

JAIN TECHNOLOGY

Industrial & Defense Instruments

XONIC[®] 100L

*ULTRASONIC TRANSIT-TIME FLOWMETER
FOR LIQUID FLOW*



User Manual

2021

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Preview




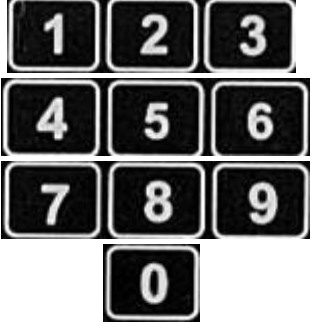


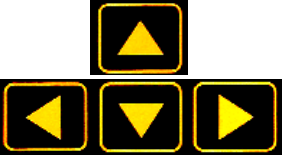

- Introduction** Xonic 100L Clamp-On Ultrasonic Flowmeter is fully digitalized, the state-of-art flowmeter that use DSP (digital signal processing) technology to measure time difference of ultrasonic signals. Please read this manual carefully before installation and operation to ensure the best performance. Contents in this manual is subject to change by the manufacturer without any prior notice to the user.
- Safety Consideration** Xonic 100L uses external power of AC110~220V . Follow all electrical and electronic safety rules to prevent any safety accident or damage of the flow computer during installation. Most applications are near to moisture, thus, be careful of any electric shock.
- Installation Steps** Select best pipe installation point for transducer.
1. Input PIPE DATA.
 2. Check the SENSOR DISTANCE displayed in flow computer.
 3. Select the sensor INSTALLATION PLACE.
 4. Mount the SENSOR horizontally to the pipe.
 5. Install FLOW COMPUTER.
 6. Connect the sensor and the flow computer via cable.
 7. Supply POWER to the flow computer and turn the switch ON.
 8. Input necessary DATA such as output and relay.

Specifications

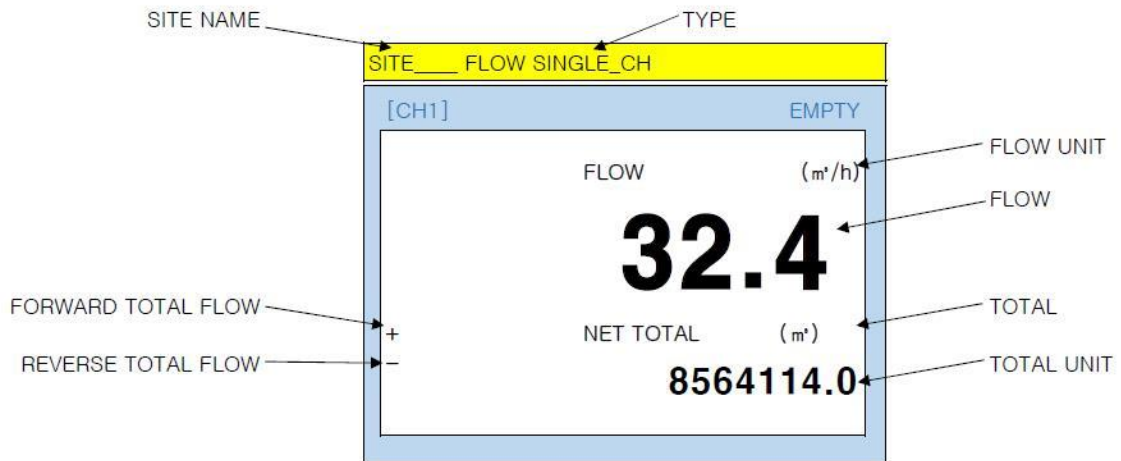
Type	Clamp-On Ultrasonic Flowmeter
Principle	Transit-Time
Pipe Size	12 ~ 6000 mm
Accuracy	±1.0 % (single path), ±0.5 % (dual path)
Flow Velocity	±0.02 ~ 12.0 m/s
Turn-Down Ratio	500:1
Repeatability	0.25%
Required Straight Run	Upstream 10D, Downstream 5D (single path) Upstream 5D, Downstream 3D (dual path)
Data Input	Two 4~20mADC
Data OUTPUT	Two 4~20mADC for flow Relay for Total RS-232C / 485 Modbus
Data Logger	32 Mbytes (above 1,000,000 times)
Display	Graphic Color LCD (Flow, Total, Velocity, Delta T, Oscilloscope Shape)
Temperature	Flow Computer -20 ~ +75 °C Transducer -40 ~ +120 °C
Power	110 ~ 220 VAC (12 ~ 24VDC option)
Enclosure	IP65
Transducer	IP68, submersible

Key Functions

Note : Touch keys do not have alphabet table, so user must select alphabet by pressing DIRECTION KEYS.

Keys	Functions
	Press to enter the menu or back to the main display.
	Press to enter the selected menu or save the input data.
	Press to delete the text or number.
	Use to input numbers.
	Use to input decimal point.
	Special function key.
	Press to select the choice in menu.
	Press to change positive or negative number of numeric data.

Understanding Display



SITE NAME : site name inputted by user. For example, SINGLE CH means single path/channel.

FLOW UNIT : flow unit selected by user.

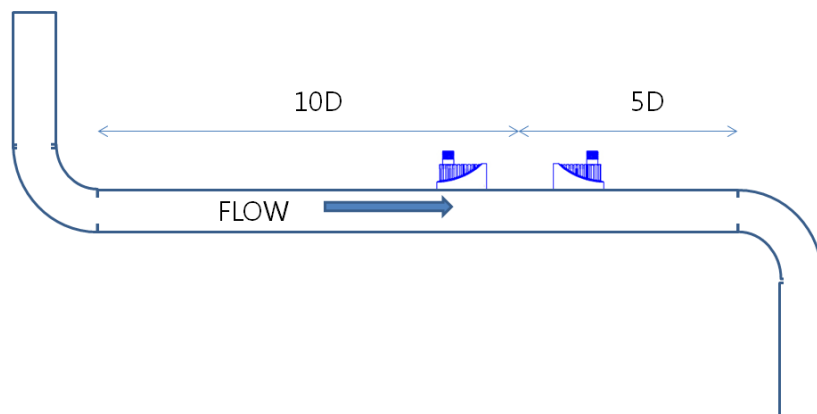
FLOW : measured flow

TOTAL : total flow

TOTAL UNIT : total flow unit

Best Transducer Installation Place

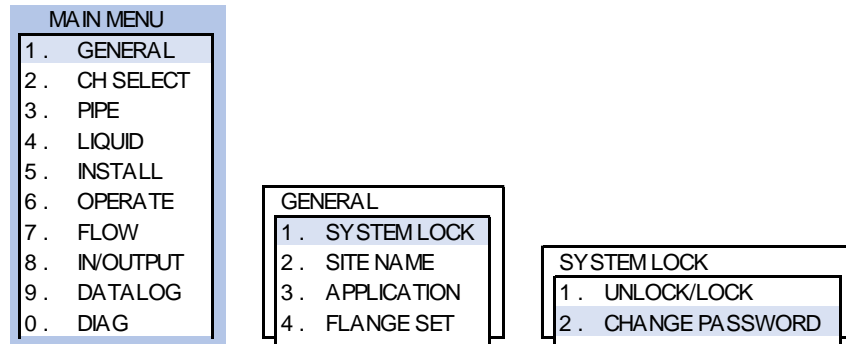
Choose an installation location that has enough straight pipe runs, 10D for upstream and 5D for downstream. For example, if pipe diameter is 1000mm, then please find 10 meters straight run for upstream and 5 meters straight run for downstream.



Section 1. input GENERAL data

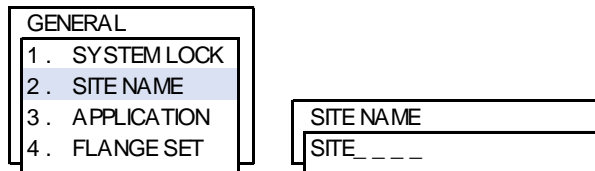
System Lock

User can set password to prevent unauthorized access to the flow computer. Input number and alphabet using keypad.



Site Name

User must input SITE MENU for initial setup. SITE NAME can be used as an ID of flowmeters when communicate remotely with many flowmeters.



Application

User can select single or dual channel.

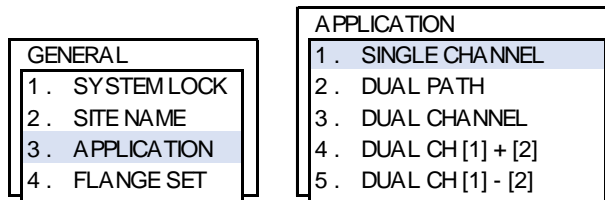
SINGLE CHANNEL is general mode that use only 1 pair of transducers for one pipe.

DUAL PATH is precision mode that use 2 pairs of transducers for one pipe to increase accuracy.

DUAL CHANNEL mode is used to measure two independent pipes simultaneously using 1 flow computer and 2 pairs of transducers.

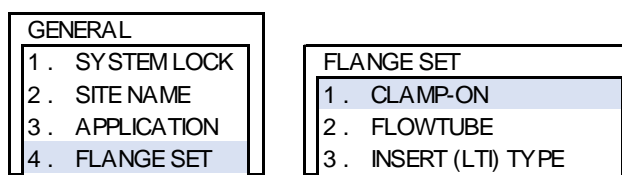
DUAL CH[1]+[2] mode is used to measure two independent pipes separately and shows total flow by summing up CH[1] and CH[2].

DUAL CH[1]-[2] mode is used to measure two independent pipes separately and shows flow difference of CH[1] and CH[2].



Flange Set

Select CLAMP-ON to use clamp-on transducer.

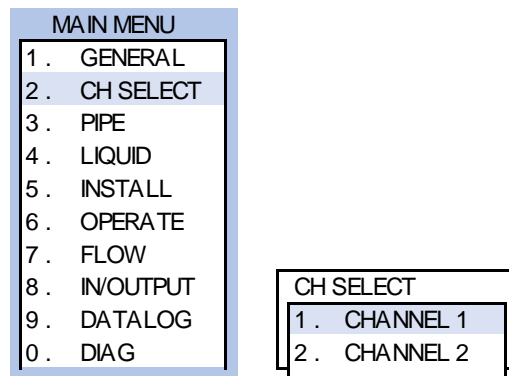


Section 2. CH SELECT

User should select channel first to setup the data in other menus.

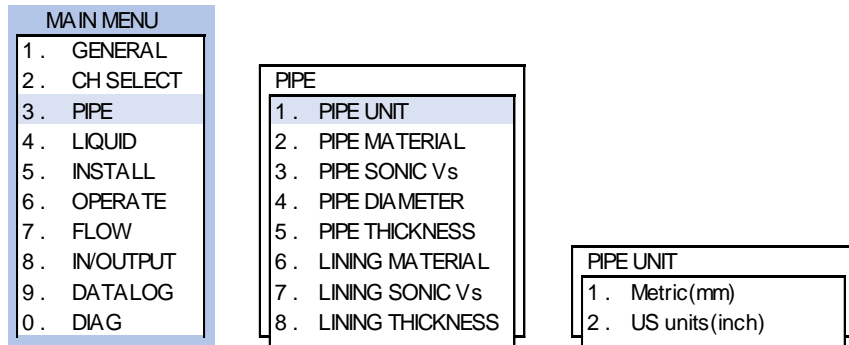
In case of single channel, select CHANNEL 1.

In case of dual channel, user have to setup the data of each channel separately.

