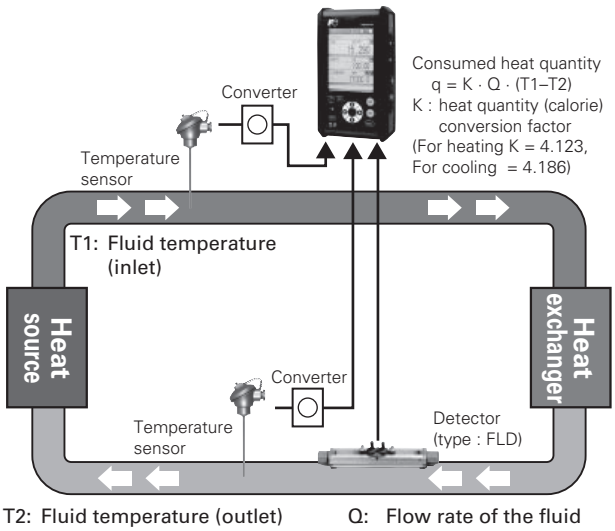
Clock display function:
Time (year, month, day, hour, minute) display (configurable)
Monthly error: about 1 minutes at normal temperature (20°C).
However, time error at power ON/OFF is not included.

Instantaneous value display function:
Instantaneous velocity, instantaneous flow rate display (The flow in reverse direction is displayed with minus "–.")
Numeric value: 10 digits (decimal point equals 1 digit)
Unit: Metric/English system selectable
Metric system
Velocity: m/s
Flow rate: L/s, L/min, L/h, L/d, kL/d, ML/d, m^3/s, m^3/min, m^3/h, m^3/d, km^3/d, Mm^3/d, BBL/s, BBL/min, BBL/h, BBL/d, kBBL/d, MBBL/d
English system
Velocity: ft/s
Flow rate: gal/s, gal/min, gal/h, gal/d, kgal/d, Mgal/d, ft^3/s, ft^3/min, ft^3/h, ft^3/d, kft^3/d, Mft^3/d, BBL/s, BBL/min, BBL/h, BBL/d, kBBL/d, MBBL/d

Total value display function:
Display of forward or reverse total (reverse is displayed as minus)
Numeric value: 10 digits (decimal point is corresponding to 1 digit)
Unit: Metric/English system selectable
Metric system
Flow rate total: mL, L, m^3, km^3, Mm^3, mBBL, BBL, kBBL
English system
Flow rate total: gal, kgal, ft^3, kft^3, Mft^3, mBBL, BBL, kBBL, ACRE-ft

Consumed heat quantity (calorie) display function:
Display of consumed heating medium
Metric system
Heat flow: MJ/h, GJ/h
Total heat quantity: MJ, GJ
English system
Heat flow: MJ/h, GJ/h, BTU/h, kBTU/h, MBTU/h
Total heat quantity:
MJ, GJ, BTU, kBTU, MBTU

Computation function of consumed heat quantity (calorie):
This function calculates the heat quantity received and sent with liquid (water) in cooling and heating.



T2: Fluid temperature (outlet) Q: Flow rate of the fluid

Temperature display function:
Fluid temperature be displayed by current input from temperature transmitter.
Metric system
Temperature unit: °C or K
English system
Temperature unit: F or K

Site data storage function:
Max. 32 locations (sites) data (pipe size, material, fluid type and etc) can be stored into built-in non-volantile memory.

Damping: 0 to 100sec (every 0.1sec) configurable for analog output and velocity/flow rate display

Low flow cut: Equivalent to 0 to 5m/s

Output setting function:
Current output scaling, output type, burnout setting and calibration

Serial communication function:
Instantaneous velocity, instantaneous flow rate, total value, heat flow, error information, received waveform, analog input, velocity profile data, logger data, etc. may be downloaded to personal computer.

Logger function: Instantaneous velocity, instantaneous flow rate, total value, heat flow, error information, received waveform, analog input, velocity profile date can be saved in a SD memory card.

Waveform display function:
Bi-directional received waveforms may be displayed.

Graph display function:
Flow rate trend graph may be displayed.

Printing function (option):
Hard copy output of a screen
Periodic printing (type: text, graph)
Logger date (type: text, graph)

Flow velocity profile measurement (option):
Flow velocity profile may be observed in real time using the exclusive detector (option).
(Refer to page 5 for details.)

Detector (Type: FLD)

Type of detector:

Kind	Type	Internal pipe diameter (mm)	Fluid temperature
Small type	FLD12	ϕ50 to ϕ400	–40 to 100°C
Small diameter	FLD22	ϕ13 to ϕ100	–40 to 100°C
High temperature	FLD32	ϕ50 to ϕ400	–40 to 200°C
Middle type	FLD41	ϕ200 to ϕ1200	–40 to 80°C
Large type	FLD51	ϕ200 to ϕ6000	–40 to 80°C

Mounting method:
Mounting on outside of existing pipe

Sensor mounting method: V or Z method

Signal cable: Exclusive coaxial cable
Standard 5m

Method for connection:
Flow transmitter side
Exclusive connector
Detector side
Large/middle type: Screw terminal
Others: BNC connector

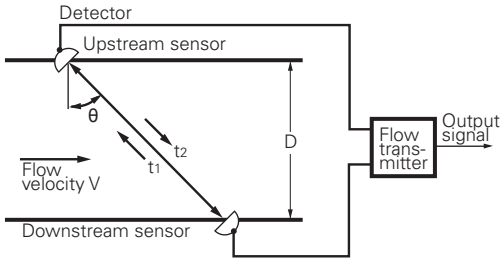
Ambient temperature: –20 to +60°C
Ambient humidity: Large/middle type sensor:
100%RH or less
Others: 90%RH or less
Type of enclosure:
Large/middle type sensor: IP67
Others: IP52
Material and mounting belt/wire:

