PRODUCT DATA SHEET

Stationary

Ultrasonic Flowmeter

UW-10

TOKYO KEIKI INC.

1. Outline

1) Transit times of ultrasonic pulses transmitted in a liquid vary with the flow velocity of the liquid and ultrasonic flowmeters utilize this characteristic to measure flow.

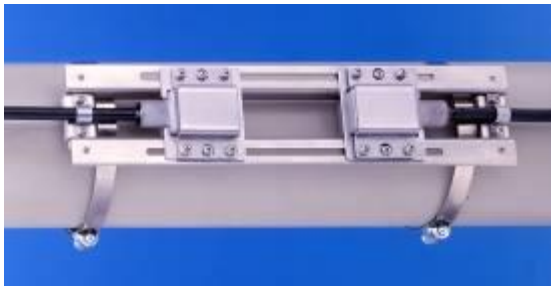
2) Regardless of whether the liquid is electrically conductive or non-conductive, ultrasonic flowmeters can measure various types of liquids such as potable water, river water, industrial water, agricultural water, wastewater, seawater, and pure water.

3) Transducers are clamped on to the outside of the pipe so it is not necessary to cut pipes or stop flow for installation and there is no pressure loss.

4) Flow measurements are possible over a wide range, -30m/s to +30m/s.

5) Economical measurements of flow from 25mm to 6000mm can be obtained.

6) Easy Operation through PC configuration software. Through graphical user interface, it is very simple and useful for everyone to input all data.



2. Features

1) *Transit-Time*

High Accuracy	±1.0% R.D. measurement ±0.3% Repeatability

2) *Wide Measuring Coverage*

Pipe dia : DN25mm ~ DN6000mm

Velocity : -30m/s ~ +30m/s

3) *Multi-Path System*

4-Path System Capability

4) *Variety Output*

2 ports : RS232C digital output

4 ports : Contact output

2 ports : Analog output

5) *Easy Configuration*

Menu driven 4-keys input

Graphical PC Configuration

6) *Logging*

Support the logging of measurement and setting changes.

3. Configuration

Flowmeter components

Component	Model	Quantity	Description
1. Main unit	UW-10	1 pc	Flowmeter main unit
2. Transducers	25mm-250mm Pipe 1MHz Sensor 300mm-6000mm Pipe 0.4MHz Sensor	1 path measurement: 2 pcs 2 paths measurement: 4 pcs 4 paths measurement: 8 pcs(*)	Ultrasonic transmit and receiving transducers and pipe-mounting fixtures for transducer (integrated transducer cable; length: 5m (standard))
3. Mounting fixture		1 set	Metal fixtures used to attach transducers to a pipe
4. Coaxial cable	5C-2WAE	1 path measurement: 2 pcs 2 paths measurement: 4 pcs 4 paths measurement: 8 pcs(*)	Connection cable between flowmeter main unit and transducers (max. cable length: 300m)
5. Multi-path Junction Box (*)		1 unit	Channel expansion junction box for 4paths measurement

(*) Multi-path measurement and multi-path Cable Junction unit for 4 paths are optional specifications.

1MHz transducer (pipe dia. less than 300mm) components are as follows.

Components		Transducer (single set standard qty)			Material	Weight (appx.)
		1path measurement	2paths measurement (*2)	4paths measurement (*2)		
1. Transducer		1pair (2pcs)	2pair (4pcs)	4pair (8pcs)	Case material SCS13	1.4kg / 2pcs
2. Mounting bracket		1pc	2pcs	4pcs	SUS304	2.9kg / pc
3. Clamp (*1) (SUS belt)	125mm-250mm	3pcs	3pcs	3pcs	SUS304 t:0.6mm	35g / pc
	25mm -100mm	2pcs	Option (*3)	Option (*3)		
4. Cover (*4)		1pc	2pcs	4pcs	SUS304 color: 5Y7/1	0.5kg / pc

SCS and SUS are notation by Japanese Industrial Standard for kind of stainless steel material.

(*1) 125mm ~ 250mm: pipe dia. (more than 125mm, less than 250mm)
25mm ~ 100mm: pipe dia. (more than 25mm, less than 100mm)

(*2) 2 or 4 paths measurement is optional specifications

(*3) Multiple paths measurement for pipe diameter less than 100A is required application specific mounting fixture. Consult Manufacturer.

(*4) Cover, optional specifications

0.4MHz transducer (pipe diameter more than 300mm) components are as follows.

Components		Transducer (single set standard qty)			Material	Weight (appx.)
		1path measurement	2paths measurement (*1)	4paths measurement (*1)		
1. Transducer		1pair (2pcs)	2pair (4pcs)	4 pair (8pcs)	Case material SCS13	2.0kg / 2pcs
2. Mounting bracket		2pcs	4pcs	8pcs	SUS304	1.9kg / 2pcs
3. Tightening fixture	Less than 1600mm	2pcs	2pcs	2pcs	SUS304	5.2kg / 2pcs
	More than 1600mm	4pcs	4pcs	4pcs		
4. Wire rope	Less than 1600mm	4pcs	4pcs	4pcs	Stainless	180g / 1m
	More than 1600mm	8pcs	8pcs	8pcs		
5. Transducer cover (*2)		2pcs	4pcs	8pcs	SUS304 Color: 5Y7/1	0.7kg / 2pcs

SCS and SUS are notation by Japanese Industrial Standard for kind of stainless steel material.

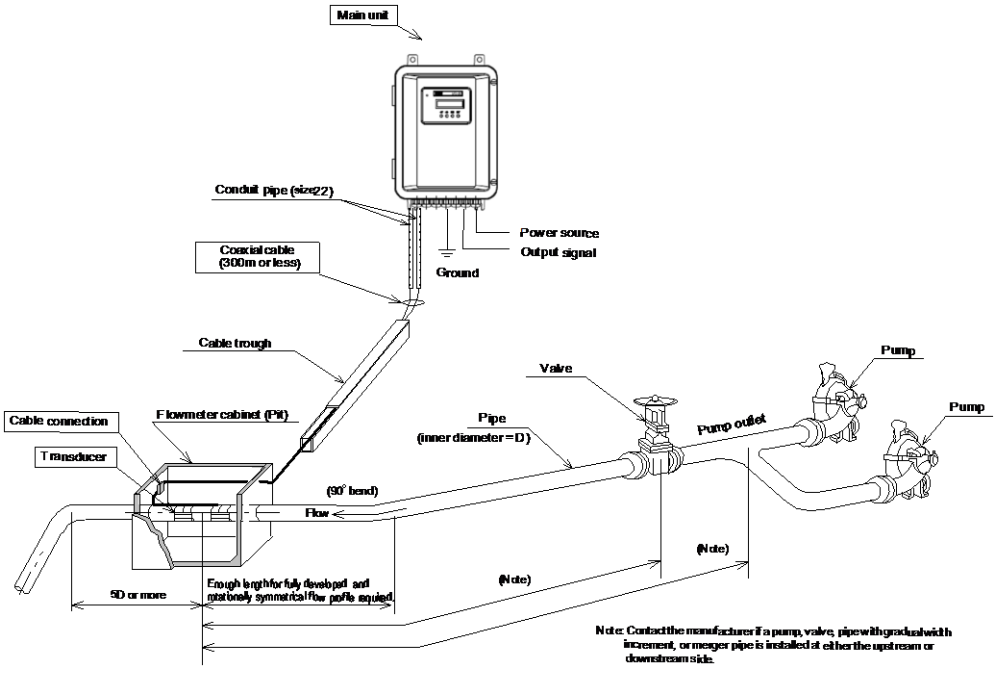
(*1) 2 or 4 paths measurement is optional specifications.

(*2) Transducer cover is optional specifications.

