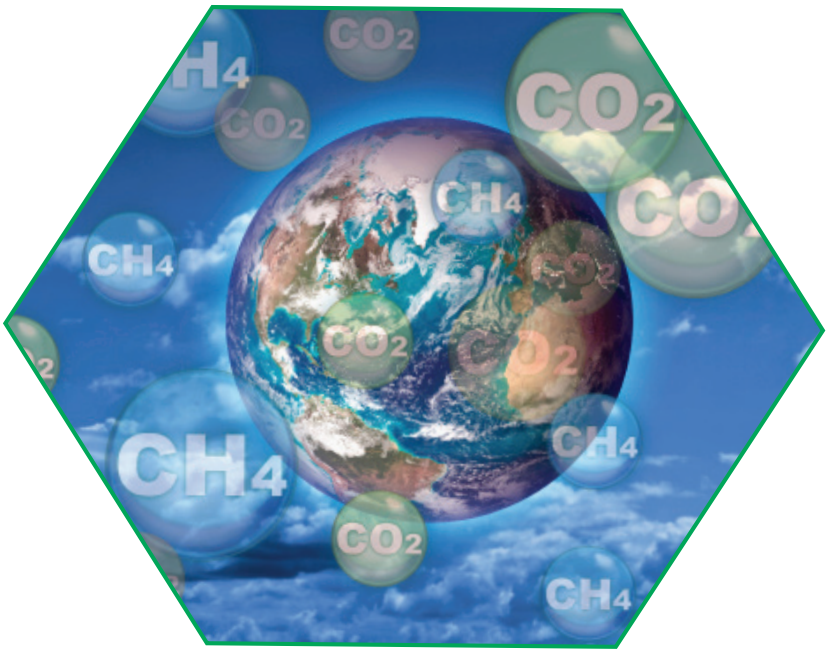
insight metering systems

iSonic 8X, 6X & 4X

Another contributor to world initiatives on net-zero emissions



Doing our part to help reduce methane emissions

- US COMPANY
- RELIABLE
- REPEATABLE
- ACCURATE
- 4G WiFi-IoT READY
- 5 YEAR WARRANTY
- ELIMINATE EMISSIONS

The iSonic 8X, 6X & 4X
indisputably the new standard in custody transfer gas management

4 Path - Westinghouse configuration, handles a wide range of velocity profiles.

4 Path, Cross - Westinghouse configuration, proven to be the most accurate and reliable in the industry.

The iSonic was designed and developed in the US by an iconic team of engineers having collectively hundreds of years of experience designing/developing ultrasonic flowmeters. The iSonic design falls nothing short of pure sophistication. It is graceful, ingenious, intuitive, and adaptable.

insight metering systems

iSonic 8X, 6X & 4X

FEATURES AND BENEFITS

- A multi-path flowmeter masterfully designed for custody transfer applications
- Fully compliant with AGA 9, OIML R 137 Class 0.5, and ISO 17089. Conformities include ATEX 2014/34/EU, NEC/CEC (US/CA) explosion-proof and intrinsically safe
- Available in sizes 3"- 24"
  2 standard path configurations:
  - iSonic 8X, 4x4 Cross chords
  - iSonic 6X, 4x2 or 3x3 Cross chords
  - iSonic 4X, 4x1 chords
  - Other designs available
- Designed for working pressures ranging from 14.7 - 3,750 psig
- Suitable for most applications across the Oil & Gas value chain, including upstream, processing, midstream, and distribution
- Meter body designed to keep the transducer cables protected and neatly confined. This practical feature greatly extends the life of the flowmeter

Also available as an option, a sun-shield designed to protect the electronics and display from damaging sun rays

The iSonic was designed to meet the harsh environment from the field including abrasion, extended temperatures and corrosion.