Kind	Type	Sensor case	Mounting bracket	Mounting belt /wire
Small diameter	FLD22	Plastic	Aluminum alloy + Plastic	Plastic cloth belt
Small type	FLD12	Plastic	Aluminum alloy + Plastic	Plastic cloth belt
Middle type	FLD41	Plastic	––	Stainless wire
Large type	FLD51	Plastic	––	Stainless wire
High temperature	FLD32	SUS304	Aluminum alloy + SUS304	Stainless belt

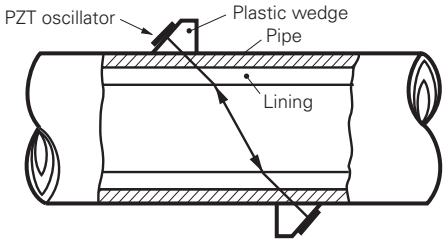
Extension cable (option):
Extended when the length of the detector signal cable is not sufficient.
Length: 10m, 50m

MEASURING PRINCIPLE

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

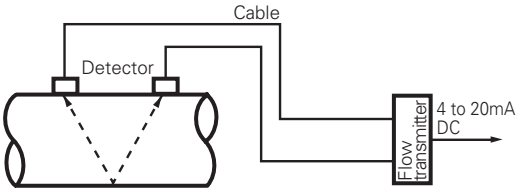


MOUNTING OF DETECTOR

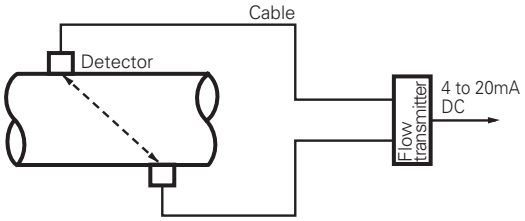


CONFIGURATION DIAGRAM

(1) When V method is used for mounting



(2) When Z method is used for mounting



DETECTOR SELECTION GUIDE

Type	Fluid temperature [°C]	Mounting method	Inner diameter of piping ø (mm) 13 25 50 100 200 250 300 400 1000 3000 6000
FLD12	–40 to 100	V	50 – 300
		Z	150 – 400
FLD22	–40 to 100	V	13 – 100
FLD32	–40 to 200	V	50 – 250
		Z	150 – 400
FLD41	–40 to 80	V	200 – 600
		Z	200 – 1200
FLD51		V	200 – 3000
		Z	200 – 6000

* For the pipe inner diameter of ϕ13mm, the sensor mounting dimension may be 0.0mm or less depending on pipe material and thickness.
When the sensor mounting dimension is 0.0mm or less, measurement error is about 2 to 5%.

Required min. pipe thickness (fluid: water) (Unit: mm)			
Steel pipe	2.15 or more	FRP	3.21 or more
Stainless pipe	1.87 or more	Ductile cast iron	2.15 or more
PVC pipe	3.69 or more	PEEK	3.69 or more
Copper pipe	3.82 or more	PVDF	3.69 or more
Cast-iron pipe	2.98 or more	Acrylic pipe	2.90 or more
Aluminum pipe	1.99 or more	Polypropylene	3.69 or more

FLOW VELOCITY PROFILE DISPLAY FUNCTION (OPTION)

Flow velocity profile can be observed in real time using the dedicated detector from the outside. It is specifiable by the code symbol of flow transmitter.

APPLICATION

Pulse Doppler method is applicable to observe flow velocity profile in real time, display the flow status in the pipe, and decide the appropriate measurement location. Also, it can be used for diagnosis of flow and laboratory test.

SPECIFICATIONS

Measuring fluid: Uniform liquid in which ultrasonic waves can propagate.
Turbidity of fluid: Axisymmetric flow in a filled pipe.
Fluid temperature:
−40 to +100°C (FSDP2)
−40 to +80°C (FSDP1,FSDP0)
Air bubble quantity:
0.02 to 15Vol% (Velocity is 1m/s)
Pipe size: Small type sensor : ϕ40 to ϕ200mm
Middle type sensor :ϕ100 to ϕ400mm
Large type sensor :ϕ200 to ϕ1000mm
Measurement range:
0 to ±0.3: ±Maximum Velocity (depending on the pipe diameter)
Refer to chart, page 6.
Note) This function is to observe flow velocity profile, and it may be different from actual flow rate.

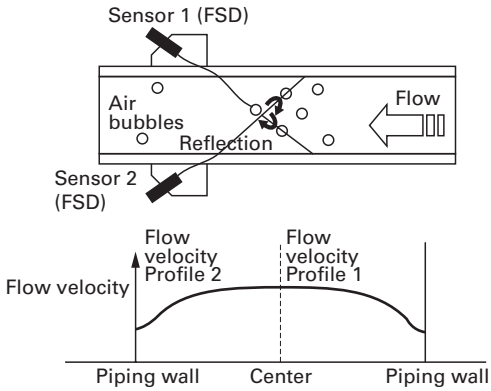
DETECTOR FOR FLOW VELOCITY PROFILE MEASUREMENT (TYPE: FSD)

Mounting method:
Mounting on outside of existing pipe
Ambient temperature: −20 to +80°C
Ambient humidity: 100% RH or less
Type of enclosure:
IP67 (with waterproof BNC connector provided.)
Material: Sensor housing: PBT
Guide frame: Aluminum alloy
Mounting belt: Plastic cloth belt/stainless belt

Measurement principle

<Pulse Doppler method>

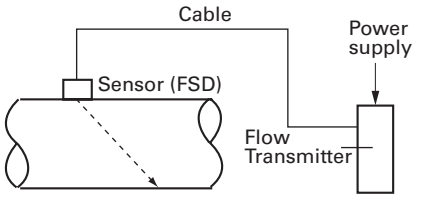
- Ultrasonic pulses are transmitted through the fluid flow. Entrained bubbles and microscopic particles within the fluid create frequency phase shifts (Doppler effect.) The resulting doppler shifts are integrated across the inside pipe diameter cross section. The resulting profile curve is a real-time dynamic display of the flow profile within the pipe.