4. Specifications

4-1. Overall Specifications

Measurement	Fluids	Homogeneous and sonically conductive fluids (water, waste water, industrial water, river water, sea water, pure water, etc.)
	Temperature range	-25°C to +65°C (depend on transducer) Note: 1) above also applicable to ambient temperature 2) For main unit, -10°C to +60°C
	Turbidity	10000 mg/L or less
Pipes	Material	Materials which allow stable transit of ultrasonic waves such as Carbon steel, Stainless steel, SUS, Castings, Ductile casting, PVC, FRPM, GRP, HDPE, PE, etc. Note: Applicable diameters may vary with material.)
	Diameters	DN25mm to DN6000mm
	Lining	None, tar epoxy, mortar, etc.
Measurement Range	Converted to flow velocity: -30 m/s to +30 m/s	
Measurement Cycle	60 ms	
Measurement Accuracy	D≧300mm, ±1% of reading, however ±0.008m/s for velocities less than 0.8m/s. D<300mm, ±1% of reading, however ±0.02m/s for velocities less than 2m/s. Note: 1) For volumetric flow rate. 2) Fully developed and rotationally symmetrical flow profile required. 3) Calibrated accuracy defined on project specification as Option.	
Calibrated Accuracy	±0.5% of reading Note : 1) According to our standard. Note : 2) Velocity 0.5 m/s	
Repeatability	±0.3%	
Range ability	1 : 300	
Measurement Method	Ultrasonic pulse transit time difference method	
Internal clock Time precision	Approximately 1 minute (Monthly difference)	



4-2. Main Unit

[Main Unit]

Analog output	St'd/option	Standard
	Output	Instantaneous flow rate Number of outputs: 2 Output pattern: 1 system parallel output, 8 types 2 system output, 10 types Special output, 1 type Note: 1) Instantaneous flow rate will change to velocity value in case of velocity mode. 2) Ch2 output will be the same type as ch1 output when 1 system or special output is selected. (parallel output)
	Output format	4 - 20mA (1 system / 2 system output) 0.8 - 20mA (special output) 20.8mA (Burnout when no echo received or during failure warning (span +5%) output possible) Max. allowable load resistance 1 K ohm, insulated outputs
	Terminal panel	Screw less Terminal (0.08~2.5mm^2 cable applicable)

Contact point output	St'd/option	Standard
	Output	For each of the 4 contact points, output selection allocation as follows. (parallel output possible) 1. Forward flow totalized pulse 2. Backward flow totalized pulse 3. No echo received warning 4. Equipment failure warning 5. Equipment failure or no echo received warning 6. Upper limit warning 7. Lower limit warning 8. Forward flow detection 9. Backward flow detection 10. High range detection 11. Low range detection 12. Not used Note: 1) Pulse width of contact is selectable from 1000,500,100 or 20ms. But not for both forward and backward. 2) Each default setting is "ON" at work, but "OFF at work is also selectable.
	Output format	Photo coupler (insulated)
	Contact point capacity	DC48V, 0.4A
	Notes	Totalize units 0.01L, 0.1L, 1L, 10L, 100L, 1m3, 5m3, 10m3, 100m3, 1000m3, 10000m3 1g, 10g, 100g, 1kg, 10kg, 100kg, 1t, 10t, 100t, 1kt, 10kt, 100kt ft3,kft3,Mft3, bbl, kbbl, Mbbl, gal, kgal, Mgal, acf, kacf, Macf Valid units may be limited depending upon the selected flow unit.
	Terminal panel	Screw less Terminal (0.08~2.5mm^2 cable applicable)

Digital output	St'd/option	Standard
	Output 1	**One-way output mode** Following data is output per set output cycle Instantaneous flow rate, forward/backward flow totalized value and various warnings. (flow meter mode: linear flow rate and various warnings) Note: Instantaneous flow rate will change to velocity value in case of velocity mode. No totalized values available.
	Output 2	**Intercommunication mode** Connection to PC enables setting of flowmeter unit, setting menu and reading of measurement values and operation status.
	Output type	RS232C (non-insulated output)
	Output cycle	1 to 3600 seconds possible (output 1 only)
	Communication speed	4800 bps, 9600 bps or 19200 bps selectable
	Data bit length	8 bit/1 stop bit
	Parity check	EVEN
	Format	TOKYO KEIKI Original Format (ASCII)
		MODBUS (Selectable; only for Output1)
	Synchronization	Asynchronous
	Cable length	Up to 3m Note: To comply with EC directives, use less than 3m cable.

Multi-path measurement	St'd/option	Option
	Quantity	2 path or 4 path
	Details	2 path: - 1 additional pulser module required and installed in main unit (total 2 modules). - Transducer, fixture, extension cable for each path required. 4 path: - External multi-path junction box is required and 2 special coaxial composite cables are connected to the flowmeter main unit. - Transducer cable connected in junction box by BNC connector. - 3 additional pulser modules required and installed in main unit. (Total 4 modules). - Transducer, fixture, extension cable for each path required.

Data setting	Setting method	PC connected to Digital Output port 2, setting through PC with configuration software (LCD 4-keys entry is available, but limited).
	Setting items	Indication, Unit (Flow rate and Totalizing) Flow Range and various settings

<table>
<tr><td rowspan="3">Measurement display</td><td>Display method</td><td colspan="3">LCD (16 character x 2 lines), with backlight
Over 5 years life (by 25°C)</td></tr>
<tr><td>Display content</td><td colspan="3">Changeable display of following:
• Instantaneous flow rate, warnings, check mode and totalizing status.
• Instantaneous flow velocity value, warnings check mode and totalizing status.
• Forward flow totalized value, warnings, check mode and totalizing status.
• Backward flow totalized value, warnings, check mode and totalized status.
• Status1 (AGC, Range, Warnings and Check mode)
• Status2 (Number of R-OFF warning & Disturbance Elimination function worked.)

Note:
1) During power failure, displayed screen component is memorized and displayed when power is again introduced.
2) Instantaneous flow velocity of each path can be indicated on display in case of multi-path installation.
3) Counter can be reset by key pad operation.</td></tr>
<tr><td>Display digits</td><td>Instantaneous flow rate:</td><td colspan="2">Dependent on max. flow rate for Analog output setting. Max. 7 digits including sign, decimal point.</td></tr>
<tr><td></td><td></td><td>Forward</td><td>Max. 7 digits Including Decimal point
Range: 0 to 99999.0</td></tr>
<tr><td></td><td></td><td>Backward</td><td>Max. 7 digits including Sign and Decimal point
Range: -0 to -99999</td></tr>
<tr><td></td><td>Instantaneous flow velocity:</td><td>sign section
integer section
decimal fraction</td><td>1 digit
2 digits
3 digits fixed</td></tr>
<tr><td></td><td>Totalized flow:</td><td colspan="2">7 digits</td></tr>
<tr><td></td><td colspan="3">During exceeding Max. range of flow rate for Analog output setting, indication would be “Instantaneous flow rate” and alternated flickering with “FS" (Full Scale) mark.</td></tr>
</table>

Measurement display (cont.)	Display content	
	Warnings	Backup battery remaining life - “B” displayed when battery voltage falls below prescribed value. Not detectable when battery would not be equipped itself.
		No Echo received warning - “R” displayed during processing when no wave received.
		Disturbance Detection - “D” displayed when the measuring condition disturbed by air bubbles, solids or other factors.
		Over Range - "O" displayed when the measuring value exceeds upper or lower limitation setting.
	Check	“<A-->”, “<-R->”, “<--M>” displayed during various check operations. (A: 4-20 check: R: range check; M: multi-path check) “<ARM>” appears during combined display.
	Totalizing Status	"I" displayed blinking when totalizing function operated.
	Failure warning	“ERR01” to “ERR63” displayed during equipment failure. Check operation display is replaced by this failure display.
	Status 1	“AGC” displayed in case of AGC function on.
		“LO-RNG” displayed in case of low range output.
		"HI-RNG" displayed in case of high range output.
	Status 2	Number of “R-OFF warning” function worked.
		Number of “Disturbance Elimination” function worked.

Function	Low flow cut	Cuts (zeros) flows when flow falls below prescribed instantaneous flow rate. Used in order to avoid output of flow values other than 0 when measurement value during still flow becomes disordered.
	No Echo receiving warning	If measurement cannot be made when no echo is received continuously over the setting time (determined transition time), status is changed to - Selected analog output type Selectable analog output transition status as follows. 0% (4mA), hold, 100% (20mA), burnout (20.8mA) - Display "R" on LCD. - Contact output of warning if set. Note: 1) Measurement values and analog output will be restored when echo is received continuously over the setting time (determined restore time). 2) In case of multi-paths, processing can be selected to change output for no echo receiving for 1 path or for all paths. Initial setting value is for no echo receiving for all paths. 3) If measurement can be made for even 1 path, measurement will be continued for only this path.
	Disturbance detection	Check whether processing values are measured properly or not and if determined to be disturbed conditions then measuring values are eliminated. - Display ”D” on the display - Count up as history on status 2
	Zero Shift compensation	Zero point can be independently compensated (shifted) for forward and backward flow rate.

