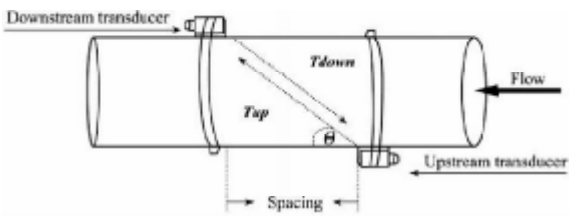
LOW COST ULTRASONIC FLOW METER

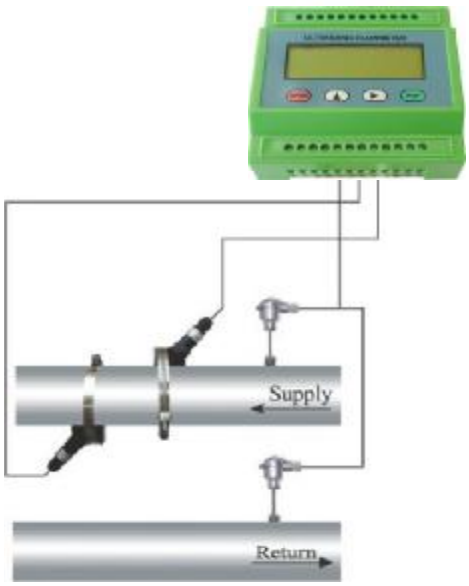
The flow meter is a fixed ultrasonic Heat Meter for continuous measurement of volumetric flow and heat energy.

Ultrasonic flow meters or heat meters are now widely used in the industrial and building sectors for monitoring hot water systems and energy efficiency monitoring. Their simplicity and reliability has seen their widespread adoption throughout the world as an accurate and reliable method of quantifying heat energy consumption.

These flow meters can be used on virtually any pipe size or material, are non-invasive and therefore not prone to the levels of deterioration that are seen by intrusive flow meters. It is also fine to use for flow applications only.

Accuracy	<1% of reading above 0.6ft/sec / 0.2 m/sec
Repeatability	0.2% fixed installation
Pipe Size	15 - 6000mm (dependant on transducers chosen)
Operating Temperature	
Transducers	-40°C to +160°C (Insertion Option: -40°C to +160°C)
Instrument	-10°C to 70°C External Environment
Data-logging	The totaliser data from the last 64 days / 32 months can be viewed using the front keys or via Modbus
Output	1x 4-20mA , 1x Pulse/Alarm (open collector) output max 80VDC 100mA (pulse width variable), 1x Relay
Power	24V DC
Dimensions	90 x 89 x 34 mm
Weight (Control Unit)	(180 g)
Programming	Programming via front keys / Flash set-up programming storage (multiple locations)





Features:

Positive / Negative / Net flow totaliser. Water Volume m3 / Heat Energy	Proprietary low-voltage transmission and self-adapting sensor technology. Anti-interference design.
Texas Instruments CPU. 100 Pico-second measurement rate resolution.	Operates with all of our transducers, including clamp-on, insertion and flow-cell
Simple low cost DIN-RAIL style enclosure (screw terminals for wires)	Able to measure electrically conductive and non-conductive liquids.
Multiple location & set-up memory for transporting to different sites enabling fast set-up	Menu PIN code lock-out, to protect settings from unwanted user interference / tampering.
2 channel 12 bits analogue 4-20mA input options eg. instead of PT100 sensors	Scalable 4-20mA output option (0-1kΩ Impedance)
2 channel programmable digital outputs (isolated Open Collector)	Frequency output. (0 - 9,999Hz), alarm driver, or totaliser, pulse output, ON/OFF control, etc.
Modbus RTU or ASCII Output / RS232, RS485	2x 20 character backlit ,LCD display.
4-key, tactile membrane keypad buttons. Each unit individual TAG number and	Timed data output option for pre-selected logged values (output to RS232 /RS485)

Fixed Ultrasonic Transducers

A pair of clamp-on transducers to measure flow from outside the pipe are included complete with pipe clamps, meaning there is no pressure drop, there are no moving parts, no leaks and no contamination. The installation is very simple and no special skills or tools are required. The Pt100 Temperature probes can be clamp on, Magnet mount, stick on or pocket fit.And now we only suppy insertion type.