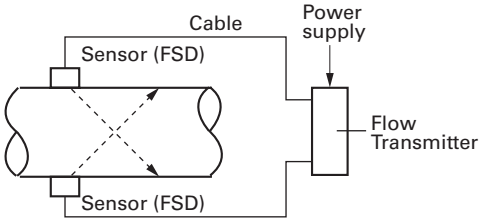
The above shows an example when using two sensors. One detector displays the flow velocity profile for a radius.

Block diagram

(1) Using one sensor



(2) Using two sensors



<Maximum measurable flow velocity>

Unit: m/s

Diameter	FSDP2	FSDP1	FSDP0
40A	6.56		
50A	6.52		
65A	5.31		
80A	4.65		
90A	4.12		
100A	3.69	7.25	
125A	3.08	6.08	
150A	2.63	5.20	
200A	2.04	4.05	7.77
250A		3.30	6.38
300A		2.78	5.41
350A		2.51	4.90
400A		2.20	4.31
450A			3.80
500A			3.48
550A			3.17
600A			2.91
650A			2.71
700A			2.52
750A			2.35
800A			2.21
850A			2.08
900A			1.97
1000A			1.77

<Maximum measurable flow rate>

Unit: m^3/h

FSDP2	FSDP1	FSDP0
33.6		
52.7		
72.1		
86.5		
102		
118	231	
147	289	
179	354	
239	474	908
	604	1168
	735	1428
	820	1598
	951	1858
		2118
		2358
		2618
		2879
		3096
		3357
		3618
		3879
		4140
		4400
		4902

PC Loader software

Equipped as standard

- PC/AT compatible machines.
- Operation on custom built PCs or shop-brand PCs cannot be guaranteed.
- Major functions: Performs parameter (site setting) display /change of the main unit and collects measured date.
  Instantaneous velocity, instantaneous flow rate, total value, error information, received waveform, analog input, logger data, etc. may be downloaded in a personal computer.
- O/S: Windows2000/XP/Vista*
- Memory requirement: 128MB or more
- Disk unit: Windows2000/XP/Vista-compatible CD-ROM drive
- Hard disk drive capacity: Free space of 52MB or more

* Windows Vista: Use it in basic mode.
  It is not available for Windows Aero.

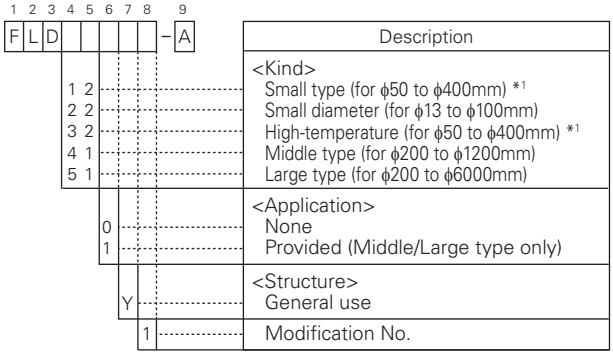
CODE SYMBOL

<Flow transmitter>

1	2	3	4	5	6	7	8		9	10	Description
F	S	C					1	-		0	
			S								<Specification> Standard
				1							<Converter> Basic system
				2							Basic system + Printer
					0						<Flow velocity profile measurement> None
					1						Provided (detector to measure flow velocity profile is separately required.)
						A					<Power adapter> AC power + power cord (125V AC) for Japanese and North American use
						B					AC power + power cord (250V AC) for European and Korean use
						C					AC power + power cord (250V AC) for Chinese use
							1				Modification No.
									0		<SD memory card> None
									1		Provided (256MB)

<Detector>

(for transit time)



Description
<Kind> Small type (for ϕ50 to ϕ400mm) *1 Small diameter (for ϕ13 to ϕ100mm) High-temperature (for ϕ50 to ϕ400mm) *1 Middle type (for ϕ200 to ϕ1200mm) Large type (for ϕ200 to ϕ6000mm)
<Application> None Provided (Middle/Large type only)
<Structure> General use
Modification No.

Note)

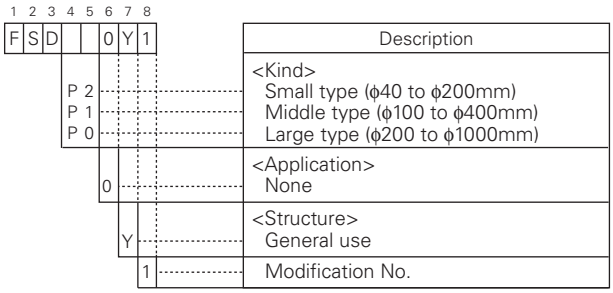
*1) Applicable diameter range:

V method: ϕ50 to ϕ250 (FLD32), ϕ50 to ϕ300 (FLD12)

Z method: ϕ150 to ϕ400 (FLD32, FLD12)

Use the optional guide rail, if a pipe that does not allow ultrasonic waves to pass through easily, such as when an old pipe, cast iron pipe or a pipe with mortar lining is used, or the flow or liquid high in turbidity is measured. Employ the Z method for mounting.

(for flow velocity profile measurement)



Description
<Kind> Small type (ϕ40 to ϕ200mm) Middle type (ϕ100 to ϕ400mm) Large type (ϕ200 to ϕ1000mm)
<Application> None
<Structure> General use
Modification No.