	Span compensation	Slope of span line can be independently compensated for forward and backward flow rate in the range 0.100 to 2.000.
	Filtering (Smoothing)	Rapid flow rate changes would be smoother by this filter for 1 to 120 sec. (Default 15sec) Note: This value is meaning the time until measuring flow rate reaches 90% by step-up increment.
	Self-diagnostics and failure processing	Self-diagnostics is run periodically. If failure is diagnosed on following items, transitions to be selected status. Diagnostic checks: 1) Memory Area check (for totalizing and setting parameter) 2) Parameter check 3) Time measurement counter malfunction 4) Transmitter malfunction 5) Receiver malfunction - Selected analog output transition status as follows. 0% (4mA), hold, 100% (20mA), burnout (20.8mA) - Display "ERR**" on LCD. (** is error number.) - Contact output of warning if set. Note: "AND" , "OR" condition is selectable in accordance with fault tolerance function setting.

Function (cont.)	Data retention	Totalized flow values and all setting parameters are retained in memory with lithium battery even if power failure. Note: 1) Setting Parameters are retained in nonvolatile memory. 2) Totalized flow value and ROFF/Disturbance detection history are retained in memory which hold by Back-up Battery. 3) Data retained in memory which hold by Back-up Battery clears if battery removed without power supply. 4) 5 year life at room temperature. 5) No battery recharging function.
	Analog output check	Output can be freely changed depending on analog output setting. Setting every 0.1% of flow span range (-120.0 to + 120.0) possible.
	Path fixing	Measurement of specified path can be fixed and flow checked for every path when using multi-paths.
	Automatic Gain adjustment (AGA Function)	Receiver gain can be set as ideal amplitude by automatically or manually. (Manual gain setting is done conventionally by monitoring receiving echo with oscilloscope)
	Analog output range switching	Analog output range is automatically changeable when double range mode.
	Automatic gain control (AGC Function)	Receiver gain is automatically adjusted to the optimum level in response to changes in receiver sensitivity during measurement. Note: Not available in case of containing air bubble or nearby flow control valve.

	Forward / Backward flow change processing	Hysteresis can be set by time in order to avoid flapping of direction detection contact points when there are back and forth, plus and minus changes in measurement values during still water condition.
	Totalized value preset	Totalized values can be freely preset. Preset Range: 0 to 9999999
	Basic data display	Following internal data can be referenced. - Fluid sonic velocity (unit, m/s) - Reynolds Number - Amp. Gain
	Error historic counter	Count "No Echo receiving warning" & "Disturbance detection" when it occurred.
	Password lock	If the password lock function is running, password lock is applied to menu operations.
	Measurement logging	Date, Time, Flow rate, Warning, Direction status, ETC (1 year storage in 10-minute intervals)
	Setting change logging	Date, Time, Name and Value of changed parameter, ETC (1,000 Parameters)

Note: If the capacity is exceeded, the oldest log is overwritten.

Power supply	AC100 to 230V +/-10% (50/60 Hz±10%) Option : DC24V±20% (This option must be pre-selected)	
	Momentary outage	AC input: 20ms, DC input: 5ms
Power consumption	AC100V: 20VA / AC200V: 27VA DC24V: 10W (Option)	
Fuse	IEC 60127-2 SS5 Cartridge fuse-links φ5.2x20 mm Rating 2A/250V Time-lag High Breaking Capacity (1500A)	
Rush Current	Less than 20A at AC100V / Less than 32A at AC200V Less than 30A at DC24V (Option)	
Operating temperature range	-10 to +60°C (for main unit ambient)	
Storage temperature range	-20 to +70°C	
Operating humidity range	Less than 90% RH, non-condensation	
Main unit construction	Protection Degree IP66 (IEC 60529)	
Wiring connection port	Cable gland, 7 pcs, O.D.6~12mm cable applicable	
Case material	Aluminum	
Coating	Melamine	
Color	Munsel 10YR9.4/0.5	
Weight	Approx. 8kg	
Dimensions	260mm x 394mm x 155mm	

European Compliance (CE marking)	EMC Directive 2014/30/EU Harmonized Standard / EN61326-1:2013 Separation into group / Group I Division into classes / Class A Location intended for use / In industrial locations Low Voltage Directive 2014/35/EU Harmonized Standard / EN61010-1:2010+A1:2019 Over voltage category II Pollution degree II Altitude 3000m or less Long-term temporary overvoltage of 1200V Short-term temporary overvoltage of 250V RoHS Directive RoHS2((2011/65/EU)+(EU)2015/863) Harmonized Standard / EN 63000:2018

Note; CE Marking will be applied only for EU market.

Korean Standard (KC marking)	KS C 9811:2019* KS C 9610-4-2:2017* KS C 9610-4-3:2017* KS C 9610-4-4:2020* KS C 9610-4-5:2020* KS C 9610-4-6:2020* KS C 9610-4-8:2017* KS C 9610-4-11:2020* *: Only the model that complies with KC mark

4-3. Transducers

Transducers	Large diameter		SE044040NC	(-25°C	to	+ 65°C)
	Large diameter narrow space		SE042140NC	(-25°C	to	+ 65°C)
	Small diameter		SE104720	(-25°C	to	+ 60°C)
	Note	Water proof performance	Protection Degree IP67 (IEC 60529) Option(SE044040NC,SE104720): IP68 This option must be pre-selected. The temperature range is limited to the following. SE044040NC: -25°C to + 45°C SE104720: -25°C to + 45°C			
		Construction	One piece construction with 5m cable			
		Cable	Coaxial cable with double shielded insulation between sheaths			
		Cable max. length	300m			

4-4. Accessories

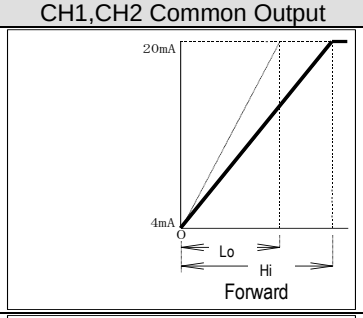
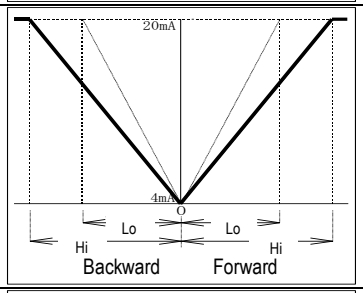
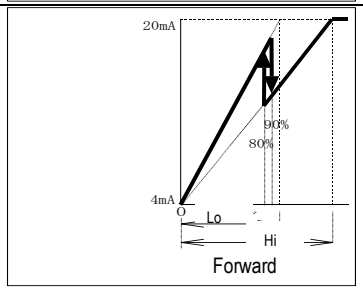
Cable Junction box	St'd/option	Option
	Construction	IEC 60529 Protection Degree IPX4
	Material	Aluminum casting
	Connection port	4 locations (2 locations each side)
Multi-Path Junction box	St'd/option	Option
	Construction	IEC 60529 Protection Degree IP66
	Material	Aluminum casting
	Connection port	10 locations (2 for Main Unit side & 8 for Transducers side)
	Cables	Included 1m Special Composite Coaxial Cable with Connector to Main unit.
Power Cable (*1)	St'd/option	Prepared by User
	Model name	OLFLEX Classic 100 or OLFLEX 150 QUATTRO
		multi-conductor, flexible power and control cable
	Part Number	10060 or 0015303
	Manufacturer	LAPP KABEL
	Details	3 Conductors AWG16, 1.5 mm^2 Nominal Outer diameter 8.1 mm

(*1) Power cable is specified to comply with EC directive.

5. Analog output profiles

Table1: Analog Output Profile Table

(1) Single System Output 1/2

Profile Description		CH1,CH2 Common Output
One-Way Single Range		
Two-Way Single Range		
One-Way Double Range	Automatic Double Range	