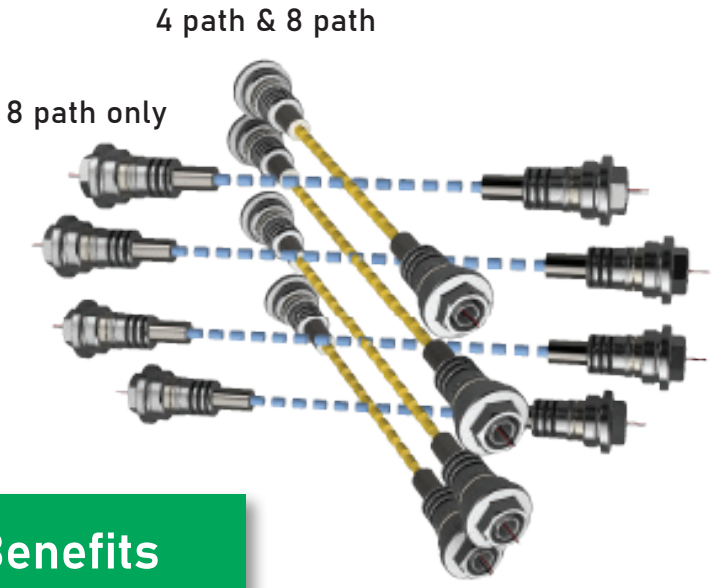
Factory standard body material is carbon steel with multilayer epoxy coating.

We offer different materials and coatings to meet other challenging applications.

Transducer Design

The iSonic transducers were designed to meet today's most demanding rigorous applications. Fully encapsulated in Titanium and Stainless Steel able to resist extreme harsh environments including, wet-gas, corrosives, and abrasive contaminants commonly found in pipelines.

The iSonic (patent pending) transducer is today's most innovative, intelligent and proven design. Whether by choice or application we offer three transducer versions to address a wide range of applications including; high pressure, low pressure and sour environments.



iSonic Transducer Features & Benefits

Transducer piezo-crystals operate outside the process, fully protected from abrasion, corrosion, and pipeline hazards, ensuring durability, reliabilty, repeatability and accuracy.

The transducer mounting arrangement (patented) provides unparalleled acoustic isolation that yields extraordinary signal to noise ratios, resulting in total elimination of meter body crosstalk-interference and path sampling at higher speed levels never achieved before.

Inherent transducer reciprocity allows for replacing the transducers without affecting the meter's accuracy or needing re-calibration. Matching transducers is unnecessary.

Insight metering systems extensive expertise in transducer design and development ensures performance and reliability as well as able to customize to meet every application.

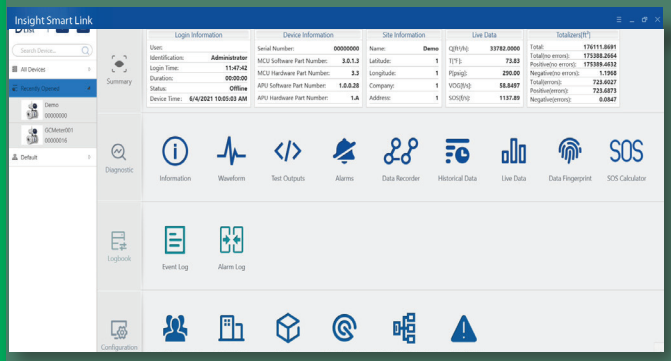
Insight SmartLink, an intelligent, intuitive and simplified diagnostic software designed to facilitate the meter's configuration, monitoring, and troubleshooting. It guides operators through any suspect / upset conditions before measurement is compromised. This software was created focusing on "simplicity" avoiding complex and complicated data screens. The user no longer struggles with confusing charts, too many screens and too much data.

