www.jain.co.kr

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ULTRASONIC FLOWMETER

JAIN TECHNOLOGY

Contents

Technology
Goes with Flow

Industrial & Defense Instruments

- Clamp-on Ultrasonic Flowmeter
- Solar Energy Flowmeter System
- Ultrasonic Gas Flowmeter
- Ultrasonic Energy Meter
- Ultrasonic Water Meter
- Defense Products

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Vision

JAIN means Human & Nature, and our technology is to develop professional technology for our homes, our lives, our kids.

Products

Producing Ultrasonic Flowmeter, Water Meter, Sewer Pipe Flowmeter, Gas Flowmeter, Energy Meter.

Calibration

Laboratories are accredited by the International Standards Act.

Defense

Producing Counter Sniper Detection System, Fire-Cracker, Smart Target.

R&D

The high-tech development of industrial with supports from goverment.

Technology Goes with Flow ~

JAIN TECHNOLOGY is specialized company for sound related instruments. Especially JAIN TECHNOLOGY make fully digitalized various kind of ultrasonic flowmeters for liquids and gas. Also, Jain Technology has CERTIFIED CALIBRATION LABORATORY for liquid flow in accordance with the recognized International Standard ISO/IEC 17025:2005.

JAIN TECHNOLOGY provides the total solutions of the ultrasonic flow measurements from planning and design, through to manufacturing, installation and commissioning. We deliver a complete range of flow measuring services, as well as specialized assistance in a range of ultrasonic flowmeters.

In addition, JAIN TECHNOLOGY involved in DEFENSE projects using sound localization technologies for sniper localization and bullet detection.

“Technology Goes with Flow ” is Jain’s slogan in order to develop best accurate ultrasonic flowmeters based on Digital Signal Processing algorithm and technology.

Thank you.

History

2020
- INNO-Water Company

2019
- Accredited Korea Calibration Laboratory by KOLAS
- Green Technology Certified

2018
- 'Sewer Flowmeter' Patent Registered

2016
- Excellent Product Certified
- G-PASS company (Excellent Company for Overseas)
- Seoul Waterworks Public-Private Partnership Member by Seoul City

2015
- Accredited Korea Calibration Laboratory by KOLAS

2014
- Green Technology Products Certified
- Excellent Performance Products Certified
- K-Water Private Contract Certified
- Ministry of Defense Award

2013
- ISO 14001 Certified
- INNO-BIZ Certified
- Venture Business

2012
- Next Generation Export Small & Medium Business
- KOTRA Excellent Export Award

2011
- Excellent Product Certified

2010
- NEP(New Excellent Product) Recertified - Clamp-On Ultrasonic Flowmeter)
- Prime Minister Award

2009
- CE Certified

2007
- ISO 9001 Certified
- NEP(New Excellent Product) Certified - Clamp - On Ultrasonic Flowmeter
- INNO-BIZ Certified
- Prime Minister Award
- Ministry of Commerce Award
- Excellent Product Certified
- Ministry of Environment Award

2006
- NET(New Excellent Technology) certified
- Research Institute Certified

2005
- Project Developer for Next Generation Core Technology

2003
- Venture Business

2001
- Ministry of Commerce Award

1997
- Promising Small & Medium Enterprise

1991
- Company Established
- Registered Korean Calibration Laboratory(Liquid flow field)

Certification

EC declaration Of Conformity

CE

according to LVD Directive 2014/35/EU

Applicant : JAIN TECHNOLOGY

Address : 710, E&C Venture Dream Tower 6 , 55, Digitalro 33-gil, Guro-gu, Seoul, Korea

Manufacturer : Same as above applicant

Address : Same as above applicant's address

Report No. : STD-S0719

Equipment Description : Clamp-on Ultrasonic Flowmeter

Equipment Type : XONIC-100LM (4 Ch. Sensor interface)

Family Model : XONIC-100DL (2 Ch. Sensor interface)
XONIC-100L (1 Ch. Sensor interface)

Test Required : IEC 61010-1:2010(3rd Edi.)
EN 61010-1:2010(3rd Edi.)

Tested by:
Standard Engineering Co. Ltd.
Safety Laboratory

Date: November. 25. 2019

M. C. Jain

Signature
Jin Min-chul / President

EC declaration Of Conformity

CE

according to LVD Directive 2014/35/EU

Applicant : JAIN TECHNOLOGY

Address : 710, E&C Venture Dream Tower II , 55, Digital-ro 33-gil, Guro-gu, Seoul, Korea

Manufacturer : Same as above applicant

Address : Same as above applicant's address

Report No. : STD-S0717

Equipment Description : Clamp-on Ultrasonic Flowmeter

Equipment Type : Xonic-10L

Family Model :

Test Required : IEC 61010-1:2010(3rd Edi.)
EN 61010-1:2010(3rd Edi.)

Tested by:
Standard Engineering Co. Ltd.
Safety Laboratory

Date: November. 25. 2019

M. C. Jain

Signature
Jin Min-chul / President

Certificate of Green Technology

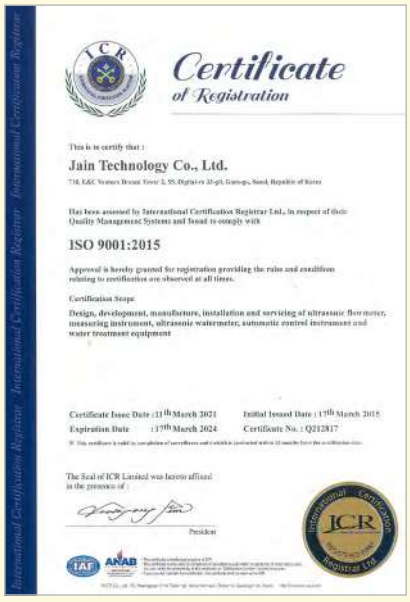
Certificate No. : GT-19-00649
Company : Jain Technology Co., Ltd.
President : Shin, Min-chul
Address : 55, Digital-ro 33-gil, Guro-gu, Seoul, Korea 710, Guro-dong,E&C Venture Dream Tower2
Technology : Flow measurement technology using transit-time clamp-on ultrasonic flowmeter
Classification No. : T030401

We hereby certify that the above-mentioned Technology has been approved as a Green Technology by the Ministry of Environment of the Korean Government under Article 32 of the Framework Act on Low Carbon, Green Growth and Article 23 of the Management Code on Green Certification System.

Date of Issue : 2019.04.18
Date of Expiration : 2022.04.17

Ministry of Environment

This certificate is valid for 3 years since the day it has been issued. If you would like to extend, you have to request extension three months prior to the expiration date.



International Certification Registrar

Certificate of Registration

This is to certify that :

Jain Technology Co., Ltd.

710, E&C Venture Dream Tower 2, 55, Digital-ro 33-gil, Guro-gu, Seoul, Republic of Korea

Has been assessed by International Certification Registrar Ltd., in respect of their Quality Management Systems and found to comply with

ISO 9001:2015

Approval is hereby granted for registration providing the rules and conditions relating to certification are observed at all times.

Certification Scope

Design, development, manufacture, installation and servicing of ultrasonic flowmeter, measuring instrument, ultrasonic watermeter, automatic control instrument and water treatment equipment

Certificate Issue Date : 11th March 2021 Initial Issued Date : 17th March 2015
Expiration Date : 17th March 2024 Certificate No. : Q212817

The Seal of ICR Limited was hereto affixed in the presence of :

President

IAF ANAB

International Certification Registrar Ltd

International Certification Registrar

Certificate of Registration

This is to certify that :

Jain Technology Co., Ltd.