(2) Single System Output 2/2

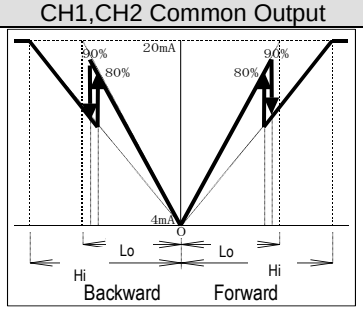
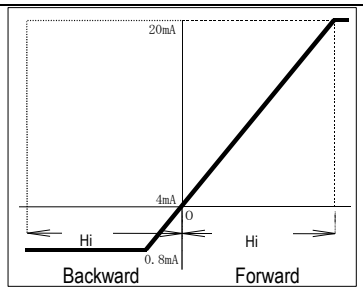
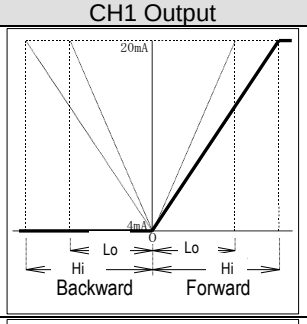
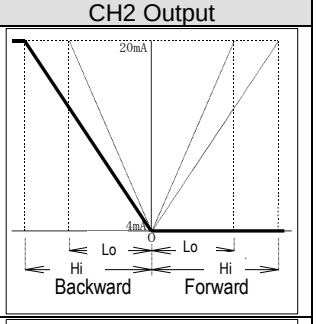
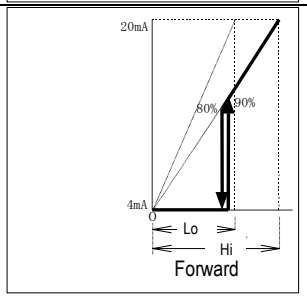
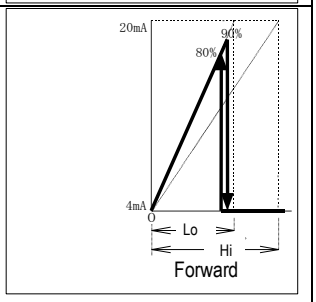
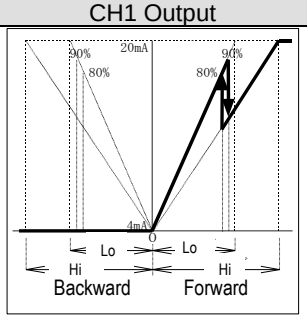
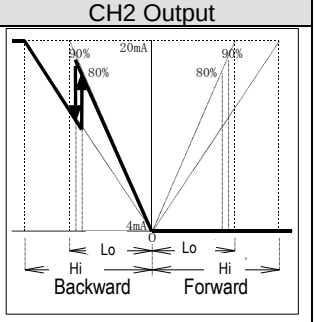
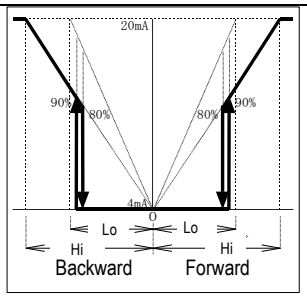
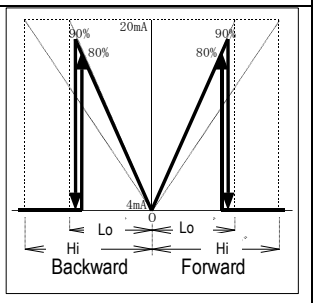
Profile Description		CH1,CH2 Common Output
Two-Way Double Range	Automatic Double Range	
Special		

Table 1 (continued)

(3) Dual System Output 1/2

Profile Description		CH1 Output	CH2 Output
Two-Way Single Range			
One-Way Double Range Internal Switching	Automatic Double Range		

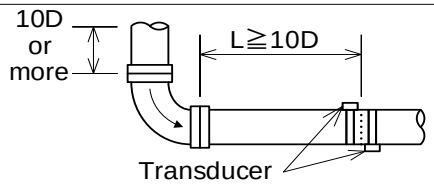
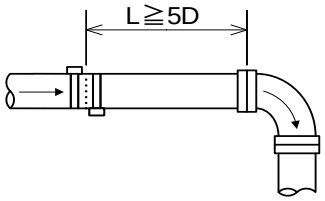
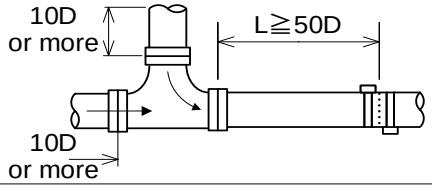
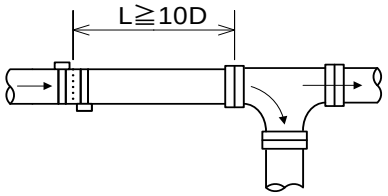
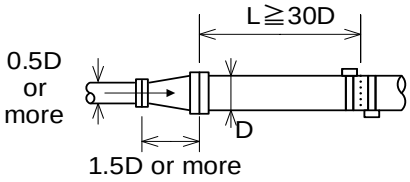
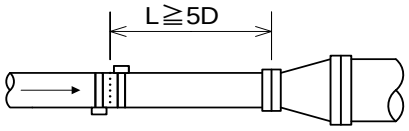
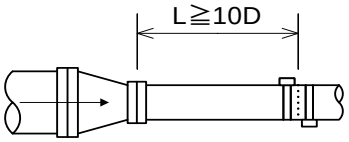
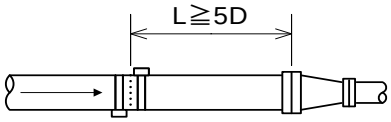
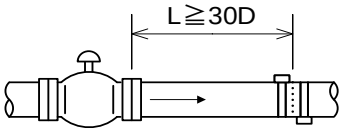
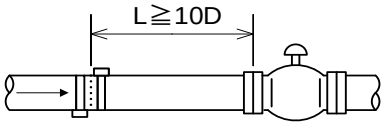
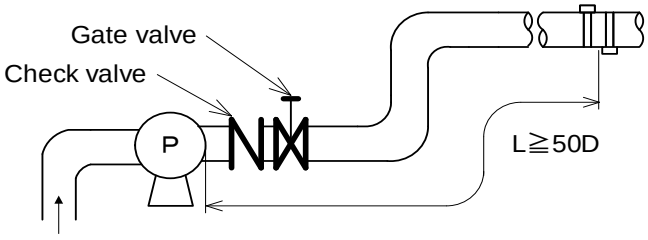
(4) Dual System 2/2

Profile Description		CH1 Output	CH2 Output
Two-Way Double Range Internal Switching	Automatic Double Range FW/BW		
	Automatic Double Range HI/LO		

6. Transducer installation

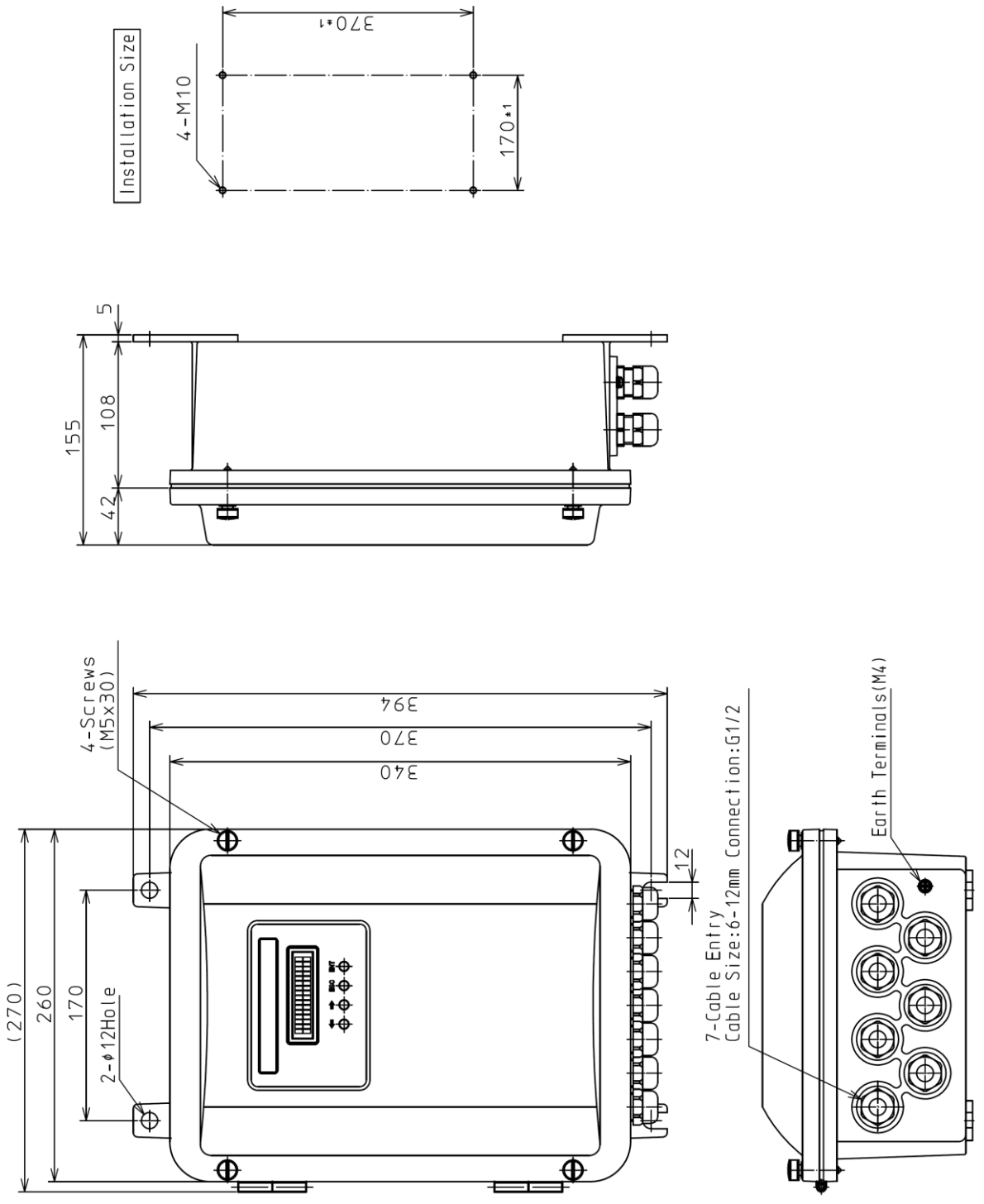
- To minimize measurement errors arising from flow profile, a straight pipe run is necessary for transducer installation.
- Liquid should fill the pipes completely and transducers should be installed in locations which have no air bubbles.
- For measurements in underground piping, the usual means is to locate the flowmeter in a pit to facilitate transducer installation, maintenance, and testing.