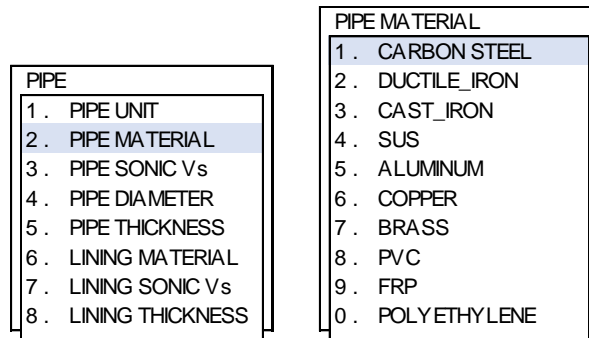


Section 3. Input PIPE Data

Pipe Unit Select pipe unit: METRIC or US units (inch)

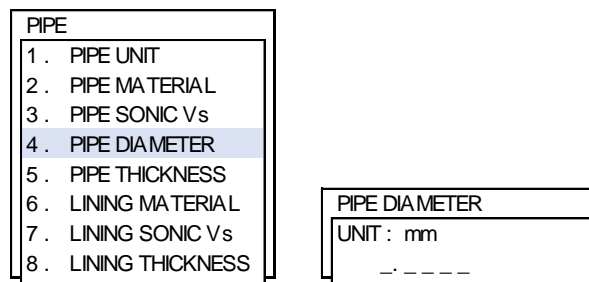


Pipe Material Select pipe material from list.

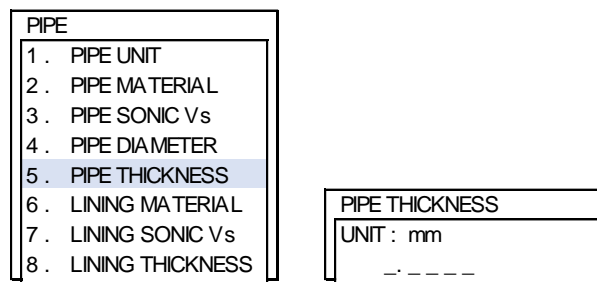


Pipe Sonic Vs N/A

Pipe Diameter Input pipe diameter using numeric keys.



Pipe Thickness Input pipe wall thickness using numeric keys.



Lining Material

If pipe has lining, select lining material.

PIPE
1. PIPE UNIT
2. PIPE MATERIAL
3. PIPE SONIC Vs
4. PIPE DIAMETER
5. PIPE THICKNESS
6. LINING MATERIAL
7. LINING SONIC Vs
8. LINING THICKNESS

LINING MATERIAL
1. NONE
2. MORTAR
3. TAR_EPOXY
4. TEFLON
5. POLYETHYLENE
6. ENAMEL
7. GLASS
8. PLASTIC
9. RUBBER
0. ASBESTOS CEMENT

Lining Sonic Vs

N/A

Lining Thickness

If pipe has lining, input lining thickness using numeric keys.

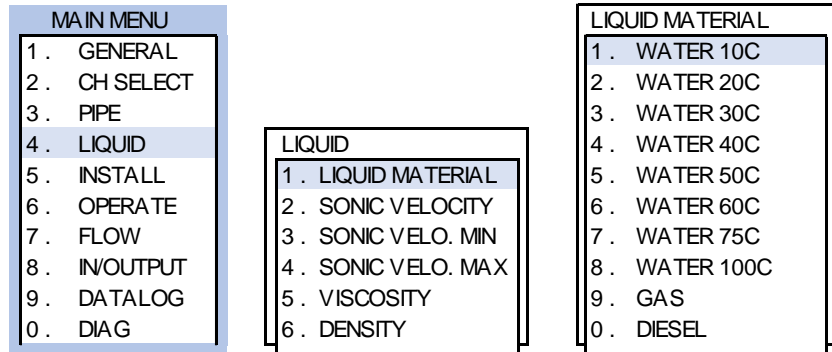
PIPE
1. PIPE UNIT
2. PIPE MATERIAL
3. PIPE SONIC Vs
4. PIPE DIAMETER
5. PIPE THICKNESS
6. LINING MATERIAL
7. LINING SONIC Vs
8. LINING THICKNESS

LINING THICKNESS
UNIT : mm

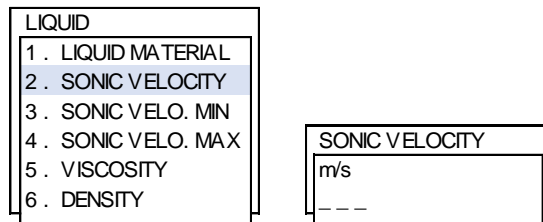
Section 4. Select LIQUID TYPE

User can select liquid type from list. Sonic velocity, viscosity and density are automatically selected by flowmeter. If liquid type is unknown, user must input **3.VISCOSITY** and **4.DENSITY** manually.

Liquid Material Select liquid type from Material list.



Sonic Velocity Flowmeter automatically displays sound speed of the selected liquid.



Sonic Velo. Min N/A

Sonic Velo. Max N/A

Viscosity User does not need to set; flowmeter automatically displays viscosity of selected liquid.

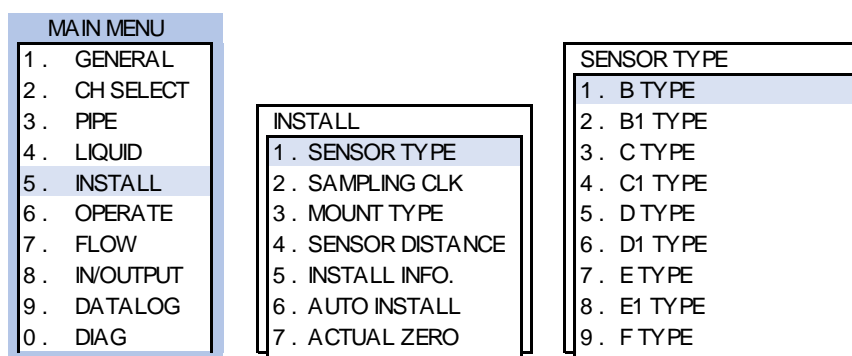
Density User does not need to set; flowmeter automatically displays density of selected liquid.

Section 5. INSTALL

For proper installation, please read this section carefully. After input pipe and liquid data, user can install quickly and easily.

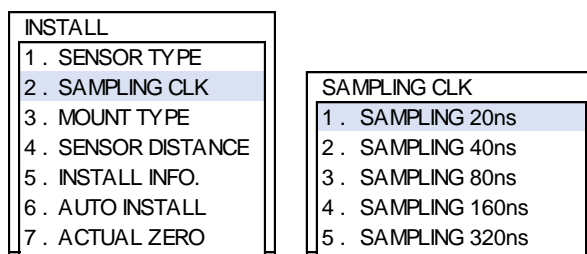
Sensor Type

User must have correct transducer for the pipe.
 Xonic 100 has 5 types of transducers and Xonic 100 will automatically recommend proper transducers for the site.
 If the Xonic 100 recommends size D type, then user must have D type transducers.
 If the Xonic 100 recommends size D1 type, then user must have D1 type transducers.
 Choose the transducer according to the sensor type displayed in the list.

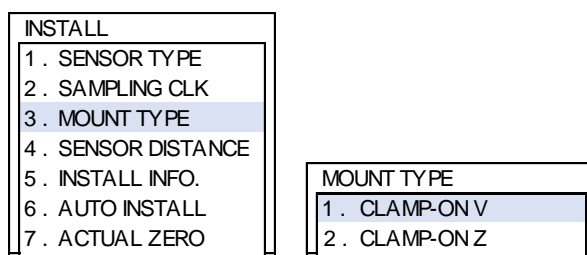


Sampling Clock

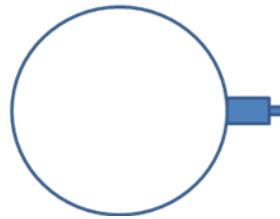
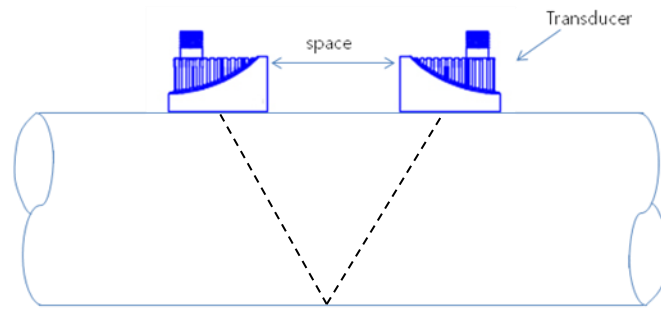
Xonic 100 automatically select SAMPLING CLOCK, so user does not need to change.



Mounting Type

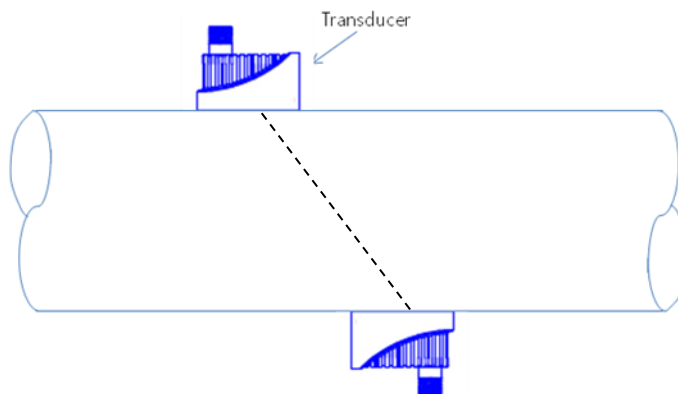


Normally, CLAMP ON V is best for most applications. V method is more accurate, and easy to install. V method means installation mode which mount two transducers onto one pipe side as per below:



<V mode installation>

If pipe is large in diameter (over 1000mm) or very old (scale or corrosion inside), please use Z MODE installation. These pipes can sometimes make the ultrasonic signal very weak, so flowmeter cannot work in V mode. Also, in the case that liquid is not clean, for example wastewater, please use Z MODE.

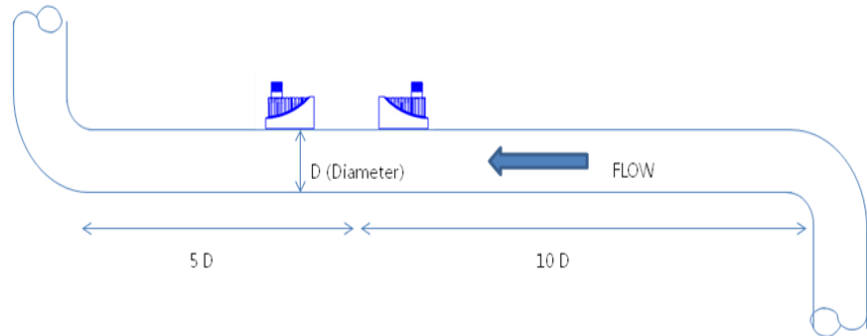


<Z mode installation>

The Z MODE make ultrasonic signal stronger than V MODE.

Finding Installation Position

Please find enough straight run pipe position. Normally, clamp-on ultrasonic flowmeter need 10 Upstream and 5 Downstream diameters straight pipe run. Ensure adequate straight pipe to ensure smooth laminar flow. Accuracy will be affected if not enough straight pipe can be found.