710, E&C Venture Dream Tower 2, 55, Digital-ro 33-gil, Guro-gu, Seoul, Republic of Korea

Has been assessed by International Certification Registrar Ltd., in respect of their Environmental Management Systems and found to comply with

ISO 14001:2015

Approval is hereby granted for registration providing the rules and conditions relating to certification are observed at all times.

Certification Scope

Design, development, manufacture, installation and servicing of ultrasonic flowmeter, measuring instrument, ultrasonic watermeter, automatic control instrument and water treatment equipment

Certificate Issue Date : 11th March 2021 Initial Issued Date : 17th March 2015
Expiration Date : 17th March 2024 Certificate No. : E103217

The Seal of ICR Limited was hereto affixed in the presence of :

President

IAF ANAB

International Certification Registrar Ltd

Korea Laboratory Accreditation Scheme

CERTIFICATE OF ACCREDITATION

Jain Technology Co., Ltd

Accreditation No. : KC15310
Corporation Registration No. : 160111-0040826
Address of Laboratory : 47, Pilgok 1 Nonggwang-gil, Yeongwol-eup, Yeongwol-gun, Gangwon-do, Republic of Korea
date of Initial Accreditation : Nov. 9, 2015
Duration : Nov. 9, 2019 ~ Nov. 8, 2021
Scope of Accreditation : Attached Annex
Date of issue : Nov. 8, 2019

This calibration laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique).

ISO-MRA KOLAS

LEE Seung Woo

Administrator
Korea Laboratory Accreditation Scheme

Korea Laboratory Accreditation Scheme(KOLAS) is a signatory of the ILAC mutual recognition arrangement

Certification

G-PASS

Certificate No. 2020-271

Certificate of Designation for an Excellent Company

Company : Jain Technology Co., Ltd.
Representative : Shin Minchul
Products : Ultrasonic Flowmeter
Validity of Certificate : December 24, 2020 ~ December 23, 2025

This is to certify that the above mentioned company was designated by Public Procurement Service of the Republic of Korea as an Excellent Company for overseas public procurement market.

2020. 12. 24

Chungwoo KIM

Kim Chungwoo
Administrator
Public Procurement Service
The Republic of Korea

ktl

안 전 인 증 서

한국산업기술시험원장

kotra

KOTRA GLOBAL BRAND 2013

- BLUE -

This award is presented to **Jain Technology Co., Ltd.** *for creating an innovative product that increases the potential of Korean overseas trade.*

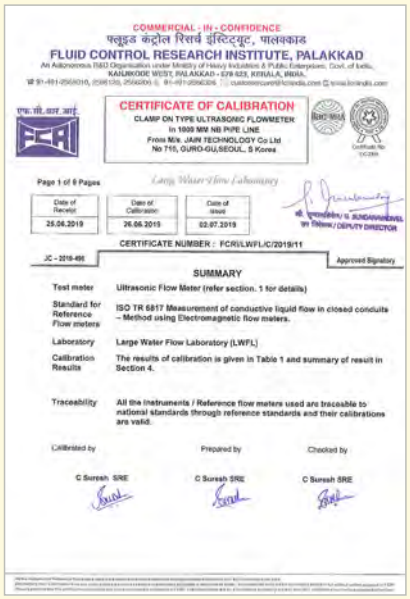
KOTRA PRESIDENT AND CEO

IECEx

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

ktl



COMMERCIAL - IN - CONFIDENCE

फ्लुइड कंट्रोल रिसर्च इंस्टिट्यूट, पालक्काड

FLUID CONTROL RESEARCH INSTITUTE, PALAKKAD

An Autonomous R&D Organisation under Ministry of Heavy Industries & Public Enterprises, Govt. of India
KANJIKODE WEST, PALAKKAD - 678 623, KERALA, INDIA.

FCRI

CERTIFICATE OF CALIBRATION

CLAMP ON TYPE ULTRASONIC FLOWMETER
In 1000 MM NB PIPE LINE
From M/s. JAIN TECHNOLOGY Co Ltd
No 710, GURO-GU,SEOUL, S Korea

Page 1 of 6 Pages

Date of Receipt	Date of Calibration	Date of Issue
25.06.2019	26.06.2019	02.07.2019

CERTIFICATE NUMBER : FCRI/LWFL/C/2019/11

JC - 2019-496

Approved Signatory

SUMMARY

Test meter	Ultrasonic Flow Meter (refer section. 1 for details)
Standard for Reference Flow meters	ISO TR 6817 Measurement of conductive liquid flow in closed conduits – Method using Electromagnetic flow meters.
Laboratory	Large Water Flow Laboratory (LWFL)
Calibration Results	The results of calibration is given in Table 1 and summary of result in Section 4.
Traceability	All the instruments / Reference flow meters used are traceable to national standards through reference standards and their calibrations are valid.

Calibrated by	Prepared by	Checked by
C Suresh SRE	C Suresh SRE	C Suresh SRE

SMBA

Excellent Performance Certificate

Certificate No. 11- 325

Certified Product : Automatic optimal frequency configuration method for clam on type ultrasonic flowmeter

Company : JAIN TECHNOLOGY Co., Ltd.
President : Min-Chul, Shin
Address : 4F,D4, D&C Venture Dream Tower 2, 197-10, Guro-Dong, Guro-Gu, Seoul, Korea

Effective Date : May 16, 2014
Expiration Date : May 15, 2017

The Small and Medium Business Administration(ROK) hereby confirms that this Product performs in accordance with Section 8, Article 15 of the 'Encouragement of Purchase and Support of Market of SME's Products Act', and is hereby certified.