[Refer to JEMIS 032-2019.]

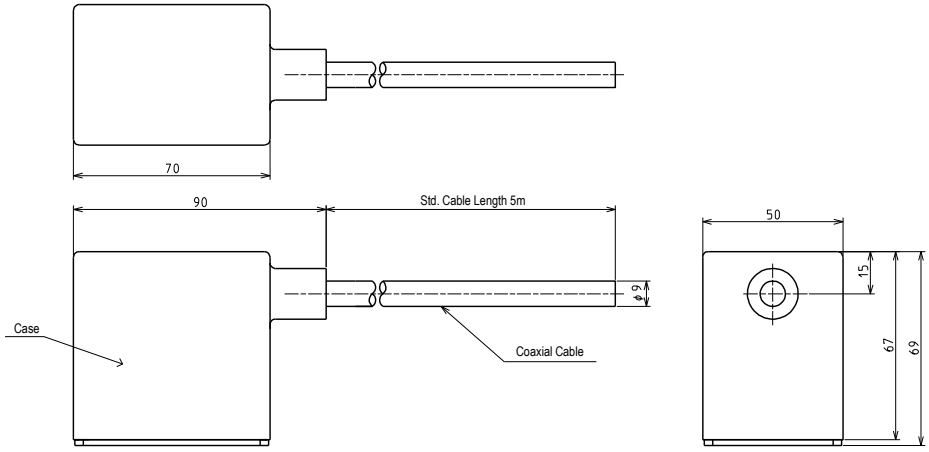
Section	Upstream straight pipe length	Downstream straight pipe length
90˚bend		
T		
Expanding pipe		
Contracting pipe		
Various valves	 When flow volume is adjusted at the upstream valve.	 When flow volume is adjusted at the downstream valve.
Pump		

[D: pipe diameter]

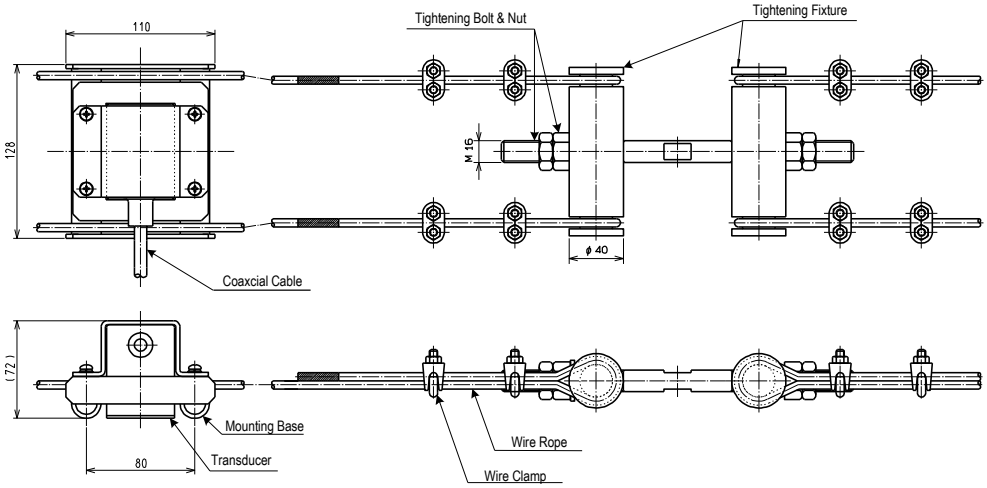
7.Dimensions



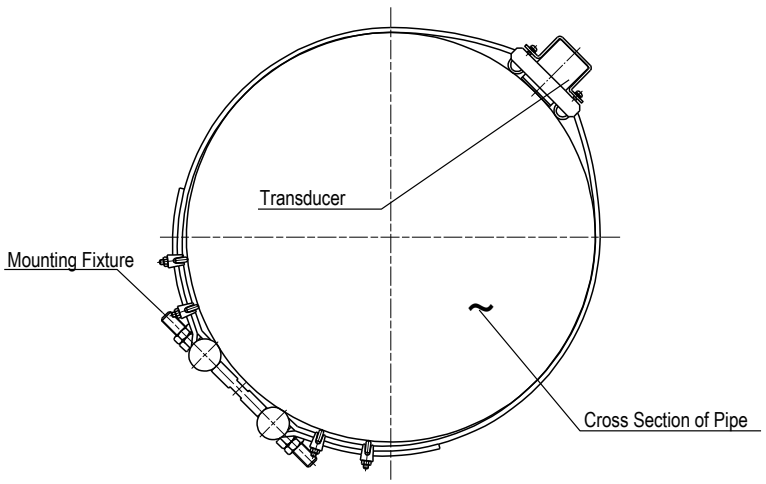
Main Unit Dimension



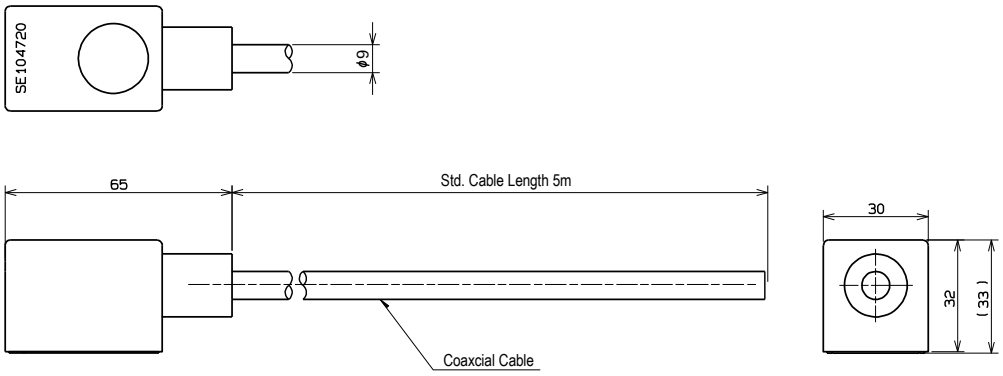
Transducer Dimensions (Pipe Dia more than 300mm)