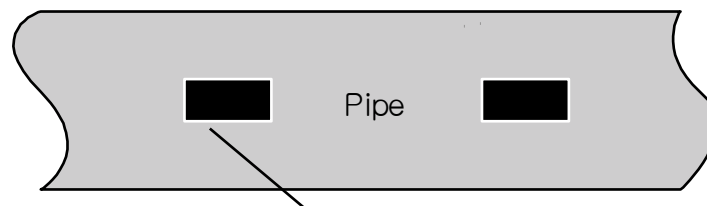


Sensor Distance

INSTALL	
1 .	SENSOR TYPE
2 .	SAMPLING CLK
3 .	MOUNT TYPE
4 .	SENSOR DISTANCE
5 .	INSTALL INFO.
6 .	AUTO INSTALL
7 .	ACTUAL ZERO

SENSOR DISTANCE	
UNIT :	mm
	238.693

Using the Sensor distance, measure the installation area on the pipe using ruler. Remember that the area must be large enough for Mounting Track installation with the sensor placement approximately in the center of the track.



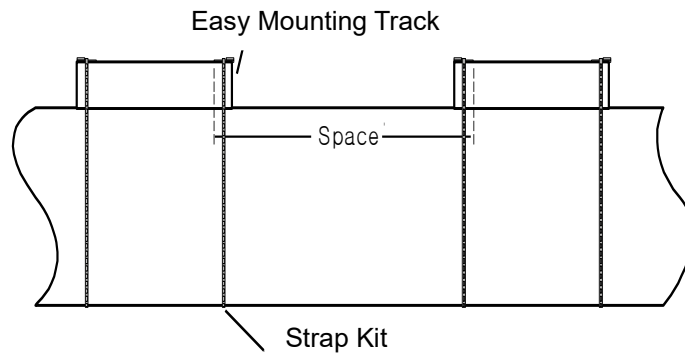
Remove any coatings, and make this area clean and flat for transducer mounting.

Remove Pipe Coating and make install position flat and clean

Please remove all pipe coatings and Use an abrasive to thoroughly clean the area. This is essential for good Ultrasonic coupling.

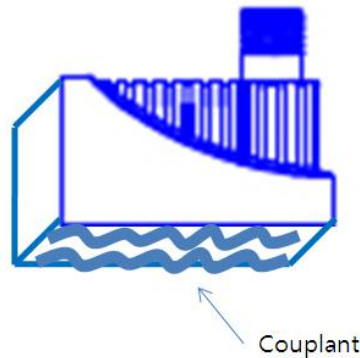
Install Mounting Track

Install mounting track onto the pipe with stainless steel strap. Fix it tightly.



Install Transducers onto PIPE

Apply couplant gel onto bottom of transducers and locate transducer into mounting track. Make transducers clamp-on pipe by tighten a clamp screw.



Install Info

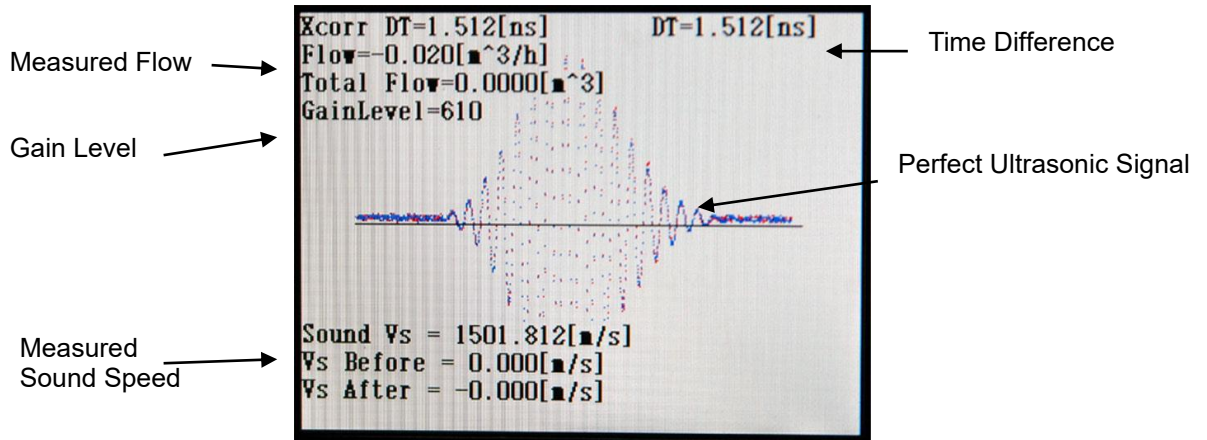
<p>INSTALL</p> <ol style="list-style-type: none"> 1 . SENSOR TYPE 2 . SAMPLING CLK 3 . MOUNT TYPE 4 . SENSOR DISTANCE <li style="background-color: #e0e0e0;">5 . INSTALL INFO. 6 . AUTO INSTALL 7 . ACTUAL ZERO 	<p>INSTALL INFO.</p> <p>Pipe: CARBON STEEL</p> <p>-OD: 0.00mm</p> <p>-T: 0.00mm</p> <p>Liner: NONE</p> <p>-T: 0.00mm</p> <p>Sensor: B(B)</p> <p>-Clk: 20nS</p> <p>Mnt: CLAMP-ON V</p> <p>Space: 0.0mm</p> <p>(E: 7.0mm)</p>
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Auto Install

Xonic 100 uses its patented AR mode ultrasonic signal for flow measurement. User simply select YES, then Xonic 100 start AR mode automatic installation procedure. User can see how AR mode find best signal.

<p>INSTALL</p> <ol style="list-style-type: none"> 1 . SENSOR TYPE 2 . SAMPLING CLK 3 . MOUNT TYPE 4 . SENSOR DISTANCE 5 . INSTALL INFO. <li style="background-color: #e0e0e0;">6 . AUTO INSTALL 7 . ACTUAL ZERO 	<p>AUTO INSTALL</p> <ol style="list-style-type: none"> 1 . NO 2 . YES
---	--

After auto installation, Xonic 100 shows the below ultrasonic signals. The signal shape must be like the below picture.



Sound Vs : In case of water 20°C, the sound speed must be around 1480 m/s. If sound speed is not around 1480, please check pipe size again.

Gain Level : Gain Level must be below 1500. High gain means low ultrasonic signal. So, if gain is over 1500, please check pipe size again and re-install transducers after clean pipe.

Signal Shape must be high in the middle area. If signal shape is not high in the middle area, please check pipe size, pipe material, etc.

Actual Zero

This menu is useful when user can stop the flow. Look flow after stop. If flow is not zero after stop the flow, press ACTUAL ZERO. Then, Xonic 100 makes flow real zero "0". Be sure flow is 0, and open valve.

- | INSTALL |
|---------------------|
| 1 . SENSOR TYPE |
| 2 . SAMPLING CLK |
| 3 . MOUNT TYPE |
| 4 . SENSOR DISTANCE |
| 5 . INSTALL INFO. |
| 6 . AUTO INSTALL |
| 7 . ACTUAL ZERO |

- | ACTUAL ZERO |
|-----------------------|
| 1 . ACTUAL ZERO AUTO |
| 2 . ACTUAL ZERO SET |
| 3 . ACTUAL ZERO RESET |

Section 6. OPERATION

Upper Flow Limit

This menu means the site flow cannot exceed flow limitation.

<p>MAIN MENU</p> <ol style="list-style-type: none"> 1. GENERAL 2. CH SELECT 3. PIPE 4. LIQUID 5. INSTALL 6. OPERATE 7. FLOW 8. IN/OUTPUT 9. DATALOG 0. DIAG 	<p>OPERATE</p> <ol style="list-style-type: none"> 1. UPPER FLOW LIMIT 2. LOWER FLOW LIMIT 3. DEAD ZONE 4. FLOW AVERAGE TIME 5. TOTAL FLOW SET 6. ALARM 7. CALIBRATION 8. ENABLE AGC 9. DAMPING 0. FIX RISC. 	<p>UPPER FLOW LIMIT</p> <p>Unit : m³/hour</p> <p>20000.160</p>
--	--	--

The value is determined by flowmeter automatically. Normally, the value is about double value than measured flow. If the user wants another value, it can be changed by keypad.

Lower Flow Limit

Normally, this value is 0.

<p>OPERATE</p> <ol style="list-style-type: none"> 1. UPPER FLOW LIMIT 2. LOWER FLOW LIMIT 3. DEAD ZONE 4. FLOW AVERAGE TIME 5. TOTAL FLOW SET 6. ALARM 7. CALIBRATION 8. ENABLE AGC 9. DAMPING 0. FIX RISC. 	<p>LOWER FLOW LIMIT</p> <p>Unit : m³/hour</p> <p>- 20000.160</p>
--	--

Dead Zone

DEAD ZONE means the flow that can be disregarded. If pipe is big, so very small flow in meaningless, then use this menu. Normally, flowmeter makes the value automatically.

<p>OPERATE</p> <ol style="list-style-type: none"> 1. UPPER FLOW LIMIT 2. LOWER FLOW LIMIT 3. DEAD ZONE 4. FLOW AVERAGE TIME 5. TOTAL FLOW SET 6. ALARM 7. CALIBRATION 8. ENABLE AGC 9. DAMPING 0. FIX RISC. 	<p>DEAD ZONE</p> <p>n/s</p> <p>0.000</p>
--	---

Flow Average Time

Default value is 5 seconds. This means display flow is average flow for 5 seconds.

- OPERATE
1. UPPER FLOW LIMIT
 2. LOWER FLOW LIMIT
 3. DEAD ZONE
 4. FLOW AVERAGE TIME
 5. TOTAL FLOW SET
 6. ALARM
 7. CALIBRATION
 8. ENABLE AGC
 9. DAMPING
 0. FIX RISC.

- FLOW AVERAGE TIME
- sec
 - 10

Total Flow Set

If user need to change flow total, can change by keypad.

- OPERATE
1. UPPER FLOW LIMIT
 2. LOWER FLOW LIMIT
 3. DEAD ZONE
 4. FLOW AVERAGE TIME
 5. TOTAL FLOW SET
 6. ALARM
 7. CALIBRATION
 8. ENABLE AGC
 9. DAMPING
 0. FIX RISC.

- TOTAL FLOW SET
1. POSITIVE SET
 2. NEGATIVE SET

Alarm

Xonic 100 has alarm functions. User can set HIGH FLOW, LOW FLOW alarms.

- OPERATE
1. UPPER FLOW LIMIT
 2. LOWER FLOW LIMIT
 3. DEAD ZONE
 4. FLOW AVERAGE TIME
 5. TOTAL FLOW SET
 6. ALARM
 7. CALIBRATION
 8. ENABLE AGC
 9. DAMPING
 0. FIX RISC.

- ALARM
1. LOW FLOW
 2. HIGH FLOW

Calibration

In case the user has a calibration instrument or other laboratory instrument to test the Xonic 100, then they can use this menu to calibrate for best accuracy, user can select calibration menu.

- OPERATE
1. UPPER FLOW LIMIT
 2. LOWER FLOW LIMIT
 3. DEAD ZONE
 4. FLOW AVERAGE TIME
 5. TOTAL FLOW SET
 6. ALARM
 7. CALIBRATION
 8. ENABLE AGC
 9. DAMPING
 0. FIX RISC.

- CALIBRATION
1. METHOD
 2. MULTI-POINT SET
 3. Kc SET

- METHOD
1. NO CALIBRATION
 2. MULTI-POINTS
 3. Kc CALIBRATION
 4. Kc and MULTI

Move cursor to CALIBRATION METHOD.

1) NO CALIBRATION is no calibration. It does not affect any calibration to the flow.