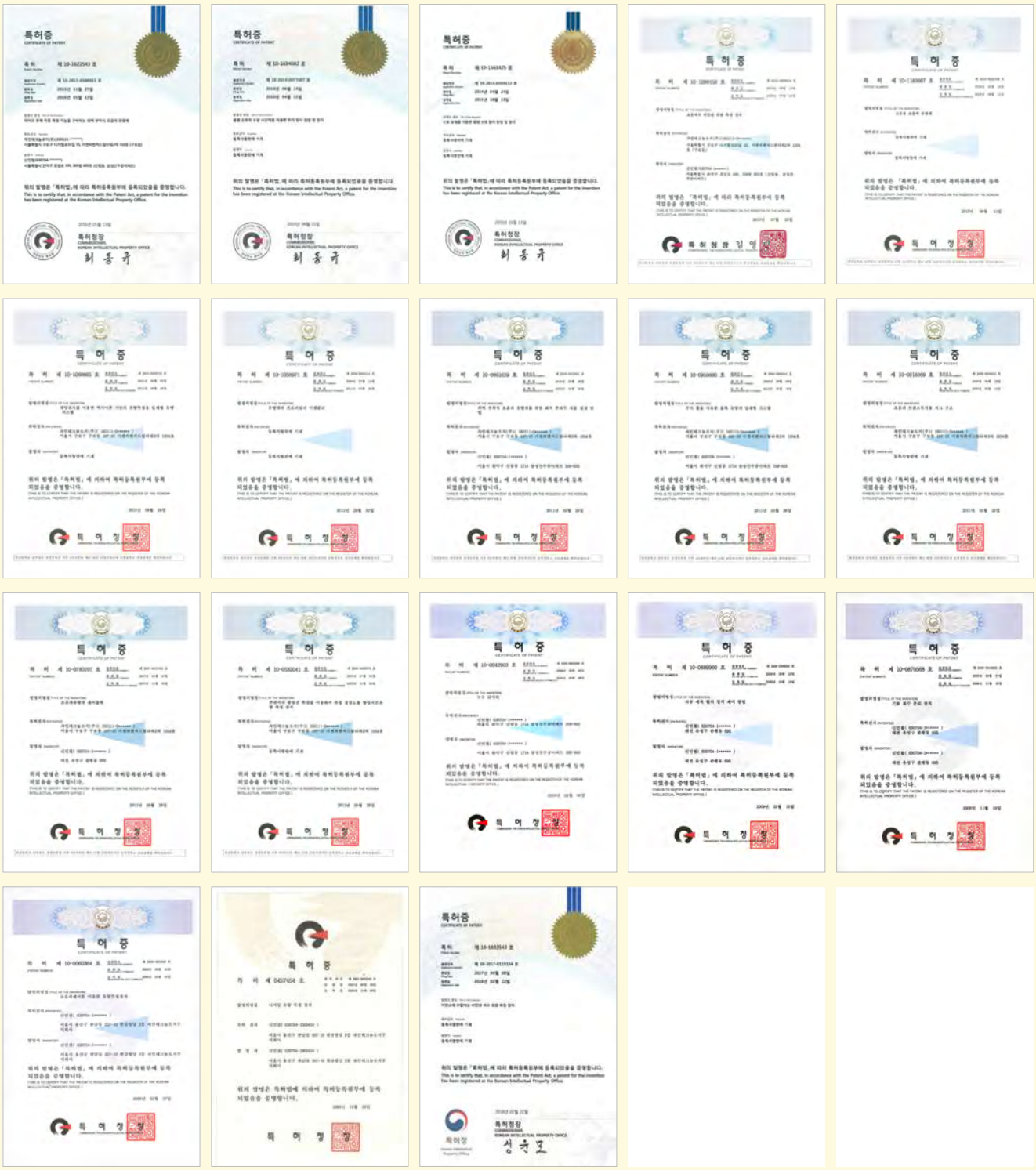
January 30, 2015

Small and Medium Business Administration
Republic of Korea

Patent

Patent (~ 2018)

10-1622543	Clamp-on ultrasonic flowmeter with automatic pipe thickness measurement
10-1060665	Integrated flow system for measuring flow rate based on thermosyphon using solar cell
10-1290159	Ultrasonic partly filled tube flow measuring device
10-1183667	Ultrasonic flowmeter for high temperature
10-1038971	Flowmeter and profiler assembly
10-1614602	Location detection method and apparatus using time difference of arrival of sound signal
10-1561425	Sound signal detection method and apparatus using a signal mode
10-0961639	Automatic optimal frequency configuration method for clamp-on type ultrasonic flowmeter
10-0959880	Block flow meter integrated system using vertical pool
10-0942903	Leak detection pipe
10-0918369	Zig Structure for ultrasonic sensor
10-0889960	Control method of automatic cleaning filter device
10-0870568	Oil recovery separator
10-0780707	One Body Ultrasonic Transducer Block
10-0560364	Flow measurement device using ultrasonic sensor
10-0532041	Flow measurement device that improves measuring accuracy by using charge and discharge characteristics of condenser
10-0457454	Digital flow measurement device
10-1833543	Low-carbon partly filled pipe sewage flow measurement device



Overseas Sales Network

Flowmeter Calibration Procedure

International Calibration Laboratory
KOLAS

Purpose of Flowmeter Calibration

Calibration refers to the act of evaluating and adjusting the precision and accuracy of measurement equipment. Instrument calibration is intended to eliminate or reduce bias in an instrument's readings over a range for all continuous values.

Calibration is required in accordance to the frequency of use, durability, and the environment after certain period of time.

Top priority of flowmeters are accuracy and performance. Allows manufacturer to procure suitability of various regulations and law.

Procedure

As an International Calibration Laboratory as KOLAS certified, Weighting System for Standard Liquid Flow facility is available. The maximum flow is 450㎥ per hour, and could calibrate up to 300mm pipe.

Facility Environment

Calibration laboratory always maintains clean environment. Pressure gauge, thermometer, hygrometer are used to keep record of calibration environment. Correction is progressed after equilibrium temperature.

KOLAS(17025) Certified FLOW TEST ABILITY

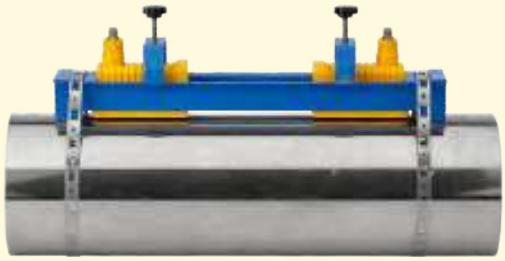
Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The confidence Level is about 95%)	Comments
Liquid flowmeter ; Differential pressure	20909	$3m^3/h \sim 450m^3/h$	3.9×10^{-3}	Weighing / JAIN-CI-209-05
Liquid flowmeter ; Electromagnetic	20910			
Liquid flowmeter ; Coriolis,etc	20912			
Liquid flowmeter ; Positive displacement	20915			
Liquid flowmeter ; Turbine	20917			
Liquid flowmeter ; Ultrasonic	20919			
Liquid flowmeter ; Variable area	20921			
Liquid flowmeter ; Vortex	20923			

Products

Clamp-on Ultrasonic Flowmeter

Xonic® 100L

- Clamp-on Transducers
- No cutting pipe for installation
- First developed in Korea
- Exported to more than 10 countries



Xonic® 100L

What is Xonic®100L?

Xonic 100 measure transit-time of flow and use DSP (digital signal processing) technology to analyze ultrasonic signals. This DSP technology can remove any noise from pipe and electronics. Also, Xonic 100 use Cross Correlation and FFT (Fast Fourier Transform) technology to make very clean ultrasonic signals. Measuring pipe is from 12 ~ 6,000mm, and velocity range is from 0.02 ~ 20m/sec. Xonic 100 can measure very slow flow, so very suitable for block flow (leak) monitoring system. Also, it has two 4-20mA inputs, so user can use this inputs to receive pressure and temperature data without PLC.

Why use Xonic®100L?

Clamp-On Technology make installation very simple. User just attach clamp-on transducers on pipes or insertion with hottap valve transducers drill to pipe. No need to stop water supply for installation and after service. Xonic100L can work with many kinds of pipe, such as: Steel, Stainless (SUS), Ductile Iron, Copper, A/C, PVC, PE, PB, FRP or others if know sound velocity.

Turn-down ratio of Xonic100L is more than 500 :1. Xonic 100L is the best flowmeter to check minimum flow during midnight. The Flow in midnight is down to 1 m3/h for 100 mm pipe and Xonic 100L can keep the accuracy. Xonic 100L use Cross Correlation technology. The technology is able to remove most noises outside the pipe. Also, Xonic 100L can measure liquids contain heavy air and slurry.

Xonic 100L has large color graphic LCD. It allows user to read the flow, total, analog input data (pressure, level, etc.) and the ultrasonic signal diagram. So user can check how flowmeter works in field without oscilloscope as diagnostic functions. Xonic 100L is dual beam or dual path is basic model. User can use as single channel flowmeter with one pair of transducers, and dual channel or dual path flowmeters with two pairs of transducers.