SCOPE OF DELIVERY

<Flow transmitter>

Name of unit		Scope of delivery
1	Basic system	1) Conversion unit 2) Power adapter 3) Power connector conversion cord 4) Power cord 5) Analog input/output cord (1.5m) 6) USB cable (1m) 7) Carrying case 8) Strap 9) Special type signal cable (5m × 2) 10) BNC adapter 11) CD-ROM (Instruction manual and Loader software for PC)
2	Printer (option)	1) Printer unit 2) Printer rolled paper (1 roll)
3	SD memory card (option)	1) SD memory card (256MB)

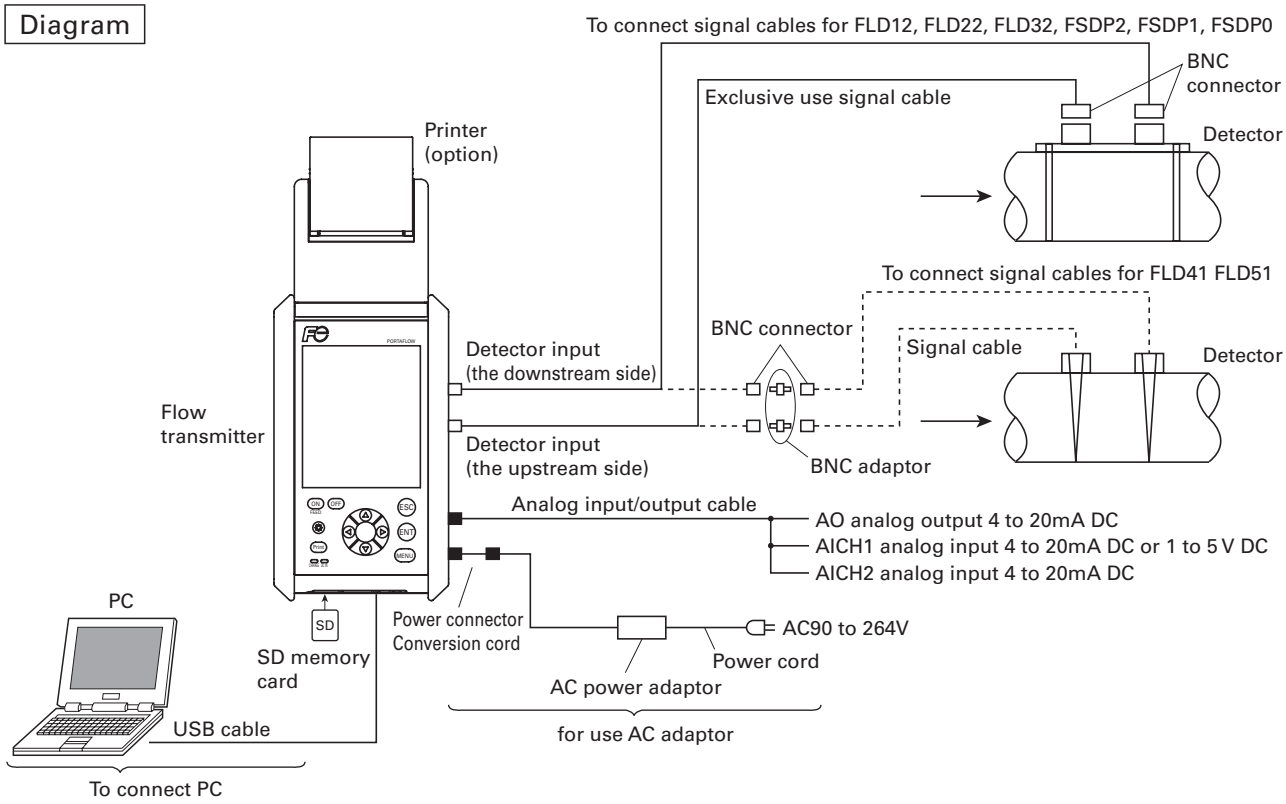
<Detector>

Name of unit		Scope of delivery
1	Detector for propagation time difference (FLD)	1) Sensor unit 2) Signal cable (5m) for FLD 3) Mounting belt/wire 4) Silicone grease (100g)
2	Detector for flow velocity profile (FSD)	1) Detector unit 2) Mounting belt/wire 3) Silicone grease (100g)