2) MULTI-POINTS is multi-point calibration menu. User can test flow from minimum to max flow. And can input each test points to flowmeter.

VIEW user can see each input points.

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">CALIBRATION</td></tr> <tr><td>1. METHOD</td><td></td></tr> <tr style="background-color: #e0e0e0;"><td>2. MULTI-POINT SET</td><td></td></tr> <tr><td>3. Kc SET</td><td></td></tr> </table>	CALIBRATION		1. METHOD		2. MULTI-POINT SET		3. Kc SET		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">MULTI-POINT SET</td></tr> <tr style="background-color: #e0e0e0;"><td>1. VIEW</td><td></td></tr> <tr><td>2. ADD</td><td></td></tr> <tr><td>3. DELETE</td><td></td></tr> </table>	MULTI-POINT SET		1. VIEW		2. ADD		3. DELETE		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">UNIT : m³/hour</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> </table>	UNIT : m ³ /hour		0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000
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BEFORE		AFTER																																						

ADD user can add test points.

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">CALIBRATION</td></tr> <tr><td>1. METHOD</td><td></td></tr> <tr style="background-color: #e0e0e0;"><td>2. MULTI-POINT SET</td><td></td></tr> <tr><td>3. Kc SET</td><td></td></tr> </table>	CALIBRATION		1. METHOD		2. MULTI-POINT SET		3. Kc SET		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">MULTI-POINT SET</td></tr> <tr><td>1. VIEW</td><td></td></tr> <tr style="background-color: #e0e0e0;"><td>2. ADD</td><td></td></tr> <tr><td>3. DELETE</td><td></td></tr> </table>	MULTI-POINT SET		1. VIEW		2. ADD		3. DELETE		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">ADD</td></tr> <tr><td>POINT :</td><td></td></tr> <tr><td>VALUE :</td><td></td></tr> </table>	ADD		POINT :		VALUE :	
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2. ADD																								
3. DELETE																								
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VALUE :																								

DELETE user can delete test points.

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">CALIBRATION</td></tr> <tr><td>1. METHOD</td><td></td></tr> <tr style="background-color: #e0e0e0;"><td>2. MULTI-POINT SET</td><td></td></tr> <tr><td>3. Kc SET</td><td></td></tr> </table>	CALIBRATION		1. METHOD		2. MULTI-POINT SET		3. Kc SET		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">MULTI-POINT SET</td></tr> <tr><td>1. VIEW</td><td></td></tr> <tr><td>2. ADD</td><td></td></tr> <tr style="background-color: #e0e0e0;"><td>3. DELETE</td><td></td></tr> </table>	MULTI-POINT SET		1. VIEW		2. ADD		3. DELETE		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">UNIT : m³/hour</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> <tr><td>0.0000</td><td>: 0.000</td></tr> </table>	UNIT : m ³ /hour		0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000	0.0000	: 0.000
CALIBRATION																																								
1. METHOD																																								
2. MULTI-POINT SET																																								
3. Kc SET																																								
MULTI-POINT SET																																								
1. VIEW																																								
2. ADD																																								
3. DELETE																																								
UNIT : m ³ /hour																																								
0.0000	: 0.000																																							
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0.0000	: 0.000																																							
0.0000	: 0.000																																							
BEFORE		AFTER																																						

*Kc SET is flow calibration with calibration factor.
 If flow is 100 and Kc is 1.0, then flow became 100.
 If flow is 100 and Kc is 1.01, then flow became 101.
 If flow is 100 and Kc is 0.99, then flow became 99.*

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">CALIBRATION</td></tr> <tr><td>1. METHOD</td><td></td></tr> <tr style="background-color: #e0e0e0;"><td>2. MULTI-POINT SET</td><td></td></tr> <tr><td>3. Kc SET</td><td></td></tr> </table>	CALIBRATION		1. METHOD		2. MULTI-POINT SET		3. Kc SET		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td colspan="2" style="text-align: center;">Kc SET</td></tr> <tr><td>Unit : None</td><td></td></tr> <tr><td>1. 000</td><td></td></tr> </table>	Kc SET		Unit : None		1. 000	
CALIBRATION															
1. METHOD															
2. MULTI-POINT SET															
3. Kc SET															
Kc SET															
Unit : None															
1. 000															

Enable Agc

AGC is Automatic Gain Control function. Enable is default.

Damping

- OPERATE
- 1. UPPER FLOW LIMIT
 - 2. LOWER FLOW LIMIT
 - 3. DEAD ZONE
 - 4. FLOW AVERAGE TIME
 - 5. TOTAL FLOW SET
 - 6. ALARM
 - 7. CALIBRATION
 - 8. ENABLE AGC
 - 9. DAMPING
 - 0. FIX RISC.

- ENABLE AGC
- 1. DISABLE
 - 2. ENABLE

- OPERATE
- 1. UPPER FLOW LIMIT
 - 2. LOWER FLOW LIMIT
 - 3. DEAD ZONE
 - 4. FLOW AVERAGE TIME
 - 5. TOTAL FLOW SET
 - 6. ALARM
 - 7. CALIBRATION
 - 8. ENABLE AGC
 - 9. DAMPING
 - 0. FIX RISC.

- DAMPING
- 1. DISABLE
 - 2. 30 SEC.
 - 3. 1 MIN.
 - 4. 5 MIN.
 - 5. 10 MIN.
 - 6. 30 MIN.
 - 7. UNLIMITED

Fix Risc.

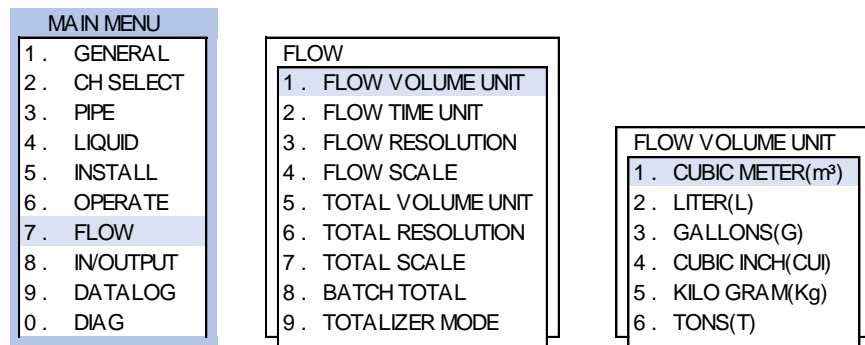
- OPERATE
- 1. UPPER FLOW LIMIT
 - 2. LOWER FLOW LIMIT
 - 3. DEAD ZONE
 - 4. FLOW AVERAGE TIME
 - 5. TOTAL FLOW SET
 - 6. ALARM
 - 7. CALIBRATION
 - 8. ENABLE AGC
 - 9. DAMPING
 - 0. FIX RISC.

- FIX RISC.
- 1. DISABLE
 - 2. ENABLE

Section 7. FLOW

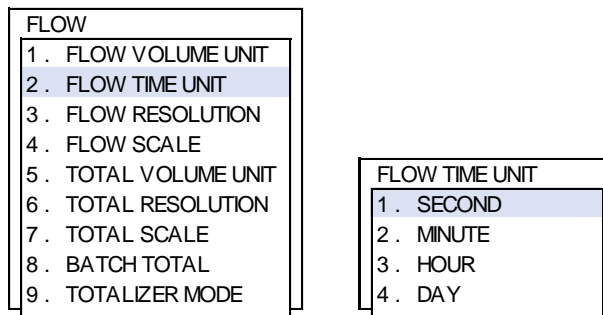
Flow Volume Unit

User can select any unit from list.



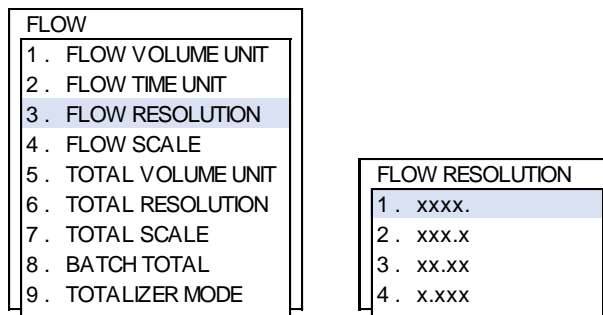
Flow Time Unit

User can select time unit from list.



Flow Resolution

User can select decimal points from list.



XXXX. means 10 for flow
XXX.X means 10.1 for flow
XX.XX means 10.12 for flow
X.XXX means 10.123 for flow

Flow Scale

In case of big flow, user can select KILO menu.

- FLOW
1. FLOW VOLUME UNIT
 2. FLOW TIME UNIT
 3. FLOW RESOLUTION
 4. FLOW SCALE
 5. TOTAL VOLUME UNIT
 6. TOTAL RESOLUTION
 7. TOTAL SCALE
 8. BATCH TOTAL
 9. TOTALIZER MODE

- FLOW SCALE
1. NONE
 2. KILO

Total Volume Unit

User can select total unit. In most case, total unit is same with flow unit.

- FLOW
1. FLOW VOLUME UNIT
 2. FLOW TIME UNIT
 3. FLOW RESOLUTION
 4. FLOW SCALE
 5. TOTAL VOLUME UNIT
 6. TOTAL RESOLUTION
 7. TOTAL SCALE
 8. BATCH TOTAL
 9. TOTALIZER MODE

- TOTAL VOLUME UNIT
1. CUBIC METER(m³)
 2. LITER(l)
 3. GALLONS(g)
 4. CUBIC INCH(cui)
 5. KILO GRAM(Kg)
 6. TONS(t)

Total Resolution

Choose from the list.

- FLOW
1. FLOW VOLUME UNIT
 2. FLOW TIME UNIT
 3. FLOW RESOLUTION
 4. FLOW SCALE
 5. TOTAL VOLUME UNIT
 6. TOTAL RESOLUTION
 7. TOTAL SCALE
 8. BATCH TOTAL
 9. TOTALIZER MODE

- TOTAL RESOLUTION
1. xxxx.
 2. xxx.x
 3. xx.xx
 4. x.xxx

Total Scale

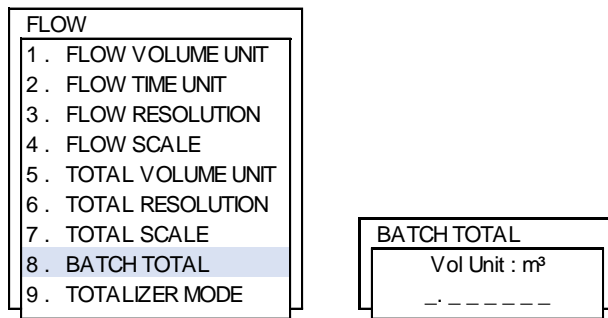
User can select KILO for big flow total.

- FLOW
1. FLOW VOLUME UNIT
 2. FLOW TIME UNIT
 3. FLOW RESOLUTION
 4. FLOW SCALE
 5. TOTAL VOLUME UNIT
 6. TOTAL RESOLUTION
 7. TOTAL SCALE
 8. BATCH TOTAL
 9. TOTALIZER MODE

- TOTAL SCALE
1. NONE
 2. KILO

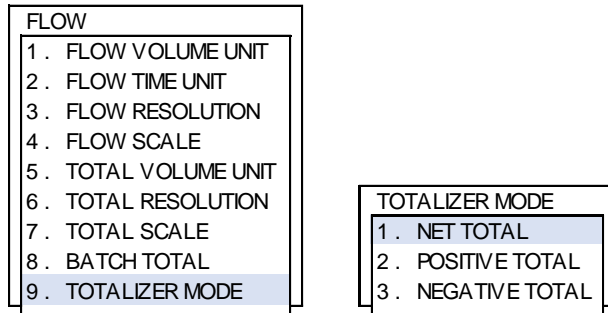
BATCH TOTAL

Batch total means relay will be on per each batch total. If flow unit is CUBIC METER, then 1.0 means 1 pulse per 1 CUBIC METER. If 0.1 batch total, it means 1 pulse per 0.1 CUBIC METER.