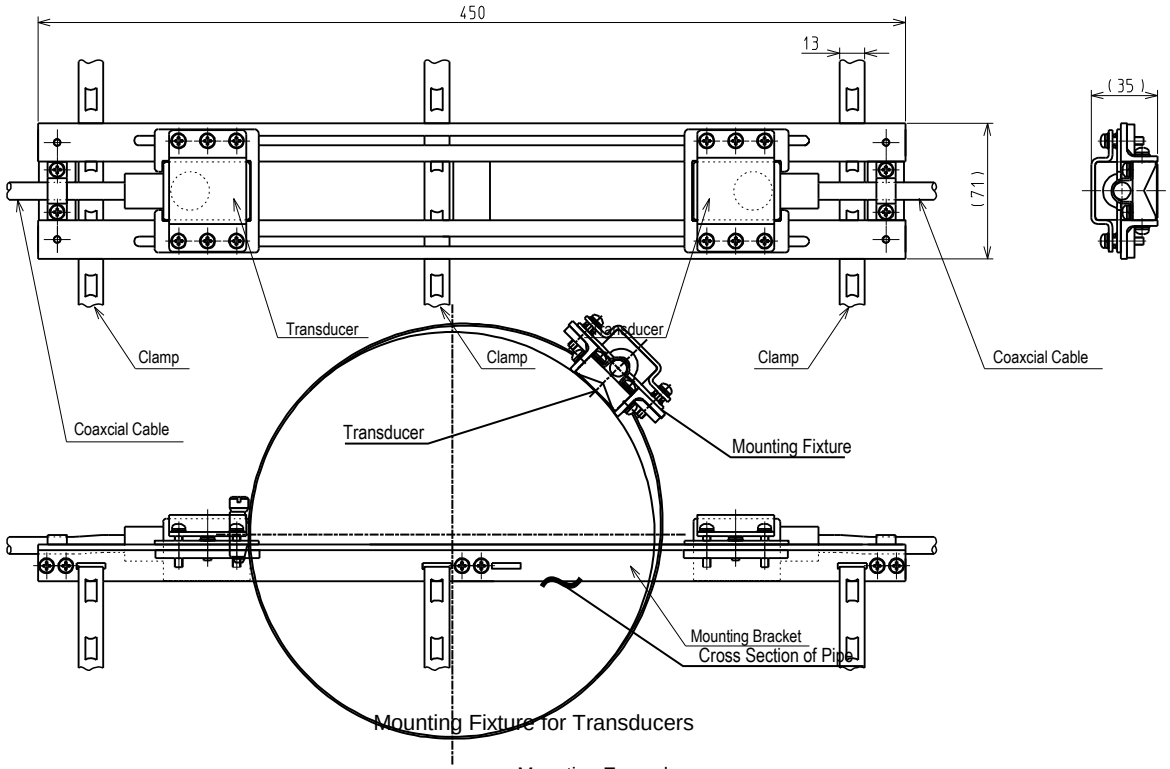
Mounting Fixture for Transducers



Mounting Example



Transducer Dimensions (Pipe Dia less than 299mm)

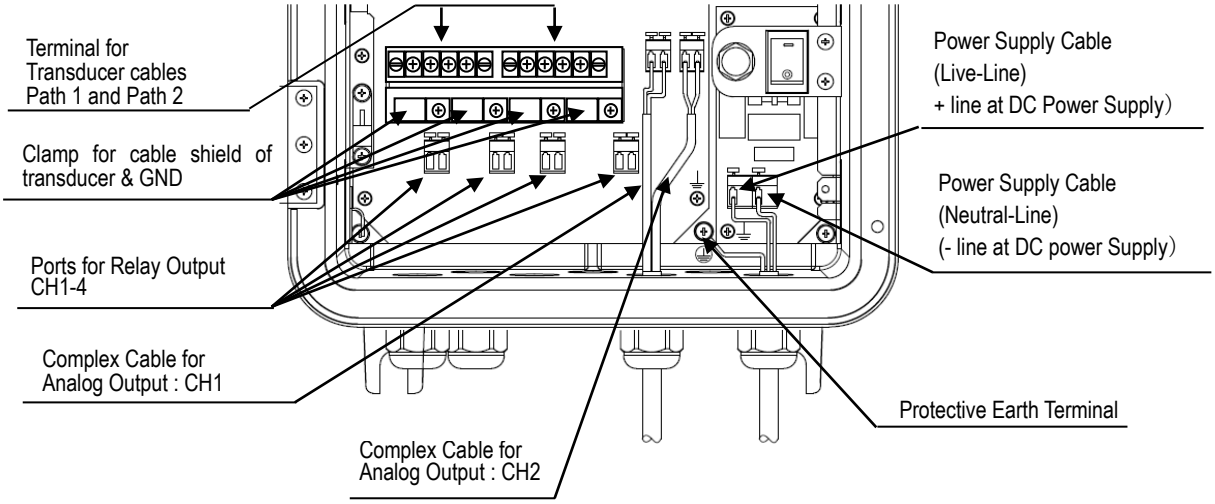


Mounting Fixture for Transducers

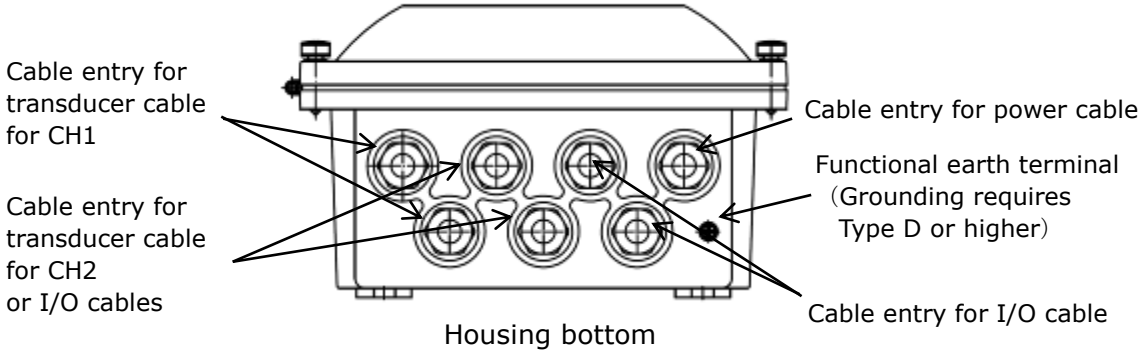
Mounting Example

8. Wiring Connection

8-1. Output connection



8-2. Cable entry port



9. System Wiring Connection

1Path or 2Path System

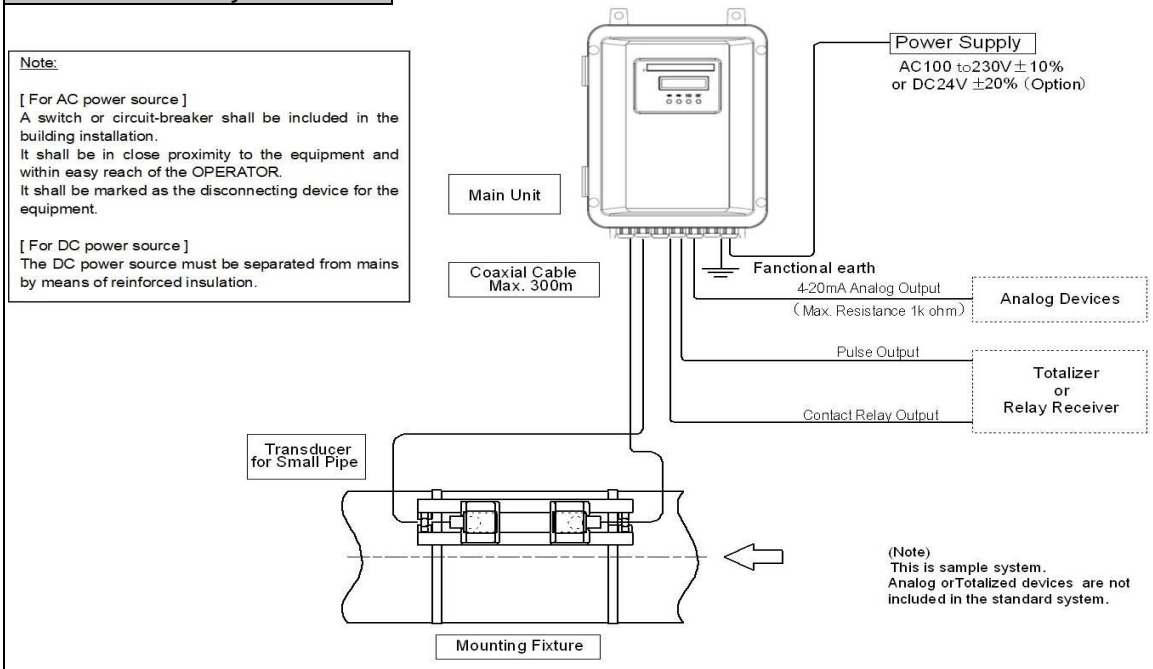


Fig 1-3 ; Ultrasonic Flowmeter basic system (1path or 2path)