OPTIONAL ITEMS

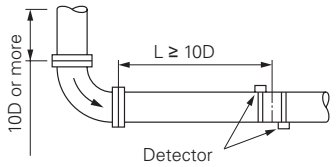
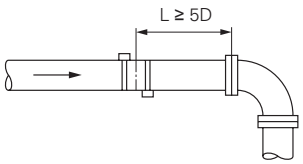
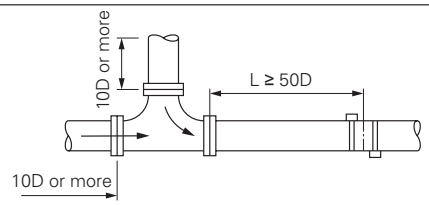
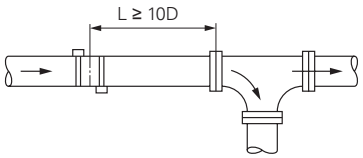
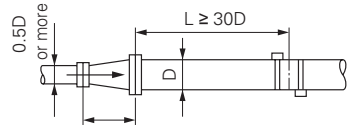
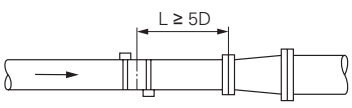
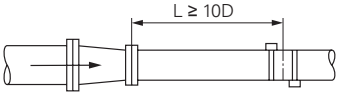
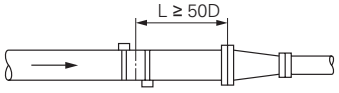
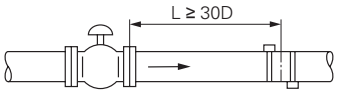
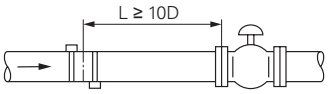
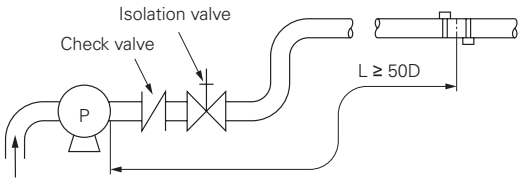
	Name	Specifications	Arrangement No.
1	Battery	Special type Li-ion battery (7.4V, 2500mAh)×2	ZZP*TK7N6384P1
2	Power adapter	Special type power adapter 90 to 264V AC, 50/60Hz · AC power adapter · Power connector conversion code	 ZZP*TK7N6383P1 ZZP*TK4J2637C1
3	Power code	Japan, North America:125V AC 2m Europe, Korea: 250V AC 2m China: 250V AC 2m	ZZP*TK7N6621P1 ZZP*TK7N6608P1 ZZP*TK7N6609P1
4	Printer unit	To be mounted on top of converter Thermal serial dot system (8 x 384 dot)	ZZP*TK4J2634C1
5	Printer roll paper	Maker: SEIKO I SUPPLY Co. Ltd. Type: LP-251L Specifications: Thermal roll paper Width: 58mm×ϕ48mm, No core	ZZP*TK7N6381P1
6	Silicone grease	Maker: Shin-Etsu Chemical Co., Ltd. Type: · For standard use G40M, 100g · For high temperature KS62M, 100g	 ZZP*TK7G7984C1 ZZP*TK7G7983C1
7	Signal cable	Special type signal cable, 5m × 2 Connector on both sides Red connector Blue connector · Large type sensor: BNC connector on one side · BNC adapter	 ZZP*TK4J2640C1 ZZP*TK4J2640C2 ZZP*TK468664C5 ZZP*TK7N6323P11
8	Extension signal cable	Special type coaxial cable with BNC connector · 10m × 2 · 50m × 2	 ZZP*TK468664C3 ZZP*TK468664C4
9	Analog input/output cable	6-core cable, 1.5m, with connector	ZZP*TK4J2639C1
10	Mounting belt /wire	· Small type/small diameter sensor: Plastic cloth belt · Large type sensor: Stainless wire Nominal diameter ϕ200 to ϕ500mm ϕ200 to ϕ1000mm ϕ200 to ϕ2000mm ϕ200 to ϕ3000mm ϕ200 to ϕ6000mm · High-temperature sensor: Stainless steel belt	ZZP*TK7G7979C1 ZZP*TK7G7980C1 ZZP*TK7G7980C2 ZZP*TK7G7980C3 ZZP*TK7G7980C4 ZZP*TK7G7980C5 ZZP*TK7G7981C1
11	Guide rail for high-temperature sensor (In mounting by the Z method)	· Mounting bracket material: Aluminum alloy+SUS304	ZZP*TK4C6164C1
12	Guide rail for small detector (In mounting by the Z method)	· Mounting bracket material: Aluminum alloy+plastic	ZZP*TK4C6164C2
13	SD memory card	Maker: Apacer Technology, Inc. Type: AP-ESD256TPSR Capacity: 256MB	ZZP*TK7N6386P1
14	USB cable	Maker: Sunwa Supply Inc. Type: KU-AMB510 Specifications: Mini USB cable (1.0m)	ZZP*TK7N6622P1

Diagram



Conditions on straight pipe

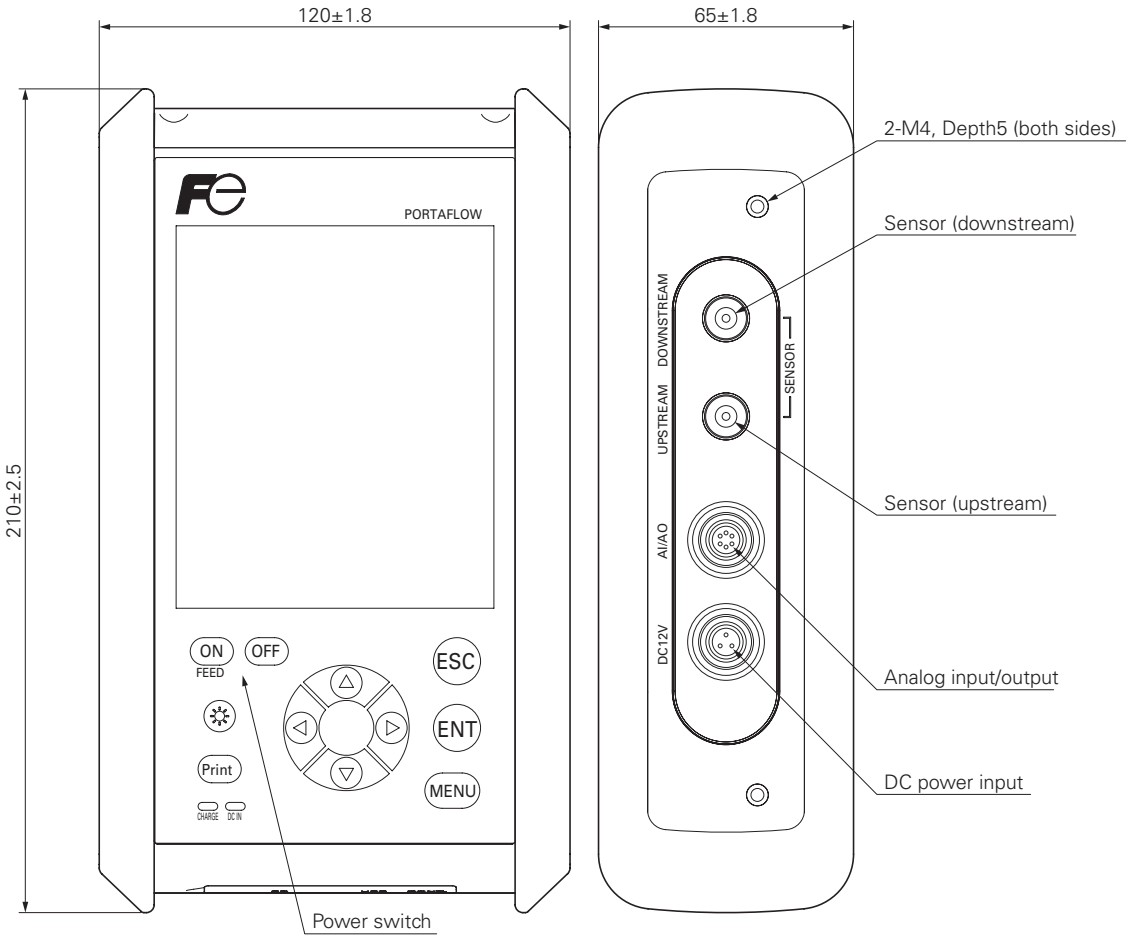
(D: Nominal diameter of pipe)