Customers can use their own PT100 temperature probes.

Ultrasonic Flow Transducers Option:

S1-type Clamp-on transducer for small pipe

M1-type Clamp-on transducer for middle pipe

L1-type Clamp-on transducer for large pipe

S1H-type Clamp-on high temperature tranducer for small pipe

M1H-type Clamp-on high temperature tranducer for middle pipe

B-type insertion wetted transducer (direct insertion)

cement insertion wetted transducer

Joint type transducer

PI-type transducer

Standard pipe transducer

Transducers details and How to select:

Clamp-on transducer

A pair of clamp-on transducer to measure the flow from outside of a pipe, there is no pressure drop, no moving parts, no leaks and no contamination. The installation is very simple and no special skills or tools are required.

S1-type Clamp-on transducer for small pipe

M1-type Clamp-on transducer for middle pipe

L1-type Clamp-on transducer for large pipe

S1H-type Clamp-on high temperature tranducer for small pipe

M1H-type Clamp-on high temperature tranducer for middle pipe

Transducer parameters

Technical parameters	S1-type	M1-type	L1-type	S1H-type	M1H-type
Pipe size(mm)	DN15~100	DN50~700	DN300~6000	DN15~100	DN50~700
Pipe size(inch)	(1/2"~4")	(2"~28")	(12"~240")	(1/2"~4")	(2"~28")
Material	ABS			Special high-temperature materials	
Frequency	1MHz				
Installation method	V (N/W)	V/Z	Z	V (N/W)	V/Z
calibration	Calibrate with the main unit				
magnetism	Magnetic		No magnetic		
temperature	32F~158F (0*~70*)			32F~320F(0*~160*)	
Protection class	IP68(can work in water, and water depth*3 meter)				
Dimension(mm)	45*30*30	60*45*45	80*70*55	90*85*24	90*82*29
weight (g)	75	250	650	94	150
Liquid types	Water,sea water.waste water,chemical liquids,oil,crude oil,alcohol,beer,etc.				
Suspension concentration	*20000ppm,may contain very small amount of air bubbles.				
Pipe material	All metals,most plastics,fiber glass,etc,				
Dedicated shielded transducer cable	Shielded transducer cable,can be extended to 500 meter*2*contact the manufacturer for longer cable requirement.				

Insertion wetted transducer

A pair of insertion-type transducers are inserted into the pipe wall to interrogate the flow in the pipe. Since the transducers do not extrude into the flow, they do not generate any disturbance or cause any pressure drop. There is no moving parts to wear out.

B-type insertion wetted transducer (direct insertion)

cement insertion wetted transducer

cement insertion wetted transducer

If the pipe material is carbon steel or stainless steel can be installed directly welding,but if the pipe material is cast iron, FRP,PVC or cement please contact with the manufacturer to order the dedicated pipe hoop. To prevent leak water please give the exact outside diameter or perimeter to the manufacturer.

Technical parameters	B-type insertion wetted transducer (direct insertion)	C-type insertion wetted transducer (oblique insertion)	cement insertion wetted transducer
Pipe size	More than DN80mm		
material	Ball valve and transducer pole's material: stainless steel, Valve base's material is carbon steel(stainless steel is optional)		
Frequency	1MHZ		
Pipe material	All metals,most plastics,fiber glass,etc,		
Installation method	Z method		
Application of temperature	-40℃-160℃		
bore Size	Φ19mm(please use the manufacture's dedicated tools to drill,it can install with pressure.)		
Pressure class	1.6MPa(less than 0.8MPa when installing)		
Protection class	IP68(can work in water, and water depth*3 meter)		
Mounting Space	More than 550mm between the well wall and the pipe wall	More than 360mm between the well wall and the pipe wall	More than 700mm between the well wall and the pipe wall
Length	186mm	228mm	330mm
Liquid types	Water,sea water.waste water,chemical liquids,oil,crude oil,alcohol,beer,etc.		
Suspension concentration	≤20000ppm,may contain very small amount of air bubbles.		
Dedicated shielded transducer cable	Shielded transducer cable,can be extended to 500meter*2contact the manufacturer for longer cable requirement,but the cable for water meter transducer do not more than 5 meter.		