Totalizer Mode

User can select totalizer mode.

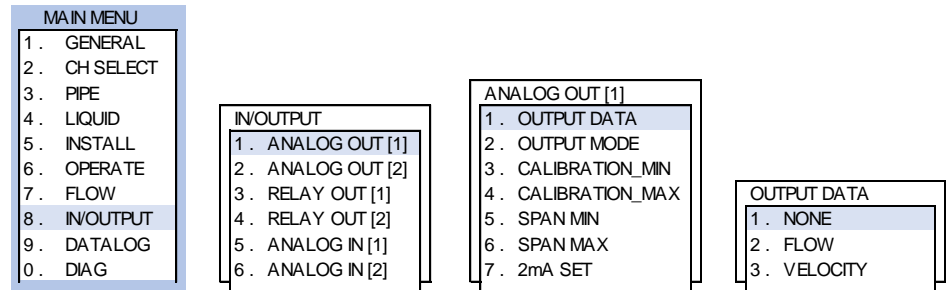


If positive flow is 100 and negative flow is 10, then total is 90
POSITIVE TOTAL means flowmeter will only totalize positive flow. If positive flow is 100 and negative flow is 10, then total is 100.
NEGATIVE TOTAL means flowmeter will only totalizer negative flow. If positive flow is 100 and negative flow is 10, then total is 10.

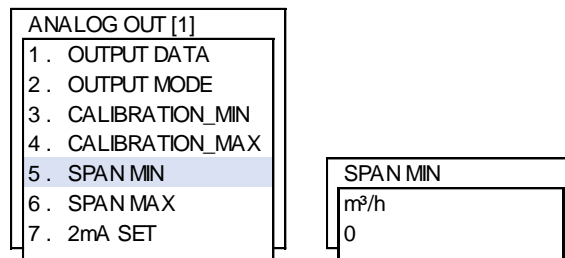
Section 8. IN / OUTPUT

Analog Out [1]

Xonic 100 has two analog output functions for 4-20mADC output. User can assign output data and set range.



User can assign FLOW or VELOCITY to ANALOG OUT 1. In most \ case, flow is assign to ANALOG OUT 1.



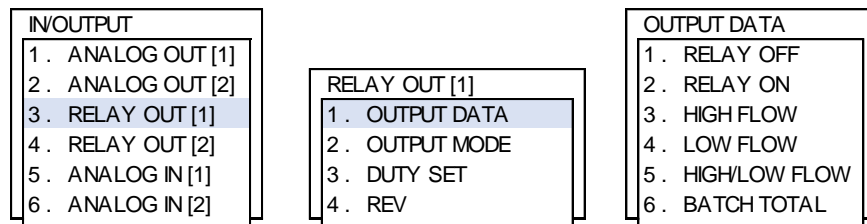
User can set ANALOG OUT 1 min and max span value.
If flow max is 1000, SPAN MAX is 1000
If flow min is 0, SPAN MIN is 0

Analog Out [2]

The same as ANALOG OUT [1] above.

Relay Out [1]

Xonic 100 has two relays and user can assign to each function. Relay is normally used for totalizer function. User can assign RELAY OUT [1] to BATCH TOTAL.



Relay Out [2]

Same as RELAY OUT [1].

Analog In [1]

In case the user wants to see pressure, temperature, user can use this function. Just set MIN and MAX input SPAN, the flowmeter sends the ANALOG INPUT data through RS-232C.

- | IN/OUTPUT |
|-------------------|
| 1. ANALOG OUT [1] |
| 2. ANALOG OUT [2] |
| 3. RELAY OUT [1] |
| 4. RELAY OUT [2] |
| 5. ANALOG IN [1] |
| 6. ANALOG IN [2] |

- | ANALOG IN [1] |
|---------------------|
| 1. SET ENABLE |
| 2. CALIBRATION_MIN |
| 3. CALIBRATION_MAX |
| 4. MIN INPUT SPAN |
| 5. MAX INPUT SPAN |
| 6. UNIT |
| 7. CHECK INPUT DATA |

- | SET ENABLE |
|------------|
| 1. DISABLE |
| 2. ENABLE |

If pressure transmitter range is from 0 to 10Kg/cm2, then
MIN INPUT SPAN is 0
MAX INPUT SPAN is 10

Analog In[2]

Same as ANALOG IN [1].

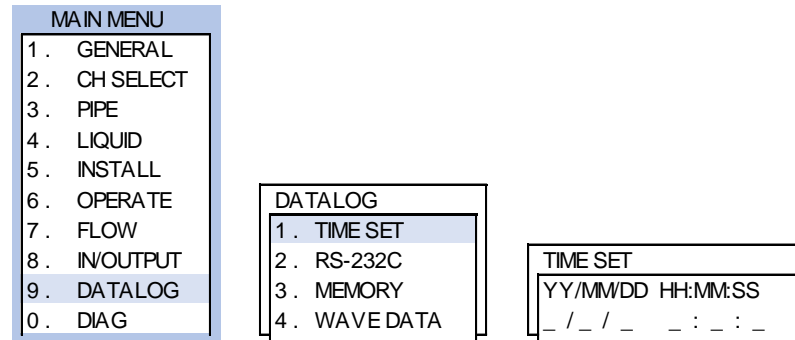
Section 9. DATALOGGER

The flowmeter provides both of RS-232C and RS-485 for the communication.

Caution) Before user start logging data, user should review this section carefully.

Time Set

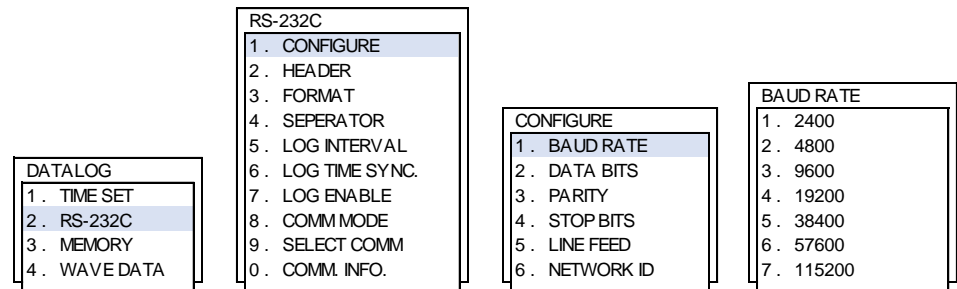
User must setup the correct date and time for recording the measurement.



Configure Baud Rate

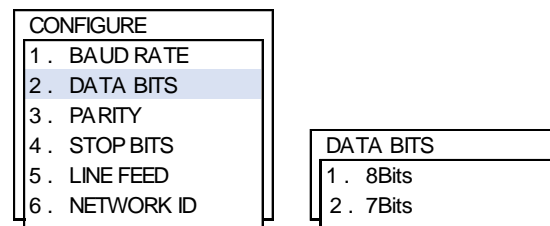
User should complete the Configure Setting for data logger
User can select the baud rate of the flow.

Caution) The value must be same with the value of user's PC or Laptop

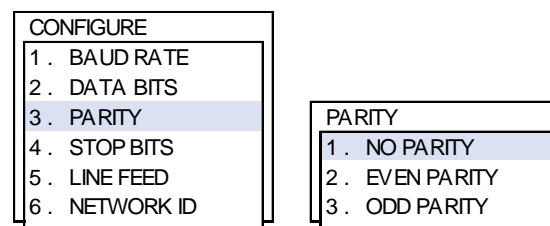


Data Bits

Set the Databits for data logger



Parity

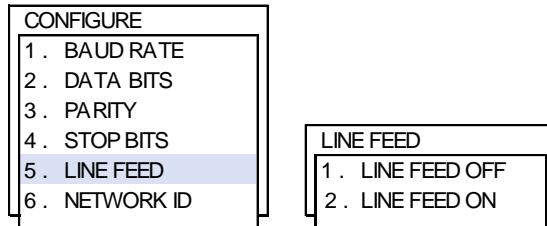


Stop Bits

Set the Stopbits for data logger.

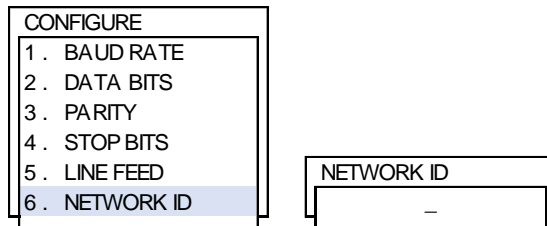


Line Feed



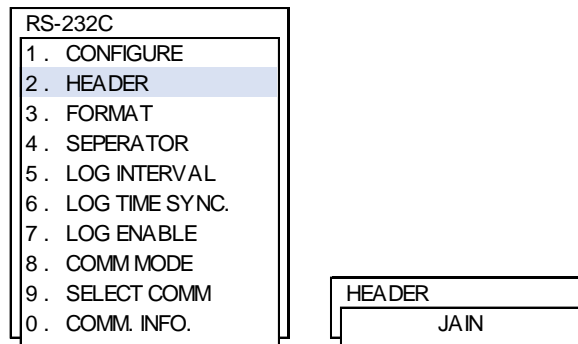
Network ID

User can set a ID in order to identify
 Move cursor by [◀] [▶].
 Input alphabet characters by [F1].
 Delete characters by [CLR].
 Leave the edit mode by pressing [ENT].



Header

User can set a Header as a Network ID for the communication.
 Move cursor by [◀] [▶].
 Input alphabet characters by [F1].
 Delete characters by [CLR].
 Leave the edit mode by pressing [ENT].



Format

User can add and list the data here so the data will be download sequentially

<p>RS-232C</p> <ol style="list-style-type: none"> 1. CONFIGURE 2. HEADER <li style="background-color: #e0e0e0;">3. FORMAT 4. SEPERATOR 5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO. 	<p>FORMAT</p> <p>HFTA</p> <p>H:Header S:Site name N:Channel No D:Date, C:Time F:Flow, T:Total I1-I2:AnalogIn1-2 U:Unit, A:Alarm V:Velocity</p>
---	--

Separator

User can select Space, Comma or Tab to separate the data.

<p>RS-232C</p> <ol style="list-style-type: none"> 1. CONFIGURE 2. HEADER 3. FORMAT <li style="background-color: #e0e0e0;">4. SEPERATOR 5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO. 	<p>SEPERATOR</p> <ol style="list-style-type: none"> <li style="background-color: #e0e0e0;">1. SPACE 2. COMMA 3. TAB
---	--

Log Interval

The Log Interval is the measurement period of time which are taken by the transducers. **Caution) If the flow value changes rapidly, then the log interval time needs to be rapidly as well.**

<p>RS-232C</p> <ol style="list-style-type: none"> 1. CONFIGURE 2. HEADER 3. FORMAT 4. SEPERATOR <li style="background-color: #e0e0e0;">5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO. 	<p>LOG INTERVAL</p> <ol style="list-style-type: none"> 1. 1 Sec 2. 5 Sec 3. 30 Sec 4. 1 Min 5. 5 Min 6. 15 Min 7. 30 Min 8. 1 Hour 9. 12 Hour 0. 24 Hour
---	--

Log Time Sync

<p>RS-232C</p> <ol style="list-style-type: none"> 1. CONFIGURE 2. HEADER 3. FORMAT 4. SEPERATOR 5. LOG INTERVAL <li style="background-color: #e0e0e0;">6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO. 	<p>LOG TIME SYNC.</p> <p>HH:MM:SS</p> <p>_ : _ : _</p>
---	--

Log Enable

User must enable the function for data logger.