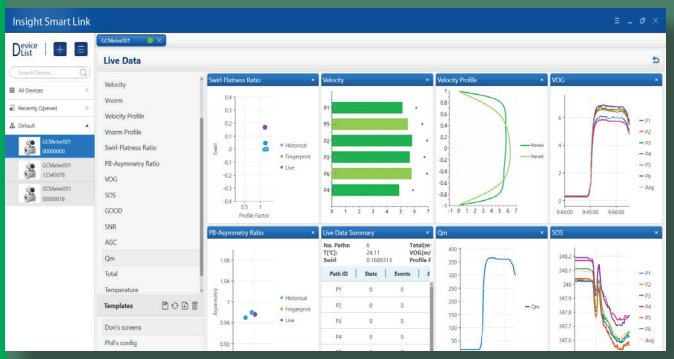
SmartLink was designed with an Intelligent dashboard, simplified and easily personalized by selecting graphical or numerical data and dragging in to an intuitive dashboard. Simplified adaptable to meet most user's needs for reliable, accurate and continuous flow analysis.

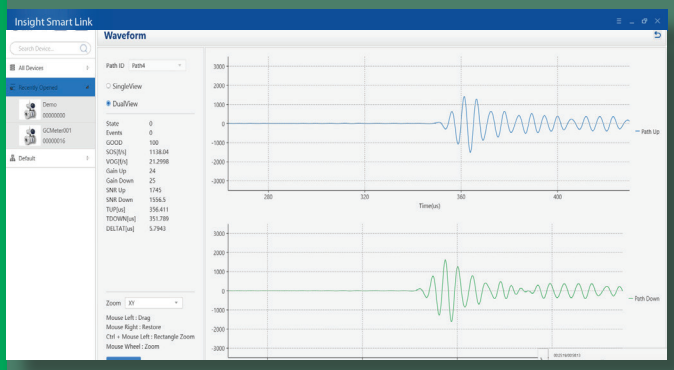
SmartLink provides performance-base and dynamic flow-based diagnostics to ensure continuous performance, reliability and accuracy 24/7.

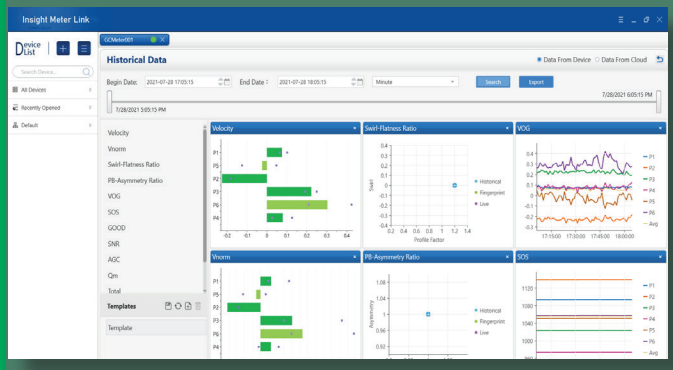
Performance-based diagnostics for each path include: gas velocity, signal-to-noise ratios, speed of sound, gain, percent-performance and more.

Dynamic-based diagnostics include: turbulence, swirl, cross-flow, profile factor and other disturbnces in the pipeline.