Inline transducers

Transducer is a flow-cell (or spool-piece), where a pair of ultrasonic sensors have already been built in. The flow cell transducer is accurately calibrated in the factory. When it is put in line with the testing pipe, the accuracy normally does not change.with high accuracy, good stability,easy to use,etc.

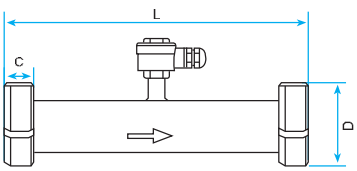
Joint type transducer

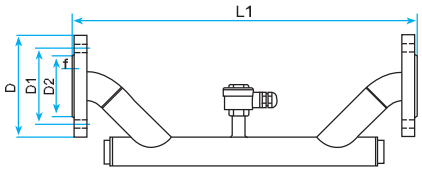
PI-type transducer

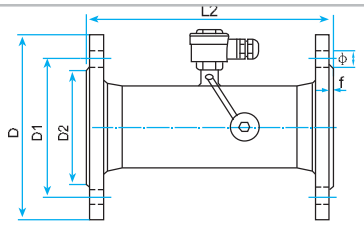
Standard pipe transducer

Transducer parameters

Technical parameters	Joint type transducer	PI-type transducer	Standard pipe transducer
Main unit	All kinds of fixed type main unit		All kinds of fixed type main unit
Pipe size	DN25-DN80mm	DN15-DN40mm	DN50-DN1000
Material	Stainless steel		Carbon steel(stainless steel is optional)
Frequency	1MHZ		
Connection	Joint type	Flange type	
Application of temperature	-40℃-160℃		
Calibration	Calibrate with the main unit		
Protection class	IP68(can work in water, and water depth≤3 meter)		
Dimension	Refer to the following table		
Nominal pressure	Refer to the following table		
Liquid types	Water,sea water.waste water,chemical liquids,oil,crude oil,alcohol,beer,etc.		
Suspension concentration	≤20000ppm,may contain very small amount of air bubbles.		
Dedicated shielded transducer cable	Shielded transducer cable,can be extended to 500meter×2contact the manufacturer for longer cable requirement,but the cable for water meter transducer do not more than 5 meter.		







Inline transducers

Joint type

Nominal diameter DN(mm)	Rated pressure (MPa)	Pipe material	Joint dimension			
			L	H	D	C
25	4.0	Stainless steel	300	282	51	19
40			300	300	74	23
50			300	310	84	24
65			350	330	100	28
80			400	345	114	30

Flange type

Nominal diameter DN(mm)	Rated pressure (MPa)	PI type	Standard-pipe	Flange dimension(mm)					
		L1	L2	D	D1	D2	f	*-*	Flange thickness
25	2.5	390		115	85	65	3	14*4	16
32		450		140	100	76	3	18*4	18
40		500		150	110	84	3	18*4	18
50	1.6		200	165	125	99	3	18*4	20
65			200	185	145	118	3	18*4	20
80			225	200	160	132	3	18*8	20
100			250	220	180	156	3	18*8	22
125			250	250	210	184	3	18*8	22
150			300	285	240	211	3	22*8	24
200			350	340	295	266	3	22*12	24
250			450	405	355	319	3	26*12	26
300			500	460	410	370	4	26*12	28
350			550	520	470	429	4	26*12	30
400			600	580	525	480	4	26*16	32
450			700	640	585	548	4	30*20	34
500	1.0		800	670	620	585	4	25*20	32
600			1000	780	725	685	5	30*20	36
700	0.6		1100	860	810	775	5	24*25	32
800			1200	975	920	880	5	24*30	32
900			1300	1075	1020	980	5	24*30	34
1000			1400	1175	1120	1080	5	28*30	36