Clamp-on Ultrasonic Flowmeter **Xonic® 100L**

Installation Photo





Performance

- Clamp-on Type
- Velocity 0.02~20m/s
- Measure Water Contains 30% Air and Slurry
- No Cutting Pipe for Installation
- Oscilloscope Function
- DSP Technology (Cross Correlation)
- 12 Patents
- Positive & Negative Flow Measurement
- Two Analog Inputs for Pressure Level
- Self-Diagnostic Functions
- Touch Key Programming
- Large Color Graphic LCD Display
- Key Lock Function
- 1,000,000 Points Datalogging

Applications

- Municipal Water, Waste Water
- Block Flow Monitoring
- Strong Acid, Solvent
- Milk, Beer, Demi-water
- Oil, Chemicals
- Cool and Hot Water
- Liquids contain Heavy Slurry and Air
- Pulp, Steel Industries
- Nuclear Power Plant
- Sea Water

Flow Computer and Transducers

Flow Converter

Transducers

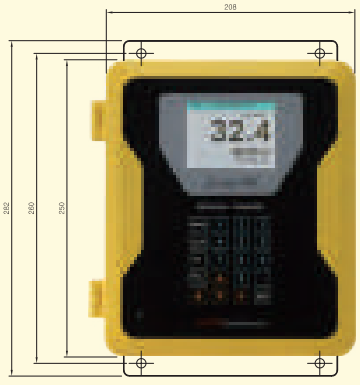
Cable and Sensor Track

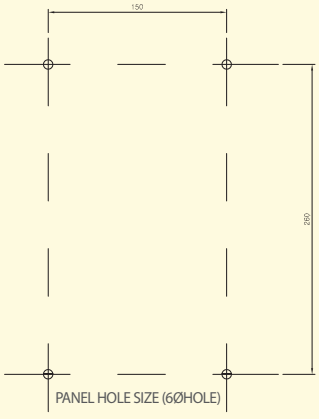
Xonic® 100L

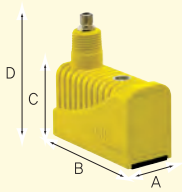
Specification

Installation	Clamp-on Ultrasonic Flowmeter
Principles	Transit-Time, AR(Anti-Round) Mode
Measuring Pipe Size	12-6000mm
Accuracy	±1.0% (single path), ±0.5% (dual path)
Velocity	±0.02~20m/s
Turn-Down Ratio	500:1
Repeatability	0.25%
Required Straight Run	Upstream 10D, Downstream 5D (single path) Upstream 5D, Downstream 3D (dual path)
CPU	32-bit microprocessor
Data Input	4-20mADC
Data Output	Two 4-20mADC for flow Relay for Total RS-232C / RS-485 Modbus
Datalogger	SD 2GB
Display	Color Graphic LCD Display (flowrate: 4.5digit, Total: 12digit) Flowrate, Velocity, Total (POS, NEG, NET), Input Data (AI), Delta T, Ultrasonic Signal Shape, Frequency
Temperature Range	Flow Computer -20 ~ +75℃ Transducer -40 ~ +120℃
Power	110 ~ 220VAC, free voltage
Enclosure	IP65
Transducer	IP68, submersible

Drawings







	A	B	C	D	PIPE SIZE
size B	23	47	37	72	15~80
size C	35	65	35	71	50~250
size D	35	93	50	85	200~500
size E	51	145	73	110	500~6000

※ It can be changed depending on pipe material and thickness.

Portable Ultrasonic Flowmeter

Xonic® 100P

- ☑ 24 hours operation
- ☑ Water proof Model
- ☑ Rugged Case, IP65

- Clamp-On, Transit-Time
- 1 path, dual path, 2 channel
- 24 hours battery operation
- IP65 Connectors
- Submersible IP68 Transducers
- Touch Key programming
- Large Color LCD Display
- Pulse Output
- Analog Output
- RS-232C Communication
- Datalogging Function
- Weight 2.4Kg

System Description

Xonic 100P is fully digitalized, easy-to-use portable flowmeter with only 2.4Kg weight. The Xonic 100P connectors are submersible design which can be used under harsh environmental conditions including rain and sun light. Basic model has two pairs of transducer connectors for dual path or dual channel. The Xonic 100P uses patent fine-timeTM DSP technology to measure virtually any type of liquids with less than 30% solids or bubbles, such as clean water, waste water, crude oil, etc.

Xonic® 100P

Portable Xonic 100P

Rugged Waterproof Case

Application

- As Standard Flowmeter : Xonic 100P can be used to check the performance of field flowmeters. The Xonic 100P can be used to compare field flowmeters performance.
- As Field Flowmeter : The Xonic 100P as portable device to spot-check various flow installation for virtually any liquids of up to 30% solids or bubbles.

Types of Liquid

Xonic 100P has very strong signal, which can measure various liquids such as clean water, waste water, milk, manure, lime stone slurry, oil, gasoline, etc. Normally, transit-time is only for clean water, but Xonic 100P can measure all types of liquids using our patented fine-time TM DSP technology.

- Clean Liquids
- Municipal Water, De-Ionized Water
- Acids, Benzene, Milk, Beer
- Crude Oil, Diesel, Alcohol
- Waste Water, Lime Stone Slurries, Manure

Performance

- Patented AR Mode
- Flow Velocity ±0.02~20m/s
- Oscilloscope Function
- Large Color LCD Display
- Touch Key Programming + Remocon
- Submersible Connectors
- 24 Hours Operation with Batteries
- Patented Fine - TimeTM Measuring Technology
- DSP Functions - Cross Correlation, FFT

Specification

Type	Portable Clamp-on
Principle	AR Mode, Transit-Time
Accuracy	±1.0%, ±0.5% with dual path
Measuring Pipe Size	20 ~ 6000 mm
Measuring Velocity Range	0.02 ~ 20m/s
Turn Down Ratio	500:1
Sensitivity	0.02 m/sec
Output	4-20mADC for flow / Relay for total / RS-232C for communication
Datalogger	32 Mbytes (1,000,000 loggers)
Display	Graphic Color LCD Display (320x240pixel) / Flow (4.5 digits) / Total (12 digits) / Ultrasonic Signal Shape (Oscilloscope Function) / Delta T, Signal Strength
Operating Temperature	Flow Computer -20 ~ +75℃ / Transducers -40 ~ +120℃
Power	AC110~220V / Battery 8hours charging, 24hours operation
IP Rating	Flow Computer IP66 (Rainproof) / Transducers IP68(Submersible)
Transducers	Size B, 15~80mm pipes / Size C, 50~300mm pipes / Size D, 300~600mm pipes / Size E, 500~6000mm pipes ※ It can be changed depending on pipe material and thickness.

Ultrasonic Sewer Pipe Flowmeter

Xonic® 100LO

- ☑ High accuracy even at low flow
- ☑ Transit-Time method
- ☑ Patented Product
- ☑ Co-developed with Korea Environment Corporation

Xonic 100LO is developed for measuring full and partly filled sewer pipe. It has specially designed 4 path transducer that allows system to measure both low flow at midnight and high flow during rainy season. Comparing to doppler flowmeter, this design never disturb flow and easy to install and maintain.

Xonic® 100LO

Application
Xonic 100LO is especially designed to measure full and partially filled sewer pipe. It measures flow velocity directly with 4 path transducers and use level transmitter to receive level data.