iSonic Sizing Guidance

iSonic Sizing		Table 1 – Flow Rates (MMSCFD) Max Rated Velocity | 3 to 24 in = 120 ft/s and 30 in = 100 ft/s										
METER SIZE		3	4	6	8	10	12	16	18	20	24	30
Operating Pressure (psig)	100	3.6	6.0	13.1	22.9	37.0	48.8	84.4	107.2	135.6	195.3	254.3
	200	6.7	11.3	24.6	42.9	69.2	91.4	158.0	200.6	253.9	365.6	476.0
	300	9.8	16.6	36.0	62.9	101.5	134.0	231.6	294.0	372.1	535.8	697.7
	400	12.9	21.9	47.5	82.9	133.7	176.5	305.2	387.4	490.3	706.1	919.4
	500	16.0	27.1	58.9	102.9	166.0	219.1	378.7	480.8	608.6	876.3	1,141
	600	19.1	32.4	70.3	122.8	198.2	261.6	452.3	574.3	726.8	1,047	1,363
	700	22.2	37.7	81.8	142.8	230.5	304.2	525.9	667.7	845.0	1,217	1,584
	800	25.3	42.9	93.2	162.8	262.7	346.8	599.5	761.1	963.3	1,387	1,806
	900	28.5	48.2	104.7	182.8	294.9	389.3	673.1	854.5	1,082	1,557	2,028
	1,000	31.6	53.5	116.1	202.8	327.2	431.9	746.7	948.0	1,200	1,728	2,250
	1,100	34.7	58.7	127.6	222.8	359.4	474.5	820.2	1,041	1,318	1,898	2,471
	1,200	37.8	64.0	139.0	242.7	391.7	517.0	893.8	1,135	1,436	2,068	2,693
	1,300	40.9	69.3	150.5	262.7	423.9	559.6	967.4	1,228	1,554	2,238	2,915
	1,400	44.0	74.5	161.9	282.7	456.2	602.2	1,041	1,322	1,673	2,409	3,136
	1,500	47.1	79.8	173.3	302.7	488.4	644.7	1,115	1,415	1,791	2,579	3,358
	1,600	50.2	85.1	184.8	322.7	520.7	687.3	1,188	1,508	1,909	2,749	3,580
	1,700	53.4	90.4	196.2	342.7	552.9	729.9	1,262	1,602	2,027	2,919	3,801
	1,800	56.5	95.6	207.7	362.6	585.2	772.4	1,335	1,695	2,146	3,090	4,023
	1,900	59.6	100.9	219.1	382.6	617.4	815.0	1,409	1,789	2,264	3,260	4,245
	2,000	62.7	106.2	230.6	402.6	649.6	857.6	1,483	1,882	2,382	3,430	4,466

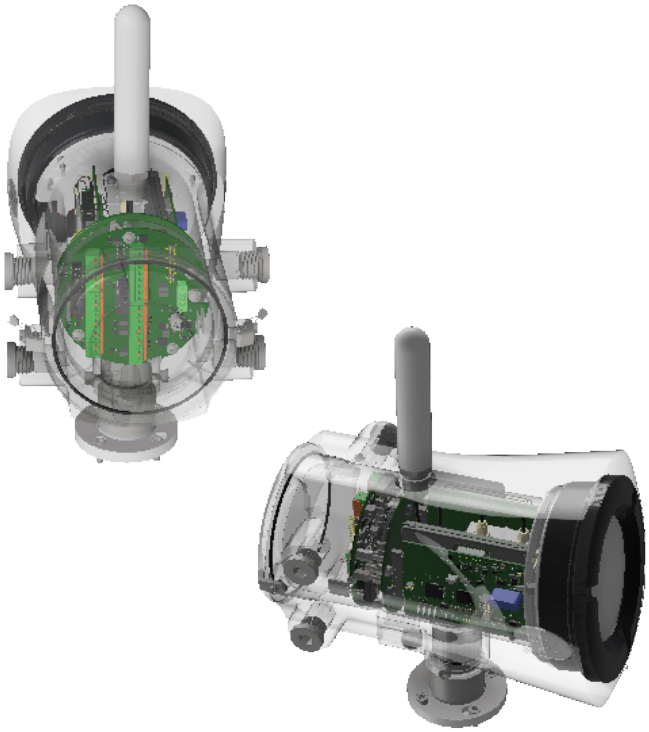
Typical Operation Max Range Sizing		Table 2 – Flow Rates (MMSCFD) Sizing max velocity 80 ft/sec for Meter sizes 3 to 24 in (for 30 in @ 70 ft/s)										
METER SIZE		3	4	6	8	10	12	16	18	20	24	30
Operating Pressure (psig)	100	2.4	4.0	8.8	15.3	24.7	32.5	56.3	71.4	90.4	130.2	178.0
	200	4.5	7.5	16.4	28.6	46.2	60.9	105.3	133.7	169.2	243.7	333.2
	300	6.5	11.1	24.0	41.9	67.7	89.3	154.4	196.0	248.1	357.2	488.4
	400	8.6	14.6	31.6	55.2	89.1	117.7	203.4	258.3	326.9	470.7	643.6
	500	10.7	18.1	39.3	68.6	110.6	146.1	252.5	320.6	405.7	584.2	799
	600	12.8	21.6	46.9	81.9	132.1	174.4	301.5	382.8	484.5	698	954
	700	14.8	25.1	54.5	95.2	153.6	202.8	350.6	445.1	563.4	811	1,109
	800	16.9	28.6	62.2	108.5	175.1	231.2	399.7	507.4	642.2	925	1,264
	900	19.0	32.1	69.8	121.9	196.6	259.6	448.7	569.7	721	1,038	1,419
	1,000	21.0	35.6	77.4	135.2	218.1	287.9	497.8	632.0	800	1,152	1,575
	1,100	23.1	39.2	85.0	148.5	239.6	316.3	546.8	694	879	1,265	1,730
	1,200	25.2	42.7	92.7	161.8	261.1	344.7	595.9	757	957	1,379	1,885
	1,300	27.3	46.2	100.3	175.1	282.6	373.1	644.9	819	1,036	1,492	2,040
	1,400	29.3	49.7	107.9	188.5	304.1	401.4	694	881	1,115	1,606	2,195
	1,500	31.4	53.2	115.6	201.8	325.6	429.8	743	943	1,194	1,719	2,351
	1,600	33.5	56.7	123.2	215.1	347.1	458.2	792	1,006	1,273	1,833	2,506
	1,700	35.6	60.2	130.8	228.4	368.6	486.6	841	1,068	1,352	1,946	2,661
	1,800	37.6	63.8	138.5	241.8	390.1	515.0	890	1,130	1,430	2,060	2,816
	1,900	39.7	67.3	146.1	255.1	411.6	543.3	939	1,193	1,509	2,173	2,971
	2,000	41.8	70.8	153.7	268.4	433.1	571.7	988	1,255	1,588	2,287	3,127