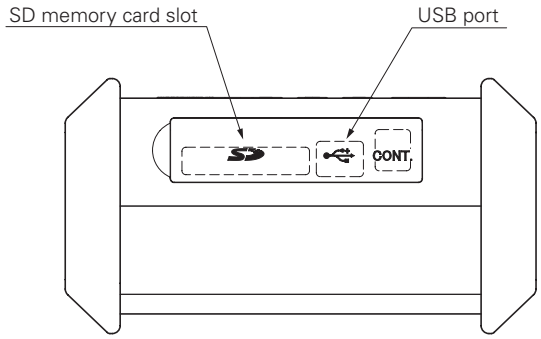
Type	Length of upstream straight pipe	Length of downstream straight pipe
90° bend		
Tee		
Diffuser		
Contraction pipe		
Valve		
Pump		

Note) Source: Japan Electric Measuring Instruments Manufacturers' Association (JEMIS-032)

OUTLINE DIAGRAM (Unit:mm)

Flow transmitter

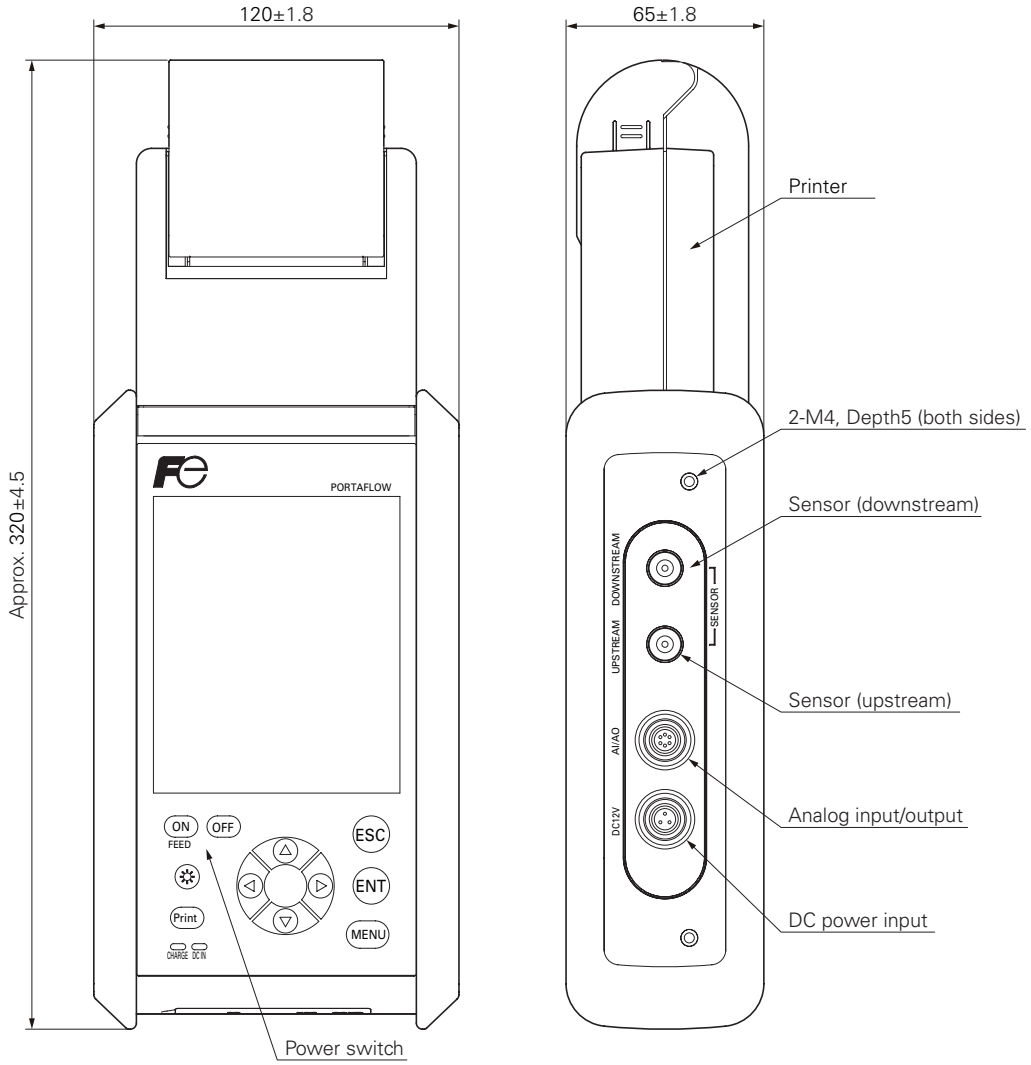