High Accuracy
Transit-Time ultrasonic flowmeter has an outstanding performance than doppler type as it uses 4 path transducers to measure velocity of each path.

Full Pipe and Low Flow
Xonic 100LO can measure even very low flow at midnight and full pipe during rainy season.

Reduce Maintenance Cost
Patented design is free from sand and sediments. So, transducer does not require regular inspection.

Flow Compensation
When sediment is formed, system compensate flow by correcting sectional area.

Sludge Deposit Alarm
System alerts only when slurry is stacked up near sensor area, and user must check the site and clean the pipe. Therefore, regular site inspection is unnecessary and maintenance cost can be reduced significantly.

Low Carbon & Green Growth Product
Xonic 100LO is low carbon & green growth product with low power consumption. It can also be operated with solar power energy.

Specification

Principle	AR(Anti-Round), Transit-Time Cross Correlation
Measuring Path	4 path
Measuring Width	150~800mm
Velocity	0~10m/sec
Accuracy	2%
Data Input	4-20mA (level meter)
Data Output	4-20mA, Relay, RS232C/485 modbus
Display	Large Color LCD 128x64
Temperature	Electronics: -20~+75℃ / Transducer: 0~+60℃
Power	AC110~220V
Protection Degree	Enclosure: IP65 / Transducer: IP68 submersible

Ultrasonic in-line Gas Flowmeter

Xonic® 7GI

- ☑ IECEx Certified
- ☑ KCs Certified
- ☑ Biogas
- ☑ Natural Gas
- ☑ AIR

Xonic-7GI is the first ultrasonic in-line gas flow meter developed in Korea. As it uses the Ultrasonic Transit-time Technology, Xonic-7GI has superior performance compared to conventional differential pressure gas flow meters. Depending on pipe sizes, it uses one path or three paths of ultrasonic sensors, and the temperature sensor is embedded for volume compensation.

Xonic® 7GI

Characteristic

- Moisture or dust resistant
- 0.05 m/s Measuring low flow rates
- Wide measuring range 200:1
- No moving parts
- Pressure loss control
- Easy to install and maintain
- Temperature sensor and volume compensation

Outstanding Performance

Xonic-7GI has a wider velocity range and higher accuracy compared to the existing mechanical type. It's dust & moisture resistant and maintains accuracy of 1.0%. The minimum to maximum flow rate ratio is over 200 times.

Digital Signal Processing

Xonic-7GI uses Jain Technology's patented AR®(Anti-Round) beam ultrasonic signal and calculates the transmission time difference according to the velocity, using DSP technology for accurate analysis.

Self-Diagnostic / Test Function

You can see all the operation of the flowmeter on the LCD screen. In particular, the ultrasonic signal oscilloscope function, which is easy to use, allows you to check the operating state of the flow meter immediately.

General Specification

Measurement Method	Ultrasonic Transit-Time Difference
Velocity	-30m/s ~ 30m/s
Minimum Velocity	0.05m/s
Display	Flow (Instant, Standard, Mass), Total Flow, Velocity
Accuracy	1.0%
Reproducibility	0.25%
Diagnostic Function	Shape of Ultrasonic Signal, Value Gain, ΔT, FFT
Measuring Gas Type	Natural gas, Biogas, Air
Ex Certification	Domestic : KCs 22-KA2BO-0594X International : IECEx KTL 22.0029X
Ambient Temperature	-20℃ ≤ Ta ≤ 60℃
Protection Level	Ex ia ⅡC T6 Ga / Ex db ⅡC T6 Gb

Converter

Encloser	IP68
Explosion Proof IECEx	IECEx FTZU 09. 0031U
In / Output	Analog In Analog Out
Interface	RS-232C, RS-485 MobBus
Power	12~24VDC

Transducer

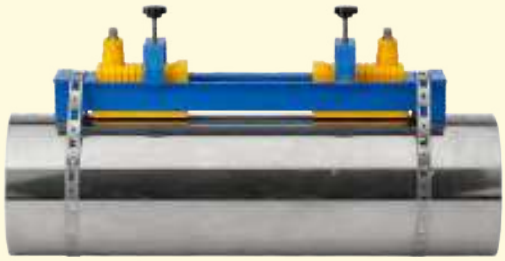
Flange Range	50~ 300mm flange type
Material	Stainless
Working Pressure	20 bar below

※ Above specifications can be changed without prior notice. Xonic® is a registered trademark of JAIN TECHNOLOGY and AR® (Anti-Round) Beam is JAIN TECHNOLOGY's patented technology.

Clamp-on Ultrasonic Gas Flowmeter

Xonic® 100GC

- Natural Gas
- Fuel Gas
- Vent Gas



Xonic 100GC is a transit-time ultrasonic flowmeter with outstanding performance compared to the differential pressure flowmeter. Depending on pipe size, system use 1 or 2 path ultrasonic sensor and use temperature sensor for volume compensation. Xonic 100GC is the first clamp-on ultrasonic gas flowmeter developed in Korea to replace high-end foreign brands by maintaining performance and reducing price of conventional gas flowmeter.

Xonic® 100GC

Feature

- Clamp-on Ultrasonic Sensor
- Measure low flow rate 0.05m/s
- Wide measuring range 200:1
- No moving part
- Pressure loss control
- Easy to install and maintain
- Temperature sensor and volume compensation

Clamp-on Transducer

Xonic 100GC is intrinsically safe as it uses clamp-on transducer without cutting pipe to measure flow. In case of steel pipe, it operates at 5Kg/cm2 pressure.

Digital Signal Processing

In order to analyze ultrasonic signal accurately, Xonic 100GC use DSP advanced technique to calculate the time lag according to the flow velocity. System consecutively maintains high accuracy by detecting clear signal even there is heavy noise.

Self-Diagnostic Function

Xonic 100GC has graphic LCD that allows user to check operational status in the field. Particularly, with a simple manipulation, the oscilloscope function makes it possible to determine the operational status of gauge in the field.

Safe Installation & Maintenance

Xonic 100GC is suitable for measuring explosive gas as the clamp-on transducer does not contact directly with gas and it is easy to install and maintain.

2-Path Measurement

Xonic 100GC use two path measurement method to maintain top performance in the field. Two path measurement advantage is that it still can keep accuracy even the straight pipe run is short.

Specification

Principle	**Transit-Time**
Operating pressure	For steel pipe 5Kg/cm2
Velocity (bi-direction)	-30 m/s ~ 30 m/s
Display	Instant flow(standard), Total flow, Velocity
Accuracy (Reading)	1.0%
Reproducibility	0.25%
Diagnostic Function	Ultrasonic signal shape, Gain value, ΔT, FFT
Application	Natural gas, Gas, AIR

Converter

Temperature	-20 ~ +80°C
Ex-proof	IECEx_Ex d II C, ATEX
Protection degree	IP65
In/Output	Digital Out _two normally open collector Analog Out_two 4-20mA Analog In_One 4-20mA
Interface	RS-232C, RS-485
Power	AC110~220V

Transducer

Ultrasonic transducer	**Clamp-on**
Material	Stainless 316
Protection degree	IP68, intrinsically safe
Temperature	-20 ~ +80°C
Temperature sensor	4 wire, -40 ~ +120°C

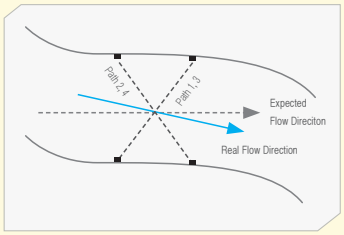
Open Channel Ultrasonic Flowmeter

Xonic® 100LM

- 4 path transducers
- Cross Flow Installation
- 2 or 4 measuring path

Xonic100LM Ultrasonic Open Channel Flowmeter use ultrasonic transit-time method for flow velocity and use level meter to receive level data. Xonic 100LM not only measure velocity, but measure sound speed and can compensate temperature change by it's own diagnostic functions. Xonic 100LM is newly developed and has very sophisticated diagnostic functions for better performance.