RS-232C 1. CONFIGURE 2. HEADER 3. FORMAT 4. SEPERATOR 5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO.	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">LOG ENABLE</td> </tr> <tr> <td style="padding: 2px;">1. DISABLE</td> </tr> <tr> <td style="padding: 2px;">2. ENABLE</td> </tr> </table>	LOG ENABLE	1. DISABLE	2. ENABLE
LOG ENABLE				
1. DISABLE				
2. ENABLE				

Comm Mode

User must enable the function for data logger.

Normal – Default

Jain View

CDMA Comm – CDMA Communication

MODBUS RTU – MODBUS Communication

RS-232C 1. CONFIGURE 2. HEADER 3. FORMAT 4. SEPERATOR 5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO.	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">COMM MODE</td> </tr> <tr> <td style="padding: 2px;">1. NORMAL</td> </tr> <tr> <td style="padding: 2px;">2. Jain View</td> </tr> <tr> <td style="padding: 2px;">3. CDMA COMM</td> </tr> <tr> <td style="padding: 2px;">4. MODBUS-RTU</td> </tr> </table>	COMM MODE	1. NORMAL	2. Jain View	3. CDMA COMM	4. MODBUS-RTU
COMM MODE						
1. NORMAL						
2. Jain View						
3. CDMA COMM						
4. MODBUS-RTU						

Select Comm

User can use both cable RS-232 and RS-485 to for the communication.

RS-232C 1. CONFIGURE 2. HEADER 3. FORMAT 4. SEPERATOR 5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO.	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">SELECT COMM</td> </tr> <tr> <td style="padding: 2px;">1. RS232</td> </tr> <tr> <td style="padding: 2px;">2. RS485</td> </tr> </table>	SELECT COMM	1. RS232	2. RS485
SELECT COMM				
1. RS232				
2. RS485				

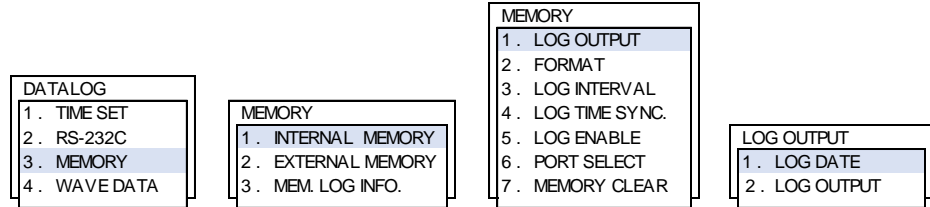
Comm Info

RS-232C 1. CONFIGURE 2. HEADER 3. FORMAT 4. SEPERATOR 5. LOG INTERVAL 6. LOG TIME SYNC. 7. LOG ENABLE 8. COMM MODE 9. SELECT COMM 0. COMM. INFO.	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">COMM. INFO.</td> </tr> <tr> <td style="padding: 2px;">LOG: DISABLE</td> </tr> <tr> <td style="padding: 2px;">BAUD: 9600</td> </tr> <tr> <td style="padding: 2px;">N-8-1</td> </tr> <tr> <td style="padding: 2px;">LINE FEED OFF</td> </tr> <tr> <td style="padding: 2px;">NET ID: 0</td> </tr> <tr> <td style="padding: 2px;">MODE: NORMAL</td> </tr> <tr> <td style="padding: 2px;">PORT: RS232</td> </tr> <tr> <td style="padding: 2px;">HDR: DEFAULT</td> </tr> <tr> <td style="padding: 2px;">FMT: HFTA</td> </tr> <tr> <td style="padding: 2px;">SEP: COMMA</td> </tr> </table>	COMM. INFO.	LOG: DISABLE	BAUD: 9600	N-8-1	LINE FEED OFF	NET ID: 0	MODE: NORMAL	PORT: RS232	HDR: DEFAULT	FMT: HFTA	SEP: COMMA
COMM. INFO.												
LOG: DISABLE												
BAUD: 9600												
N-8-1												
LINE FEED OFF												
NET ID: 0												
MODE: NORMAL												
PORT: RS232												
HDR: DEFAULT												
FMT: HFTA												
SEP: COMMA												

Memory of Datalogger

Internal Memory User can see the records of First Log and Last Logger.

Log Output



Format

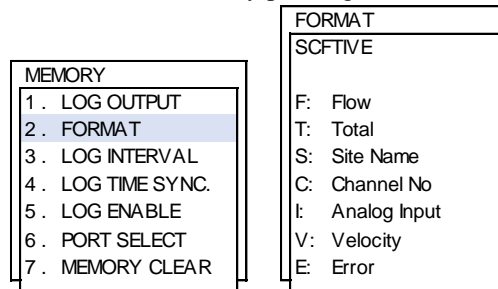
User can add and list the data here so the data will be download sequentially.

Move cursor by [◀] [▶].

Input alphabet characters by [F1].

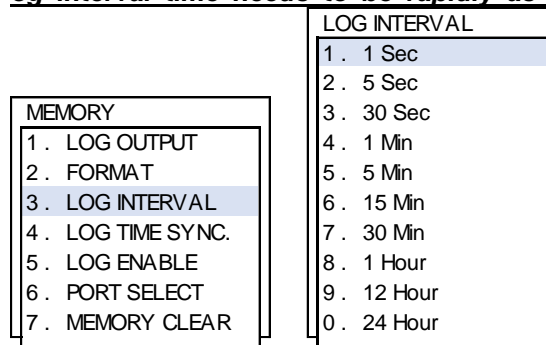
Delete characters by [CLR].

Leave the edit mode by pressing [ENT].

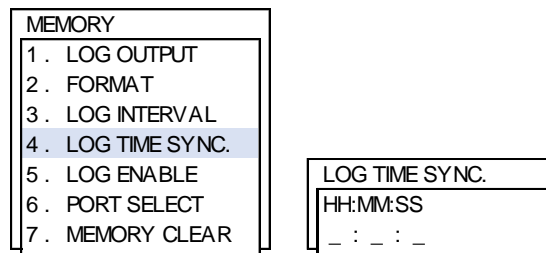


Log Interval

The Log Interval is the measurement period of time which are taken by the transducers. **Caution) If the flow value changes rapidly, then the log interval time needs to be rapidly as well.**

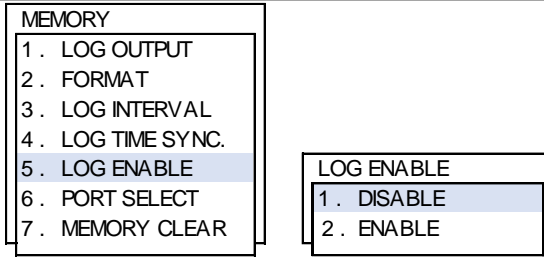


Log Time Sync



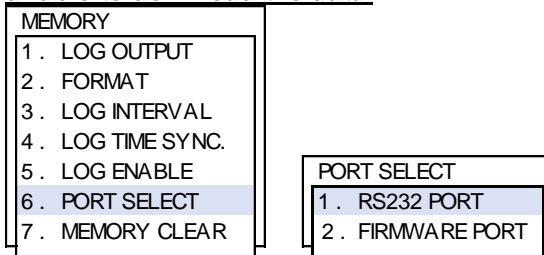
Log Enable

User must enable the function for data logger.



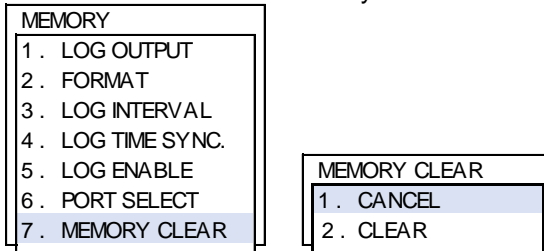
Port Select

User can use both RS-232 port or Firmware port to connect flowmeter with user's laptops. **Caution) The setting must be corrected otherwise user is unable to download the data.**

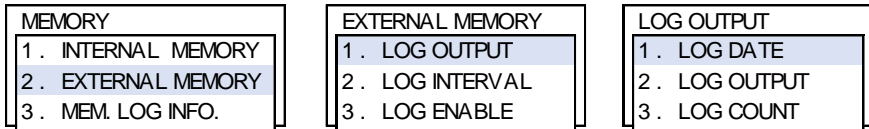


Memory Clear

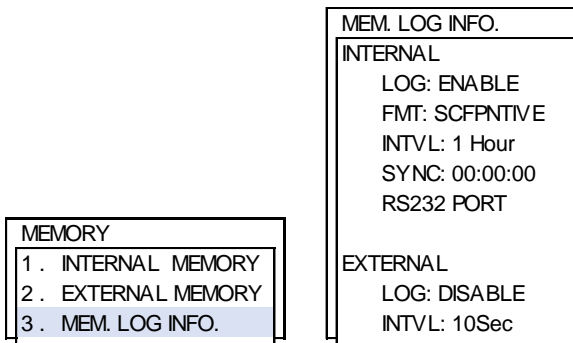
User can clear all of memory here.



External Memory

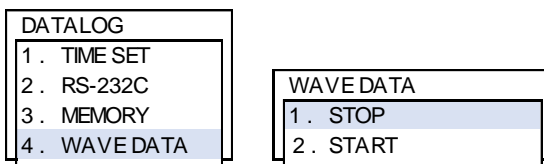


Mem Log Info



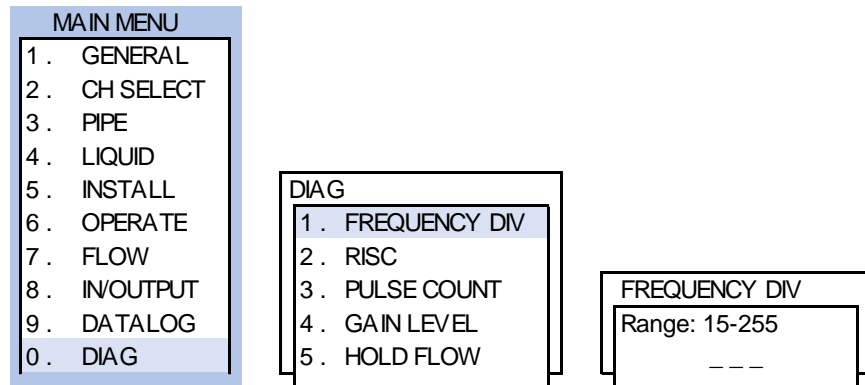
Wave Data

Download the Signal Wave Data



Section 10. Diagnostics

User can see what happen in flowmeter through diagnostic functions.



FREQUENCY DIV is frequency functions.

RISC is distance from impulse signal to receive signal.

PULSE COUNT is numbers of pulse. 5 is default.