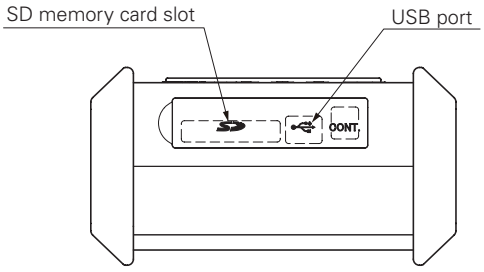


Weight : Approx. 1.0kg

OUTLINE DIAGRAM (Unit:mm)

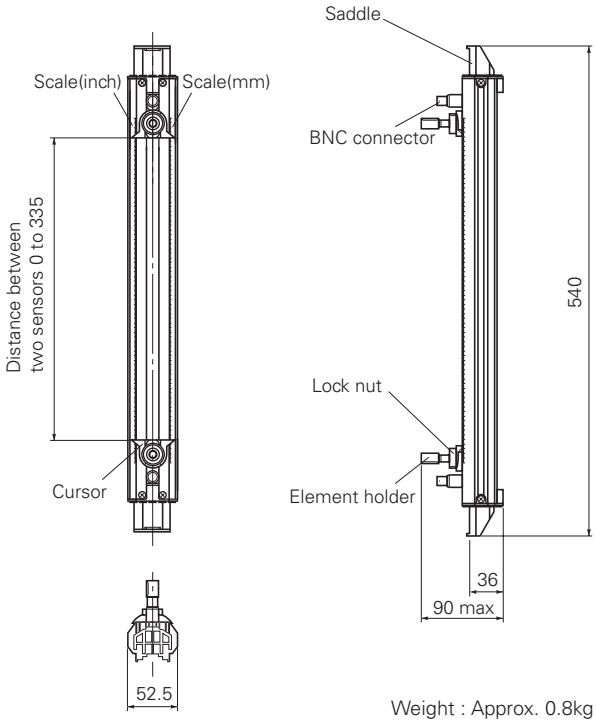
Flow transmitter (with printer)





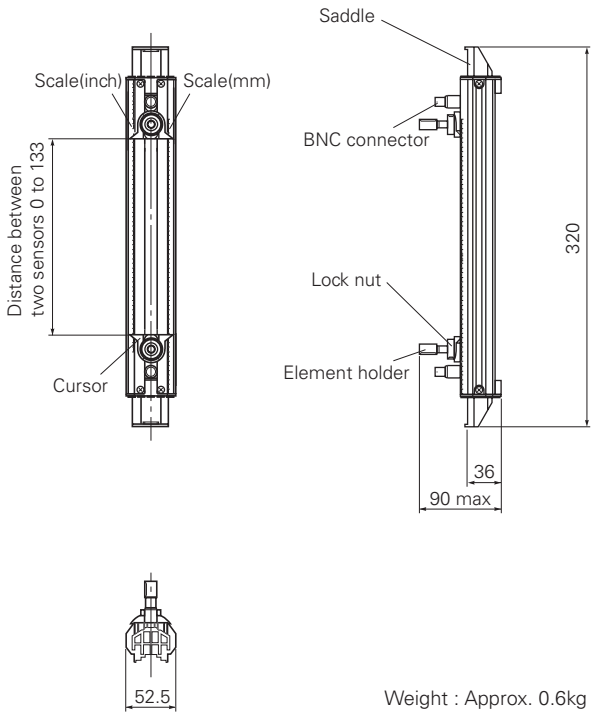
Weight : Approx. 1.2kg

OUTLINE DIAGRAM (Unit:mm)



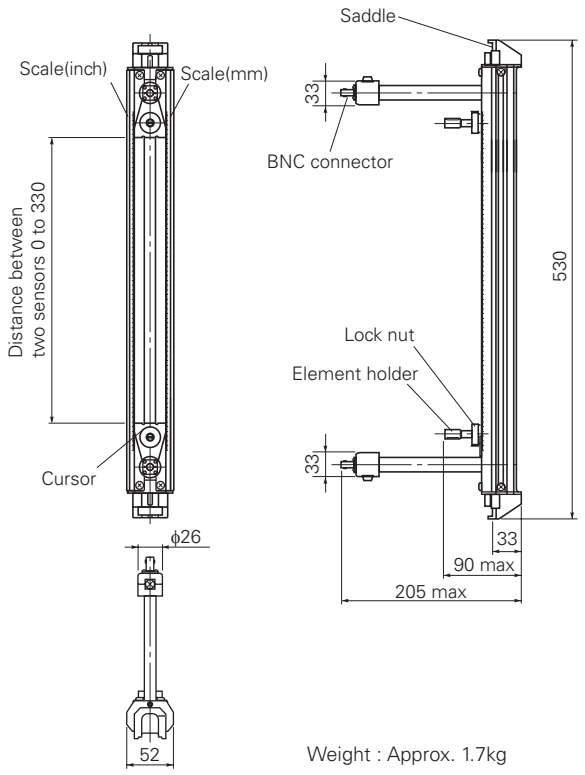
Weight : Approx. 0.8kg

Detector FLD12 (Small type)