4Path System

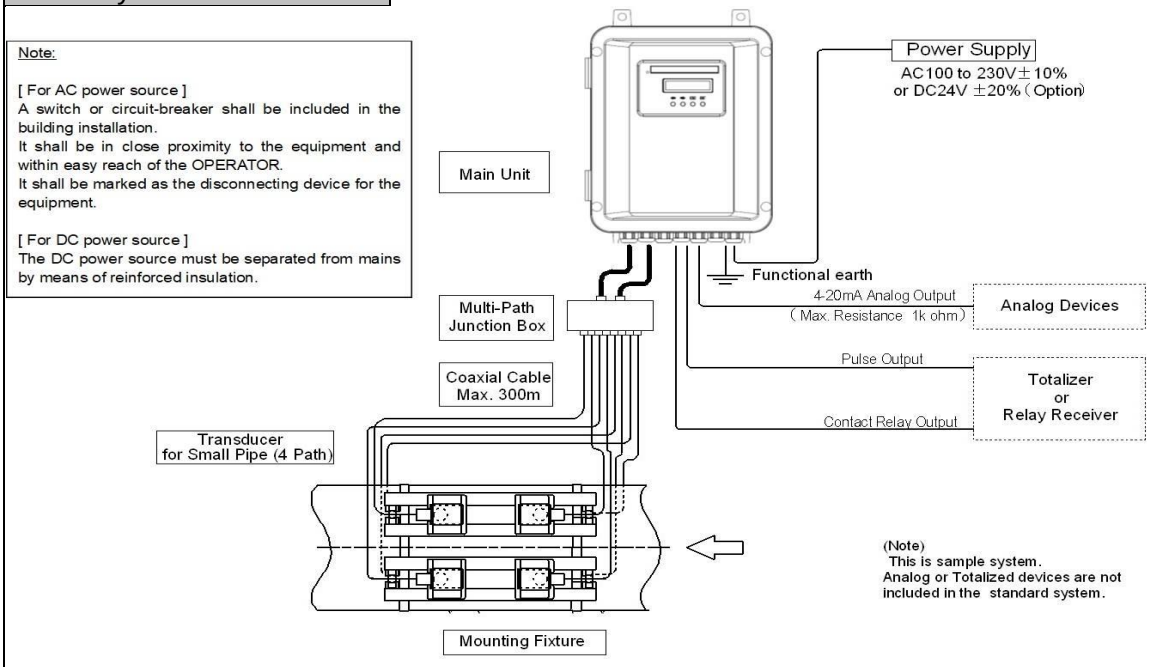
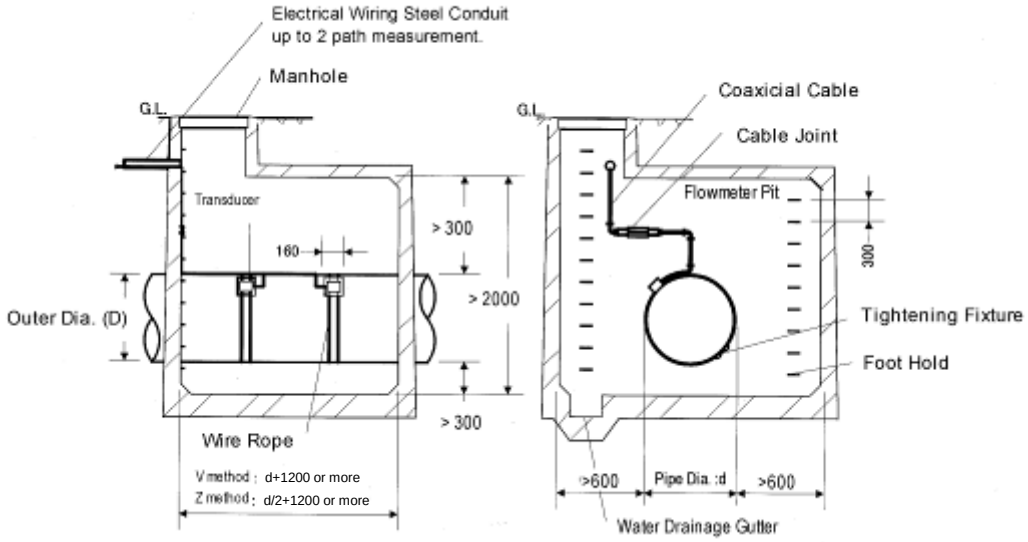


Fig 1-4 ; Ultrasonic Flowmeter basic system (4Path)

10. Building a flowmeter pit



- In principle, when measurement is of underground pipe, it is suggestive to prepare of dedicated flowmeter pit.

- It is not necessary to prepare a flowmeter pit in the case of indoor or outdoor piping, but proper footing should be planned for transducer mounting and equipment adjustments in the case the pipe is located high off the floor or when pipe diameter is large.

Building a flowmeter pit

1. Select pit site (taking into consideration the following points)
   1) Straight section of pipe is required for installation of transducers as explained under Part 5.
   2) Consult manufacturer if an adjustable valve or pump is used.
   3) To prevent noise interference or signal attenuation, coaxial cable used between joining material and main unit should be less than 300m.

2. Size and construction of flowmeter pit
   1) Using above schematic as reference, determine size of flowmeter pit based on actual piping position and conditions. Height of pit should allow person to stand while working. In cases of pipe diameters greater than 800mm, prepare footholds or footing space.
   2) Implement countermeasures for floods such as drainage gutters, etc. (Install water pump where water is liable to accumulate or flood.)
   3) Consult Manufacturer for other specific conditions. (Above dimensions are ideal and not the minimum required.)

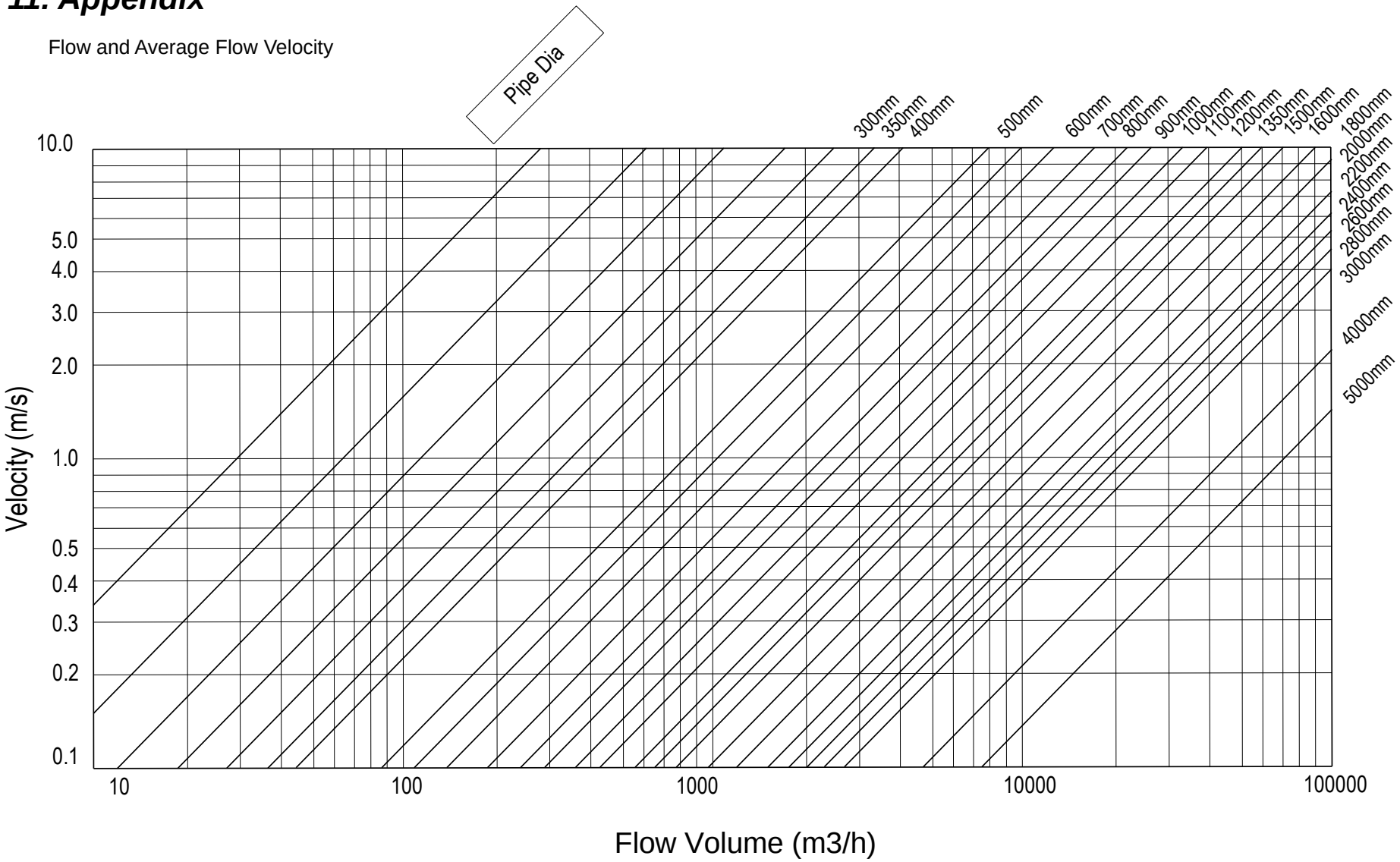
Transducer installation

1. Strip paint/coating from piping surfaces at transducer mounting locations and fix transducers on piping using the accessory mounting fixtures. When mounting transducers according to the “V” method, the distance separating the transducers should be about the diameter of the pipe. If the “Z” method is used, the distance should be one half of the diameter.