Xonic® 100LM



System Description

Xonic 100LM use Cross- Correlation and Fast Fourier Transform technics to measure more accurate flow rate. This DSP technology makes Xonic 100LM more reliable, maintainable and accurate.

Xonic 100LM use certified new technology PATENTED "Very precise time measurement method" and also use PATENT "Transducer Design for Open Channel". The patent is about transducers alignment method in field, and engineers can align one transducers to opposite transducer very precisely with laser pointer.

Application

Xonic 100LM measure flow velocity directly with patented 4 path transducers. Transducers are located at the end of each side to prevent any obstructions, and level is located on the top of the open channel, and accuracy is within 2% of actual flow.

Cross Flow Installation

In case of winding open channel, Xonic 100LM can use Cross Flow Installation to keep better accuracy. Path 1 & 3, Path 2 & 4 can be installed as cross path to keep better accuracy.

Specification

Principle	Anti-Round Mode, Transit-Time
Measuring Path	2 or 4 path
Measuring Width	30 meters
Accuracy	2%
Sensitivity	0.01 m/s
Data Output	4-20mADC, Relay, RS-232C / RS-485 ModBus
Data Input	4-20mADC
Datalogger	32Mbytes
Display	Large Color LCD (128x64)
Temperature Range	Electronics -20 ~ +75℃ / Transducers 0 ~ +60℃
Power	110~220VAC, free voltage
Enclosure	Electronics : IP65 / Transducer : Submersible (IP68)

Solar Energy Flowmeter System
(Block Flow Monitoring)
WISOP

No civil engineering and excavation work is required.

No pipe cutting or welding for flowmeter installation is required.

Solar Energy Flow System is eco-friendly and low-carbon, so it can be used for municipal water monitoring system. The system has beautiful design and do not require much space for installation. Unlike old cabinet type flowmeter panel, this solar power panel makes streets beautiful and shop owners do not raise complaints.

WISOP

Inside of system

Installed Solar Power Block Flow System

Clamp-on Ultrasonic Flowmeter Sensor

System Description

Solar Power Flow Monitoring System only use solar energy for operation. The system has 80W solar panel, and 5 rechargeable batteries, and clamp-on ultrasonic flowmeter. Total power consumption of the system is only 5W per hour, so the system can operate 30 days without sun.

Wireless Communication(Option)

As it supports wireless communication, no expense for civil engineering and excavation work. Wireless communication system does not require a lightning arrester, therefore no lightning risk through the communication line.

Performance

- Only Solar Power Required
- Beautiful Design
- Wireless CDMA Modem Communication(Option)
- No Cutting pipe
- No AC Power Required
- No Cooling Fan (unique design for air cooling)
- Patented Design
- Patented AR Mode
- Operate 30 days without sun
- 1 Ultrasonic Flowmeter
- 5 Rechargeable Batteries
- 1 CDMA Modem
- 1 Charge Controller

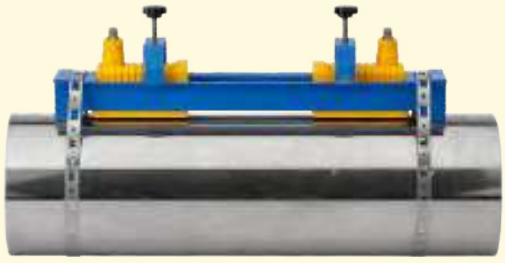
Specification

Power	Solar 120W Panel, 15V
Communication	RS 232 / 485 (wireless communication)
Flowmeter	Clamp-on, Ultrasonic, Transit-Time
Panel Size	Height 3.0M, 300Ø, Stainless steel
Data Inputs	Two (Pressure or Level)
Accuracy	1.0% (single path)

Compact Ultrasonic Flowmeter

Xonic® 10L

- Clamp-on Type
- AR Mode
- Compact and Cheap

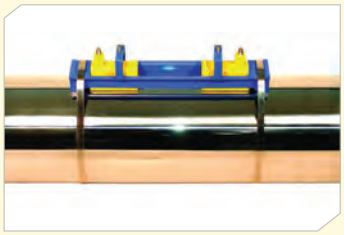


Xonic 10L use DSP technics - cross correlation and fast fourier transform - and it analyze ultrasonic signal with pico-seconds time resolutions. Patented AR (Anti-Round) Mode ultrasonic signal make Xonic 10L to measure even lime stone slurry, waste water, and orange syrup juice.

Xonic 10L model is very compact and economic but performance is same with high end model Xonic 100L.

Xonic® 10L

Small pipe(50~300A)



Small Diameter Installation

Performance

- AR (Anti-Round) Mode Ultrasonic Flowmeter
- Transit-Time Method
- Oscilloscope Function
- Measure from 0.02m/s
- Easy & Fast Installation
- Clamp-On Type
- Patented Transducer Block or clamp-on transducers

Application

Xonic 10L is ideal for small pipe applications such as cut off block area flowmeters to monitor water consumption and flowmeters for chemical plants. Especially, Xonic 10L can measure velocity from 0.02 m/s, so it can be used to monitor small water leakage of cities at midnight.

Transducer

Transducer is available for 12~300mm pipes, and it is made of special plastics. Transducer can be fastened strongly on pipe using mounting track and single stainless strap.

Economic Flowmeter

All function is same with high end model Xonic 100L, but price is economic. Xonic 10 can replace any type of flowmeters, such as magnetic flowmeters, orifice flowmeters, turbine flowmeters without cutting or welding the pipe. Xonic 10L is clamp-on type, so cost for installation or repair is very simple and economical.

Specification

Principle	Transit-Time, ARMode®
Display	Color Grapic LCD, Flow, Total, Analog Inputs, Delta T Oscilloscope Graphic, Signal Strength
Transducer	Clamp-On
Velocity	0.02~20m/s
Accuracy	1.0 % (single path)
Sensitivity	0.01 m/s
Data Output	4-20mADC, RS-232C
Datalogger	32Mbytes
Temperature	Flow Computer -20 ~ +75℃ / Transducers -40 ~+120℃
Power	12~24VDC (AC adaptor included)
Enclosure	Flow Computer(IP65) / Transducer, submersible(IP68)

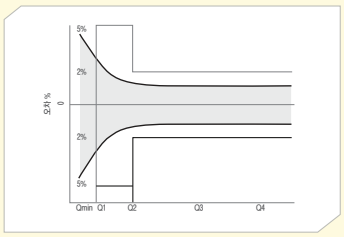
Ultrasonic Water Meter
Xonic® 5L

- Stainless Steel Body
- 8 years Battery Operation
- Wireless infrared communication

Meter size		50	80	100	150	200	250	300
Q4	Max Flow m^3/h	20	200.2	312.5	390.6	787.1	1250	1250
Q3	Normal Flow(±2%)	16	160.2	250	312.5	629.7	1000	1000
Q2	Spread Flow(±2%)	0.64	2.05	3.2	4.0	8.06	10	16
Q1	Min Flow(±5%)	0.128	1.28	2.0	2.5	5.04	6.25	10
	Start Flow	0.048	0.641	1.0	1.25	2.52	3.0	8.0
	Flange Length	305mm	240mm	240mm	300mm	350mm	450mm	500mm

Xonic® 5L

Ultrasonic Water Meter Display



Q4 = Max Flow (±2%)
Q3 = Normal Flow(±2%)
Q2 = Spread Flow(±2%)
Q1 = Min Flow(±5%)

System description

Xonic 5L is stainless steel, no moving parts, battery operating , fully digitalized Water Meter for municipal water applications. Also, Xonic 5L can measure clean water, dirty water, chemicals, oil, alcohol, etc, so it can replace conventional water meters.