iSonic 8X, 6X & 4X Weight and Dimensions

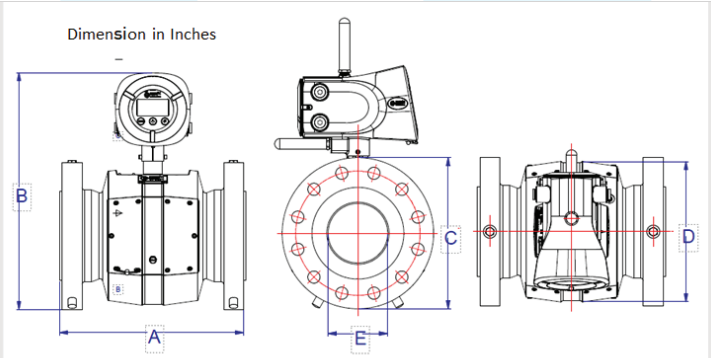
The iSonic's body is forged Carbon Steel and machined utilizing multi-tasking CNC to ensure highest precision.

The iSonic standard overall length is 3D for sizes 3 - 16 inch, making it suitable for new or existing compact skid designs. Consult the factory for other lengths to meet installation requirements.

The iSonic is easily adaptable in the field and control room. With Modbus protocol and multiple I/O facilitates seamless integration into any Flow Computer, RTU and SCADA.



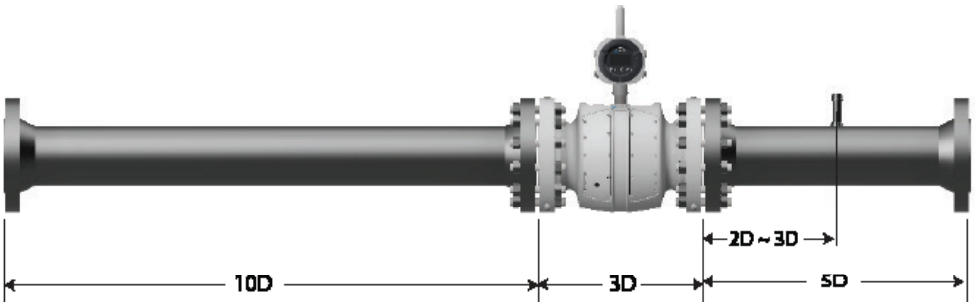
The iSonic's electronic enclosure it's a magnificent craftmanship, ergonomic, ample I/O, and easy access to facilitate maintenance and repairs