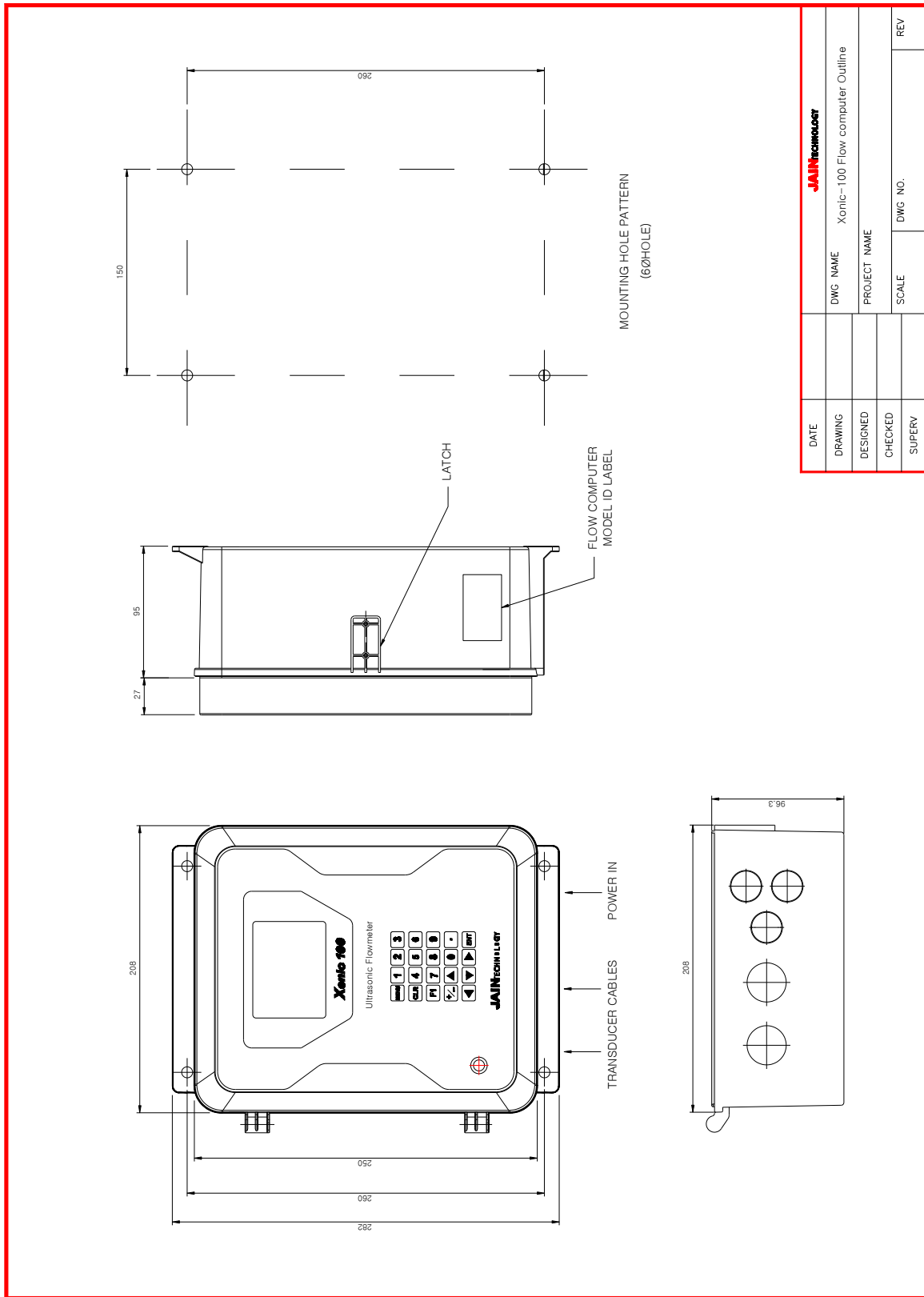
GAIN LEVEL is amplitude level of signal. The number is automatically set by flowmeter.

HOLD FLOW is functions to match with remote indicator.

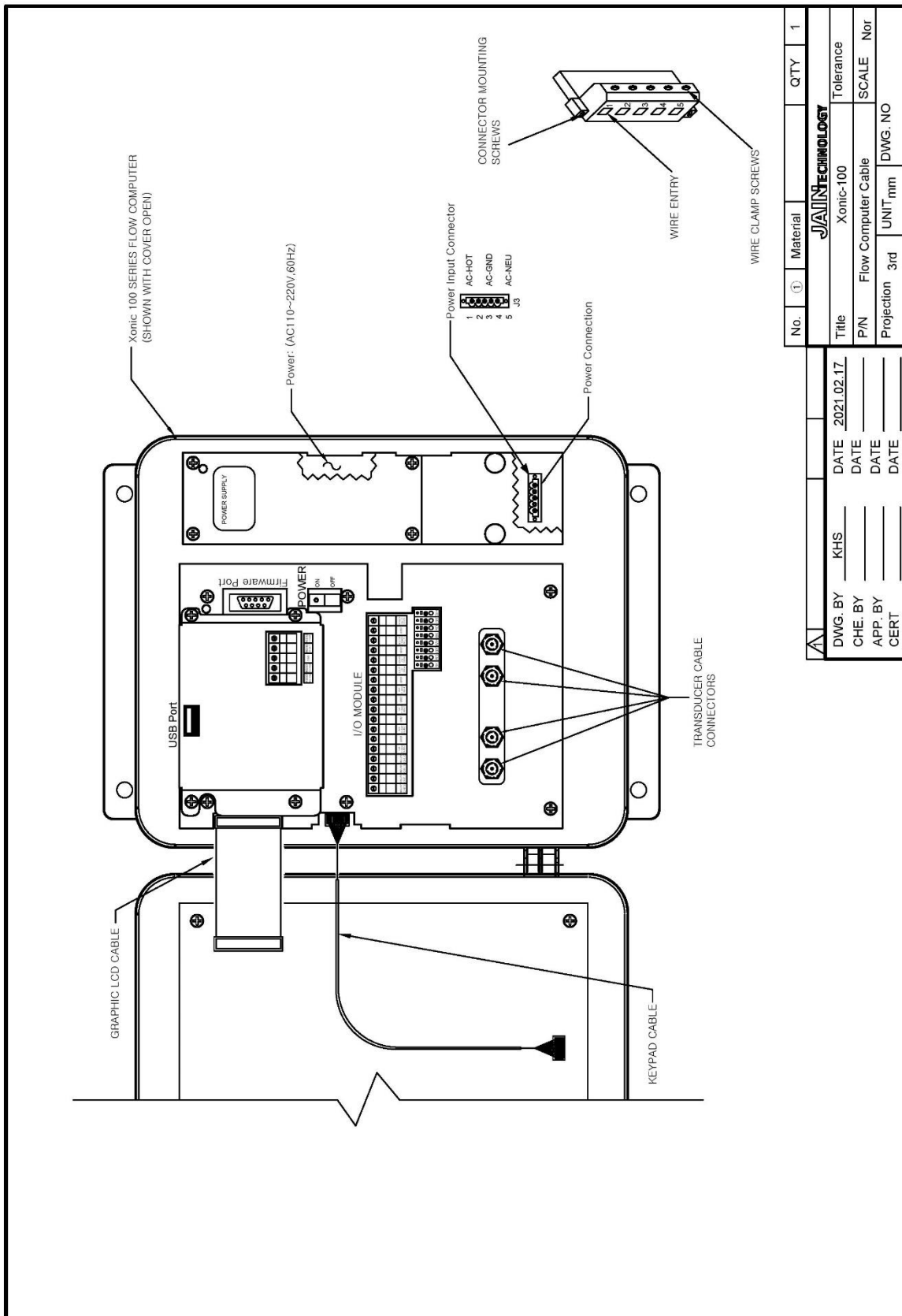
When **HOLD FLOW** is 0, Xonic 100 send 4mA output.

When **HOLD FLOW** is 1000 (max span flow), Xonic 100 send 20mA output.

DRAWINGS



DATE		JAINTECHNOLOGY
DRAWING	DWG NAME	Xonic-100 Flow computer Outline
DESIGNED	PROJECT NAME	
CHECKED	SCALE	DWG NO.
SUPERV		REV

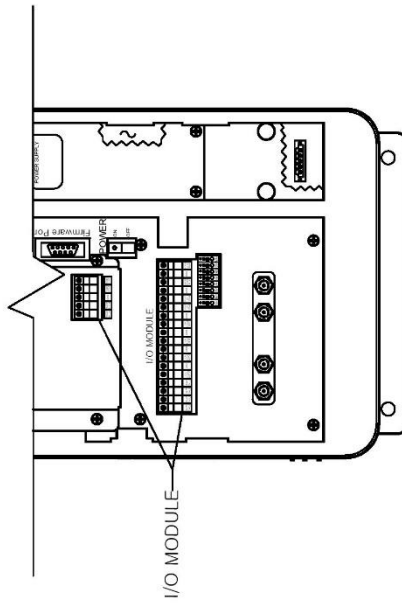


No.	Material	QTY	1
JAINTECHNOLOGY			
Title		Xonic-100	Tolerance
P/N	Flow Computer Cable	SCALE	Nor
Projection	3rd	UNIT mm	DWG. NO

DWG. BY	KHS	DATE	2021.02.17
CHE. BY		DATE	
APP. BY		DATE	
CERT		DATE	

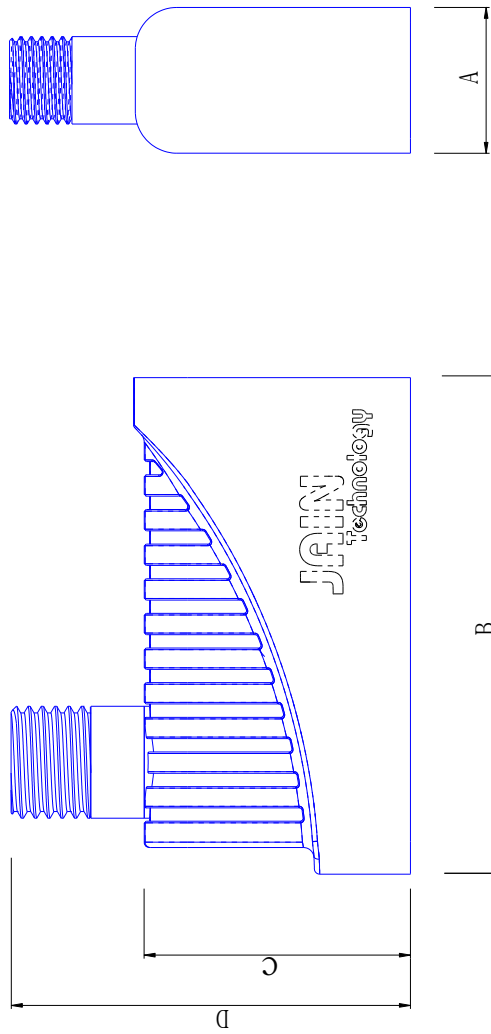
<I/O MODULE>

Pin#	SIGNAL	FUNCTION
1	RX COM	RS-232 Transmitter Output
2	TX COM	RS-232 Receiver Input
3	GND	STANDARD
4	B OUT	Inverting Receiver Input and Noninverting Driver Output
5	A OUT	Noninverting Receiver Input and Noninverting Driver Output
6	CH2_E	RELAY 2 OPEN(A)
7	CH2_C	RELAY 2 COMMON(C)
8	CH1_E	RELAY 1 OPEN(A)
9	CH1_C	RELAY 1 CLOSED(C)
10	4-20mA OUTPUT	ANALOG 4~20mA OUTPUT 1CH
11	GND	STANDARD
12	4-20mA OUTPUT	ANALOG 4~20mA OUTPUT 2CH
13	GND	STANDARD
14	4-20mA INPUT	ANALOG 4~20mA INPUT 1CH
15	GND	STANDARD
16	4-20mA INPUT	ANALOG 4~20mA INPUT 2CH
17	GND	STANDARD
18	ISOLAT 24V	Isolate Positive Supply Output DC+24V / Max : 50mA
19	ISOLAT 24V	Isolate Positive Supply Output DC+24V / Max : 50mA (Loop power supply)
20	GND	STANDARD
21	ROUTER POWER	Positive Supply Output DC+5V / Max : 1A (CDMA, LTE Router power supply)
22	GND	STANDARD
23	POWER 12V/30A	Positive Supply Input DC+12V --- DC+24V / Max : 2A