No Moving Parts

- No Turbine or Impeller
- No Gear Box
- No Magnetic Parts

Stainless Steel Body

- No Corrosiveness
- No Rust

Fully Digitalized Water Meter

- Ultrasonic Transit-Time Method
- Empty Alarm
- Total & Flow Indication
- Pulse Output (1m3/pulse)
- Bi-Direction Flow
- 9.5 Digit Total
- Battery Operating (8 Years)
- Same Size with Turbine

Application

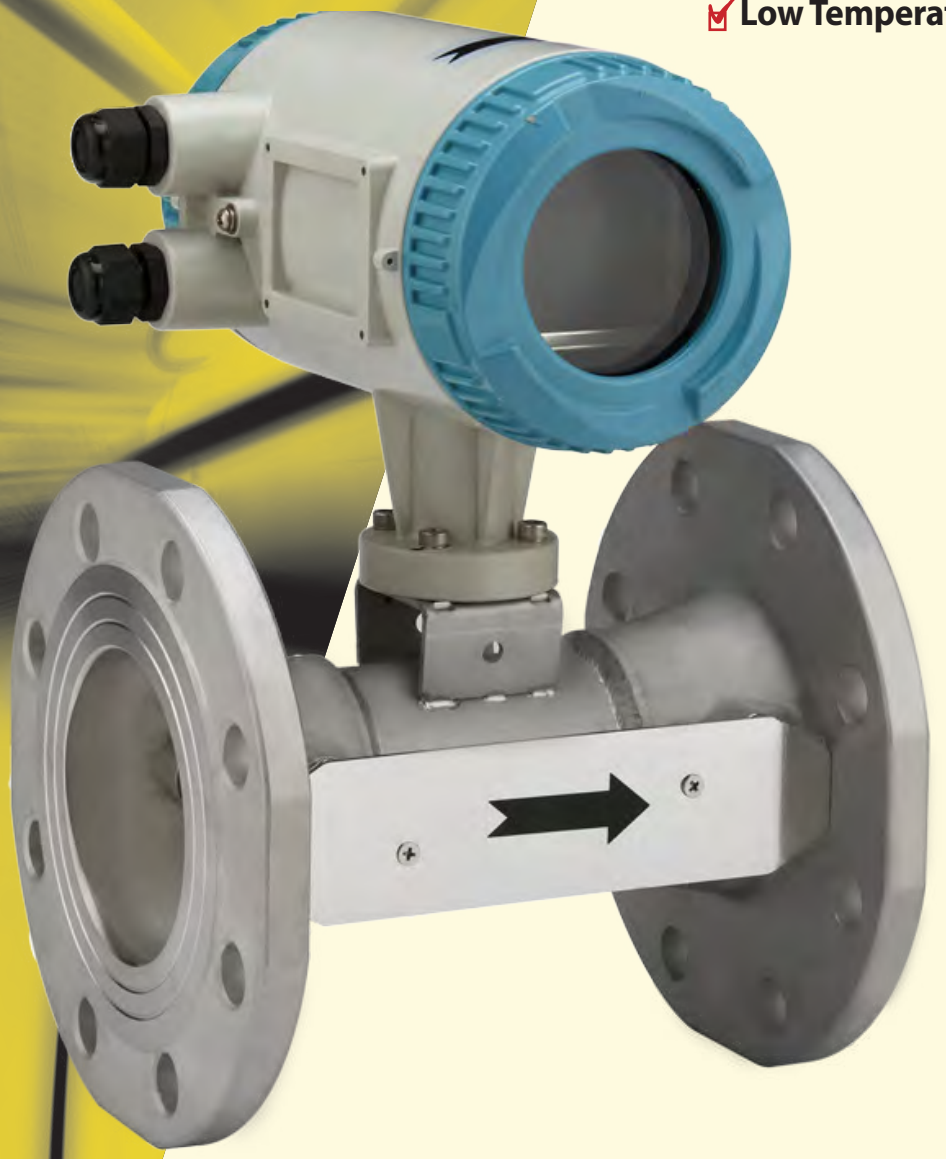
- Water Meter
- Chemical
- Semiconductor
- Oil Refinery
- Flow Monitoring
- Steel
- Ship Manufacturing
- Irrigation

Specification

Measuring Method	Ultrasonic Transit-Time / 1 Pair Insertion Transducer
Accuracy	2.0% RD
Measuring Range	0.05~10 m/s
Sensitivity	0.01 m/s
Output	IrDA Communication
Display	Total & Flow / Reverse Flow / Empty Alarm / Operation Status / Communication
Operating Temperature	-20 ~ +75℃ for Electronics / -40 ~ +90℃ for Transducers
Datalogger	Option
Protection	IP68 for Spool / IP65 for Remote Electronics
Spool Material	SS C 13A

Ultrasonic Energy Meter
Xonic® 10LE

- District Heating
- High Temperature Liquid
- Low Temperature Liquid



Xonic10LE is insertion type ultrasonic flowmeter with 1 path, 2 path, 3 path spool.
It has no moving parts and fully digitalized with precise temperature sensors.
Xonic10LE can measure clean water, dirty water, chemicals, oil, alcohol, etc,
so it can replace conventional flowmeters.

Xonic® 10LE

No Moving Parts

- No Turbine or Impeller
- No Gear Box
- No Magnetic Parts

Stainless Steel Body

- No Corrosiveness
- No Rust

Fully Digitalized Water Meter

- Ultrasonic Transit-Time Method
- Bi-Direction Flow
- Empty Alarm
- BTU Flow & Total / Volume Flow & Total
- RS-232C / 485 Modbus / Pulse Output / 4-20mA Analog Output
- Same Size with Turbine

Specification

Measuring Method	Ultrasonic Transit-Time / 1~3 Pair Insertion Transducers
Accuracy	0.5% RD
Measuring Range	0.05~10 m/s (flow velocity) / -40 ~ +150℃(temperature)
Sensitivity	0.001 m/s
Temperature Sensor	PT500
Output	RS-232C / 485, 4-20mA, Relay
Display	Flow & Total / BTU Flow & Total / Graphic Mode (diagnostic) / -signal shape, strength, etc
Operating Temperature	-20 ~ +60℃ for Electronics / -40 ~ +150℃ for Transducers / -100 ~ +150℃ for Temperature
Datalogger	32Mbytes
Protection	IP68 for Spool / IP65 for Electronics
Spool Material	Stainless Steel 304