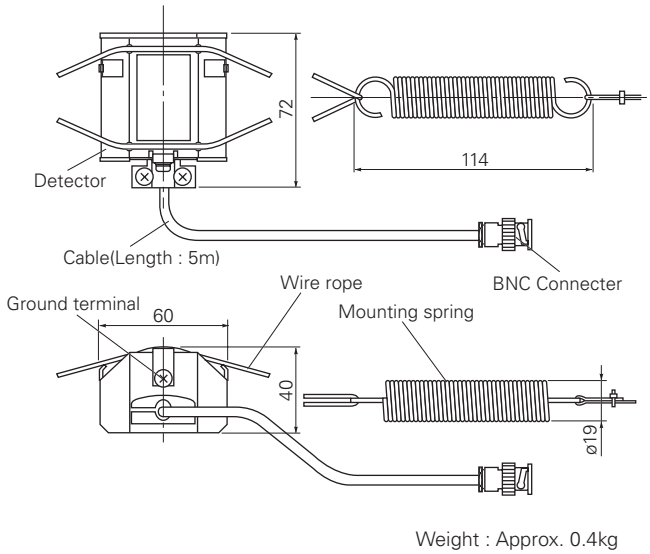
Weight : Approx. 0.6kg

Detector FLD22 (Small diameter)



Weight : Approx. 1.7kg

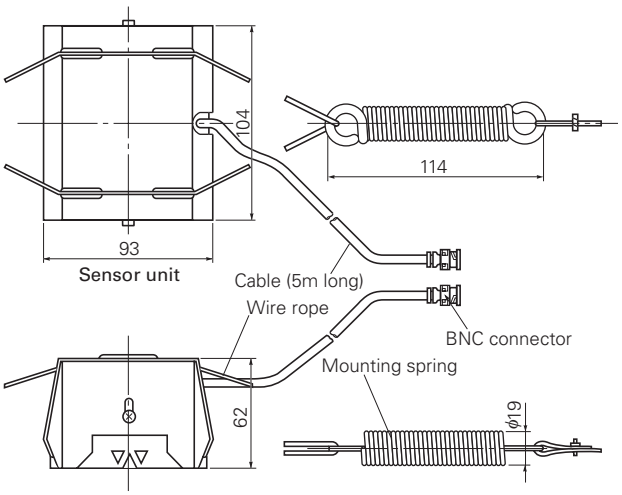
Detector FLD32 (High-temperature)



Weight : Approx. 0.4kg

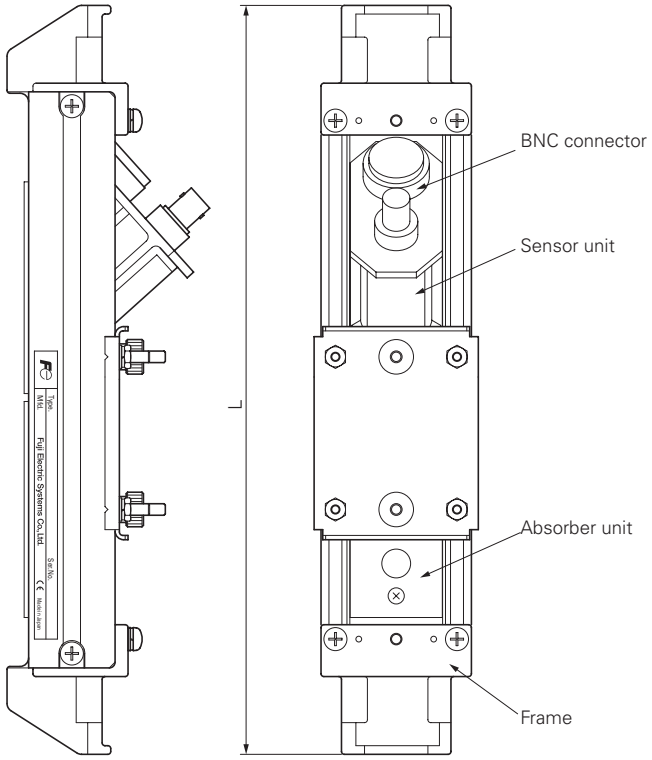
Detector FLD41 (Middle type)

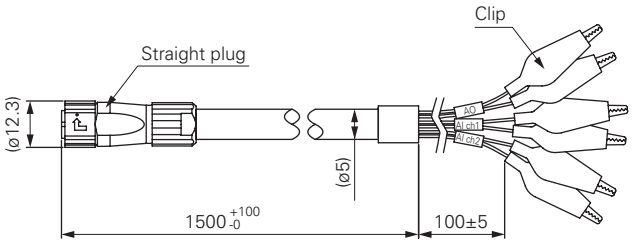
OUTLINE DIAGRAM (Unit:mm)



Weight : Approx. 1.4kg

Detector FLD51 (Large type)

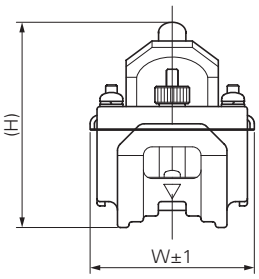




Weight : approx. 0.1kg

Code color	Clip color	Mark
Black (BK)	Red (R) (+)	AO
White (W)	Black (BK) (–)	
Red (R)	Red (R) (+)	AI ch1
Green (G)	Black (BK) (–)	
Yellow (Y)	Red (R) (+)	AI ch2
Brown (BN)	Black (BK) (–)	

Analog input/output cable



Type	Diameter (mm)	L	H	W	Weight Approx. (kg)
FSDP2	ϕ40 to ϕ200	260±1.2	70	57	0.8
FSDP1	ϕ100 to ϕ400	260±1.2	72	57	0.9
FSDP0	ϕ200 to ϕ1000	350±2.0	90	85	2.0

Detector FSD (Detector for flow velocity profile measurement)

⚠ Caution on Safety

*Before using this product, be sure to read its instruction manual in advance.

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