No.	①	Material	QTY	1
J/AINTECHNOLOGY				
Title		Xonic-100		
P/N		I/O MODULE		
Projection	3rd	UNIT	mm	DWG. NO

DWG. BY	KHS	DATE	2021.02.18
CHE. BY		DATE	
APP. BY		DATE	
CERT		DATE	



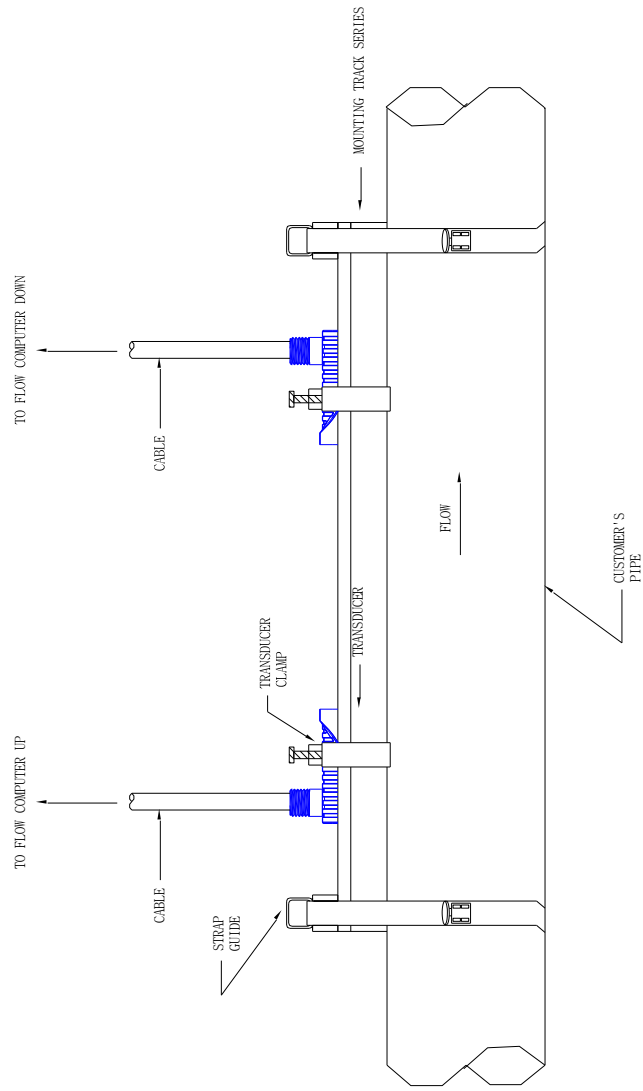
Dimension

단위: mm

P/N	A	B	C	D	측장파이프
LTB	23	42	37	63	15-80
LTC	35	65	40	72	50~250
LTD	35	93	50	86	200~500
LTE	50	145	76	111	500~6000

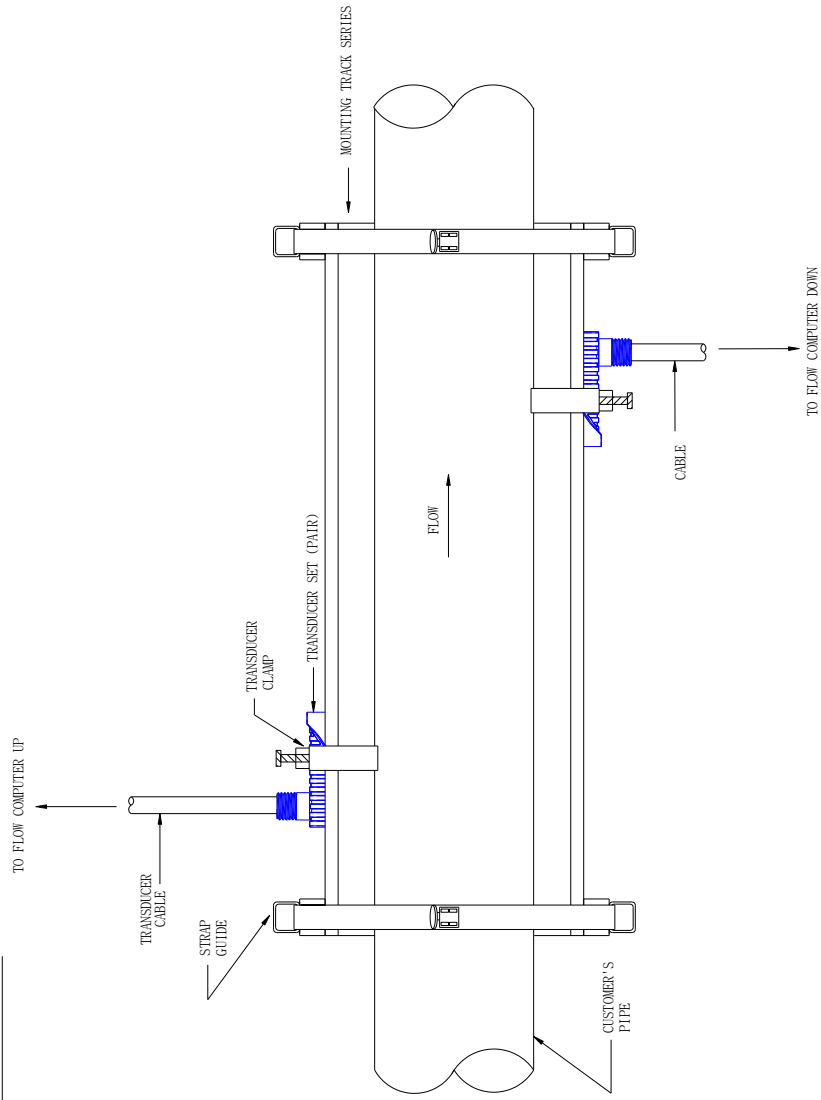
JAIN TECHNOLOGY			
DATE	DWG NAME	SCALE	REV
DRAWING	Xonic-100 조음파유량계 센서도		
DESIGNED	PROJECT NAME	DWG NO.	
CHECKED			
SUPERY			

REFLECT MODE INSTALLATION

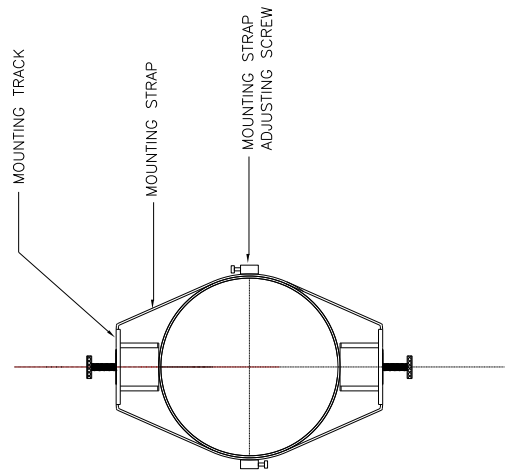
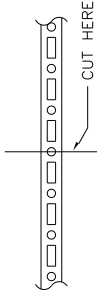
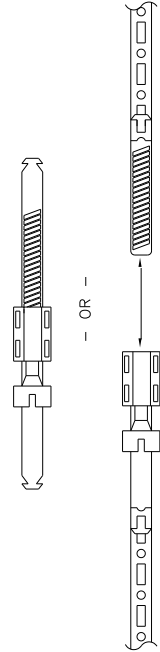



DATE	DWG NAME	TRANSDUCERS INSTALLATION AND MOUNTING TRACKS(REFLECT MODE)
DRAWING	PROJECT NAME	
DESIGNED	SCALE	DWG NO. 102-TP
CHECKED		REV
SUPERY		

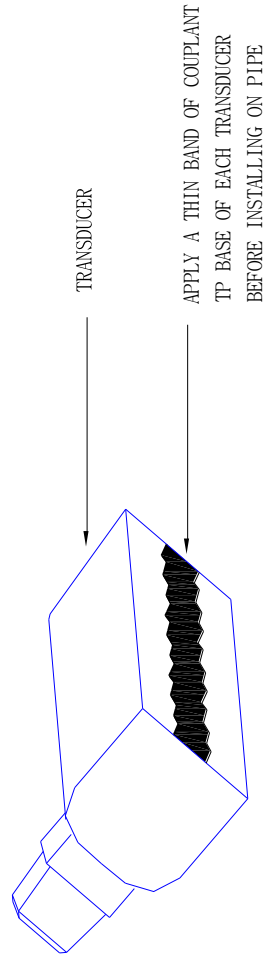
DIRECT MODE INSTALLATION



JAINTECHNOLOGY	
DWG NAME	TRANSDUCERS INSTALLATION AND MOUNTING TRACKS(DIRECT MODE)
DESIGNED	PROJECT NAME
CHECKED	SCALE
SUPERY	DWG NO.
	REV

<p>STEP-1</p> <p>DETERMINE PROPER BAND LENGTH ONE OF TWO WAYS:</p> <p>A) IF DIAMETER IS KNOWN, REFER TO BAND LENGTH TABLE OR CALCULATE MAXIMUM BAND LENGTH $3.14 \times \text{DIA.} + 18"$, TRIM TO FIT WHEN INSTALLING.</p> <p>B) IF DIAMETER IS NOT KNOWN, MEASURE CIRCUMFERENCE WITH STRING, TWINE, etc., AND ADD 18" (TO ENCIRCLE FRAMES). THIS DIMENSION IS APPROXIMATE, TRIM BAND TO FIT WHEN INSTALLING.</p>	
<p>STEP-2</p> <p>MEASURE BAND TO PROPER LENGTH AND CUT THROUGH CENTER OF NEAREST ROUND HOLE WITH SHEARS, SNIPS, HACKSAW etc.</p>	
<p>STEP-3</p> <p>EITHER MATE FASTENER HALVES AND THEN LINK TO STRAP ALREADY IN PLACE AROUND PIPE. OR LINK FASTENER HALVES INDEPENDENTLY TO STRAP ENDS (HOLD IN PLACE WITH TAPE IF NECESSARY) AND ENGAGE FASTENER AFTER WRAPPING STRAP AROUND PIPE.</p>	
<p>STEP-4</p> <p>USING STRAPS MADE TO SIZE REQUIRED, INSTALL MOUNTING TRACKS AND TRANSDUCERS IN ACCORDANCE WITH APPROPRIATE INSTALLATION DRAWING FOR SPECIFIC TRACK ASSEMBLIES.</p>	

DATE		DWG NAME	INSTALLATION / OUTLINE ADJUSTABLE MOUNTING STRAP
DRAWING		PROJECT NAME	
DESIGNED		SCALE	
CHECKED		DWG NO.	102-S/SF
SUPERV			REV



USE OF COUPLANT COMPOUND

DATE	DWG NAME	TRANSUCERS INSTALLATION	REV
DRAWING	PROJECT NAME	COUPLANT	
DESIGNED	SCALE	DWG NO.	102-C
CHECKED			
SUPERV			

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TECHNOLOGY

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