2. After installing and adjusting the transducers, remove transducer mountings, and coat pipe surface with anti-rust paint.

11. Appendix

Flow and Average Flow Velocity



Required parameters for Inquiry

AA. Pipe Information

1) Process Name :

2) Line Quantity : Lines(s)/Location(s)

3) Pipe Specification: If possible, send us DWG of pipe diagrams.

Diameter Nominal : DN (mm) / Out Diameter mm

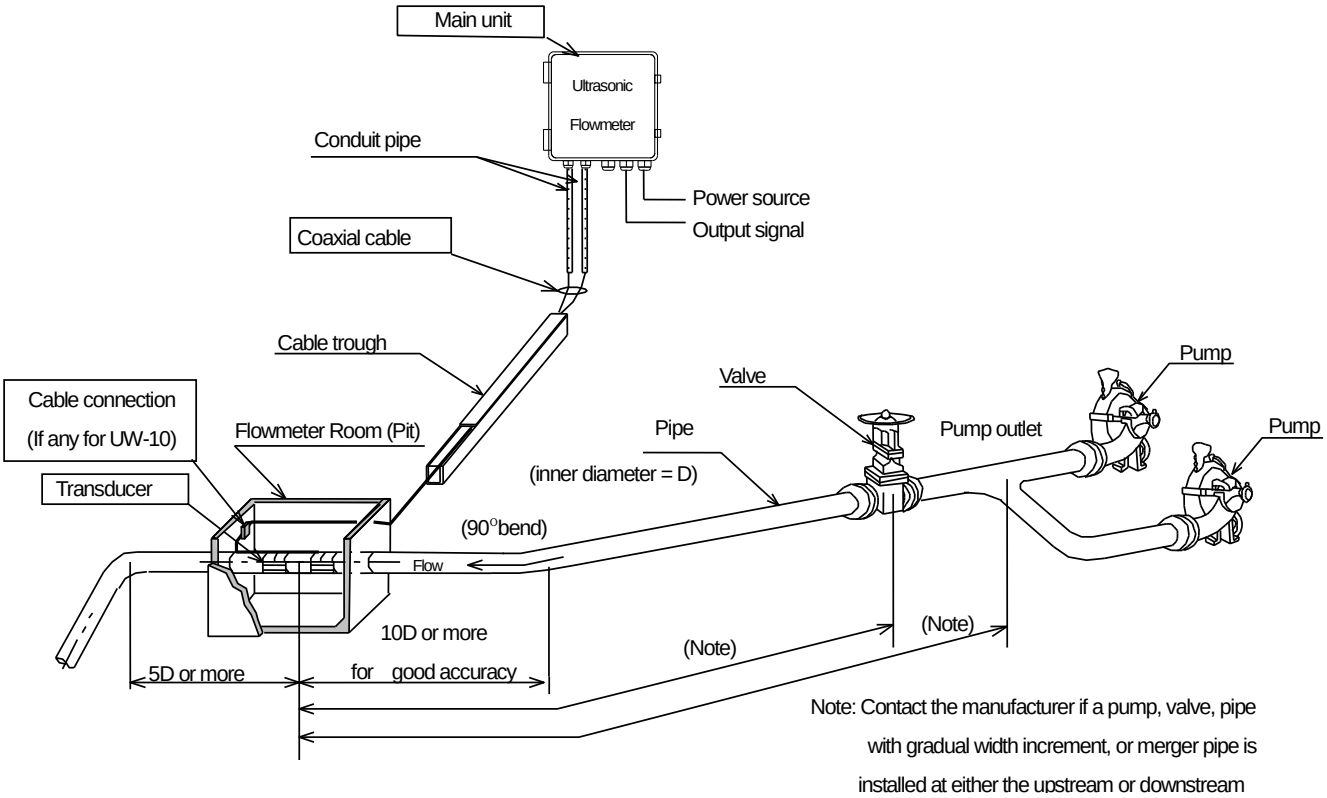
Pipe Material : / Thickness mm

Lining Material : (if any) mm / Thickness mm

4) Required cable length: From Main Unit to Transducer m

5) Straight Pipe-run : From , folds (times) for upstream side

: From , folds (times) for downstream side



BB. Liquid Information

1) Liquid Name : (main component; if any)

2) Sound Speed of Liquid: (if liquid is special and identified) m/s

3) Liquid viscosity : (if liquid is special and identified) m^2/s

4) Temperature : C deg.~ C deg.

CC. Extra Information

1) End user name :

2) Atmospheric conditions : Non-Hazardous / Hazardous requirement ( )

3) Purpose of process :

4) Existing Flow instruments : (if any)

5) Any other problems at Flow : (if any)

Ultrasonic Flowmeter model UW-10 Ordering Code List

UW-10- [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] - [ ][ ][ ][ ][ ][ ][ ]

Component Code | Site Condition Code

Component Code

[ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Connecting Transducer

1	Large Diameter (DN300mm to DN6000mm) SE044040NC (-25 to +65 deg.C)
2	Large Diameter & Narrow Space SE042140NC (-25 to +65 deg.C)
3	Small Diameter (DN25mm to DN250mm) SE104720 (-25 to +60 deg.C)
X	Special Transducer, Consult to us.

Measuring Path

1	1 Path	1 pair of Transducer
2	2 Path	2 pairs of Transducer
4	4 Path	4 pairs of Transducer

Flow Direction & Analog Output Profile

1	One-way & Single Range
2	One-way & Automatic Double Range
3	One-way & Manual Double Range
4	Two-way & Single Range
5	Two-way & Automatic Double Range
6	Two-way & Automatic Double Range, FW/BW
7	Two-way & Automatic Double Range, HI/LO
8	Two-way & Manual Double Range
9	Two-way & Manual Double Range, FW/BW
A	Two-way & Manual Double Range, HI/LO
N	Not Use

Mounting Style of Main Unit

1	Wall Mount (Standard)
2	Pole Mount (Optional)

Power Supply

A	AC 100-230V +/-10% (Standard)
D	DC 24V +/-20% (Optional)

Extension Length of Coaxial Cable

[ ][ ]	x 10m (up to 300m)
[ ][ ]	No Extension

In spite of extension, transducers are including 5m cable.

Method of Cable Connection

S	ScotchCast™ *1
J	Junction Box
N	None

Diameter Nominal of installing pipeline

[ ][ ][ ] A	A = cm
[ ][ ][ ] B	B = inch

Optional Component

S	Setup Software for Windows™ operating system *2
N	Not Use

*1 ScotchCast is trademark of 3M.

*2 Windows is trademark of Microsoft.

Ultrasonic Flowmeter model UW-10 Ordering Code List

UW-10- [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] - [ ][ ][ ][ ][ ][ ][ ]

Component Code | Site Condition Code

Site Condition Code

[ ][ ][ ][ ][ ][ ][ ]

Pipe Material

	1	Steel
	2	Ductile Iron
	3	Stainless Steel
	4	PVC
	X	Other Material ( )

@	Outside Diameter	[ ][ ][ ].[ ]	mm / inch
@	Pipe Thickness	[ ][ ][ ].[ ]	mm / inch

Please fill in forms with actual data.

Lining Material

	1	Tar Epoxy
	2	Mortar
	X	Other Material ( )

@	Lining Thickness	[ ][ ].[ ]	mm / inch

Please fill in forms with actual data.

Measuring Liquid

	1	Drinking Water, Raw Water
	2	Sea Water
	3	Sewage Water (after Screening)
	4	Lubricant (Oil)
	5	Chiller Water, Heated Water
	X	Other Liquid ( )

Contact Output (Up to 4 simultaneous outputs)

	1	Forward Totalizing Pulse
	2	Backward Totalizing Pulse
	3	Receiving Echo Error Alarm (ROFF)
	4	Break Down (Unit Failure) Alarming
	5	ROFF [or] Break Down
	6	High Limit Alarm
	7	Low Limit Alarm
	8	Forward Direction
	9	Backward Direction
	A	High Range
	B	Low Range
	C	BREAK (Normal Open)
	D	MAKE (Normal Close)
	N	Not Use

Qmax. (Maximum Flow Rate)

@	

Please fill in forms with actual data.

Please show flow rate's unit also. (ex. m^3/h)

This value is related to the setting of maximum range of Analog Output & Indicate-able digits on LCD.

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