Flow Range

NO	size	start (q0)	min (qi) 50:1	max (qp)	over (qs)
1	20mm	0.015	0.03	1.5	3
2	25mm	0.07	0.14	7	14
3	40mm	0.1	0.2	10	20
4	50mm	0.15	0.3	15	30
5	65mm	0.25	0.5	25	50
6	80mm	0.45	0.9	45	90
7	100mm	0.7	1.4	70	140
8	125mm	1	2	100	200
9	150mm	1.5	3	150	300
10	200mm	2.5	5	250	500
11	250mm	5	10	500	1000

Field Installation

Technology
Goes with Flow

Seoul City (Xonic 100L)

K-Water (Xonic 100L)

Seoul City (Xonic 100L)

Taean-gun (Xonic 100L)

Romania (Xonic 100L)

Vietnam (Xonic 100L)

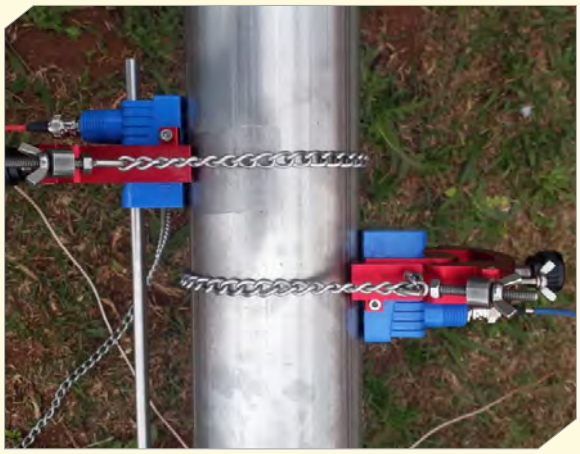
Field Installation

Foreign Ultrasonic Flowmeter(Top) and
Jain Technology Ultrasonic Flowmeter(Bottom)
(K-Water Profit Sharing Task 2014)

Foreign Ultrasonic Transducer (Green) and
Jain Technology Ultrasonic Transducer(Blue)
(K-Water Profit Sharing Task 2014)

Qatar (Xonic 10L)

Thailand (Xonic 10L)



Brazil (Xonic 100P)

UAE (Xonic 100P)

Thailand (Xonic 100P)

Thailand (Xonic 100P)

Indonesia (Xonic 100P)

Malaysia (Xonic 100P)

Philippines (Xonic 100P)

Philippines (Xonic 100P)

Field Installation

Wondang Reservoir (Xonic 100LM)

Jecheon City (Xonic 100LM)

Chungju City (Xonic 100LM)

Jeju City (Xonic 100LM)

USA (Xonic 100LM)

Italy (Xonic 100LM)

Gwangju City (Xonic 100LO)

Jeju City (Xonic 100LO)

Ansong City (Xonic 100LO)

Uiwang City (Xonic 100LO)

Chungju City (Xonic 100LO)

Indonesia (Xonic 100LO)

Field Installation

Seoul City (WISOP)

Hanam City (WISOP)

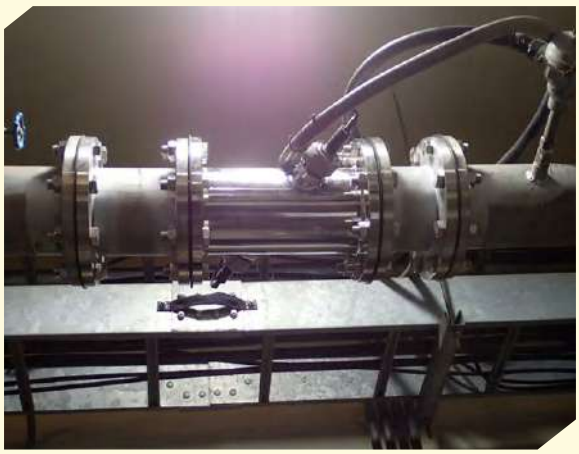
Seoul City (WISOP)

Jeju City (WISOP)

Iran (Xonic 5L)

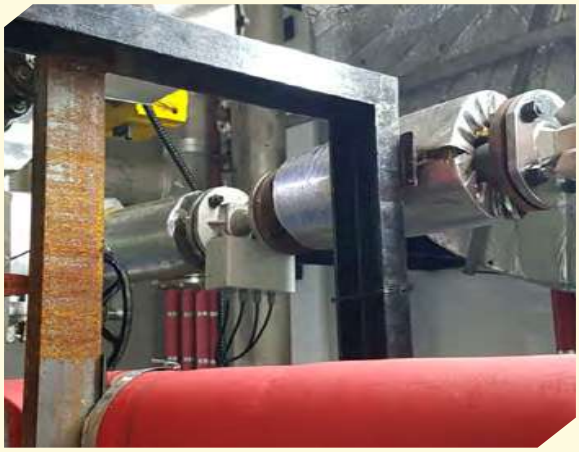
Seoul City(Xonic 5L)

Field Installation

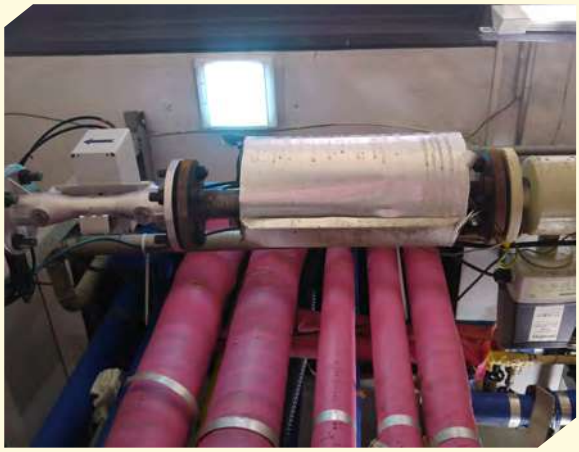


Chungju City (Xonic 10G)

Chungju City (Xonic 10G)



Korea District Heating Corporation (Xonic 10LE)

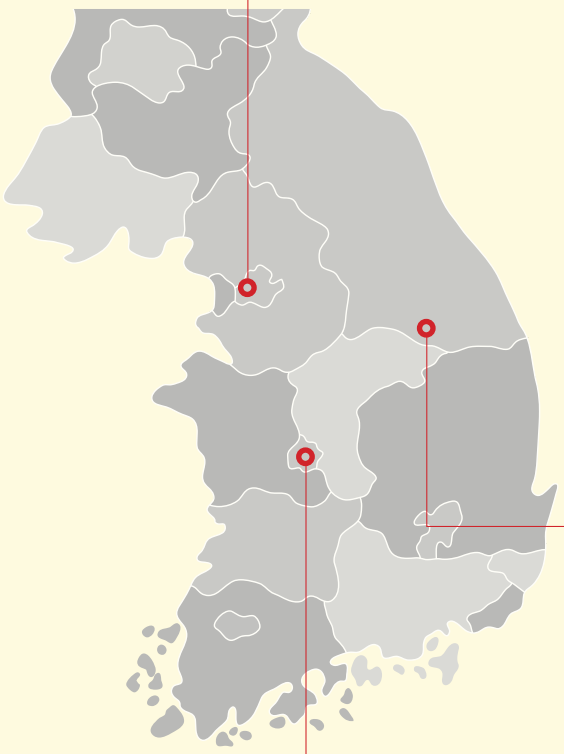


Korea District Heating Corporation (Xonic 10LE)

Korea District Heating Corporation (Xonic 10LE)

Korea District Heating Corporation (Xonic 10LE)

Map and Contact Us



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Technology
Goes with Flow

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