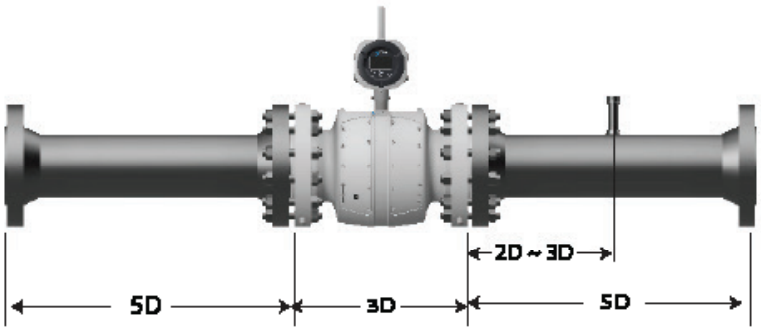
Size NPS	Flange(#)	Weight (Lbs)	A (In)	B (In)	B + Antenna	C (In)	D (In)	E (In)
3	150	80	9.4	17.2	21.1	7.5	8.4	2.9
3	300	87	9.4	17.6	21.4	8.3	8.4	2.9
3	600	90	9.4	17.6	21.4	8.3	8.4	2.9
3	900	127	15.7	18.2	22.1	9.5	8.4	2.9
4	150	124	11.8	18.5	22.3	9.0	9.8	3.7
4	300	138	11.8	19.0	22.8	10.0	9.8	3.7
4	600	155	11.8	19.3	23.2	10.8	9.8	3.7
4	900	212	19.7	19.7	23.6	11.5	9.8	3.7
6	150	363	17.7	21.5	25.4	11.0	14.0	5.5
6	300	394	17.7	22.3	26.1	12.5	14.0	5.5
6	600	443	17.7	23.0	26.9	14.0	14.0	5.5
6	900	575	29.5	23.5	27.4	15.0	14.0	5.5
8	150	569	23.6	23.8	27.6	13.5	16.5	7.3
8	300	620	23.6	24.5	28.4	15.0	16.5	7.3
8	600	702	23.6	25.3	29.1	16.5	16.5	7.3
8	900	805	23.6	26.3	30.1	18.5	16.5	7.3
10	150	837	29.5	26.1	29.9	16.0	18.8	9.3
10	300	913	29.5	26.8	30.7	17.5	18.8	9.3
10	600	1068	29.5	28.1	31.9	20.0	18.8	9.3
10	900	1181	29.5	28.8	32.7	21.5	18.8	9.3
12	150	1299	35.4	28.6	32.4	19.0	21.1	10.6
12	300	1402	35.4	29.3	33.2	20.5	21.1	10.6
12	600	1547	35.4	30.1	33.9	22.0	21.1	10.6
12	900	1741	35.4	31.1	34.9	24.0	21.1	10.6
14	150	1479	41.3	30.2	34.1	21.0	22.4	12.2
14	300	1631	41.3	31.2	35.1	23.0	22.4	12.2
14	600	1755	41.3	31.6	35.4	23.8	22.4	12.2
14	900	1976	41.3	32.3	36.2	25.3	22.4	12.1
16	150	1823	33.5	32.5	36.3	23.5	24.5	14.0
16	300	1982	33.5	33.5	37.3	25.5	24.5	14.0
16	600	2179	33.5	34.2	38.1	27.0	24.5	14.0
16	900	2382	35.4	34.6	38.4	27.8	24.5	13.9
18	150	2161	35.4	34.2	38.1	25.0	26.8	15.7
18	300	2407	35.4	35.7	39.6	28.0	26.8	15.7
18	600	2664	35.4	36.3	40.2	29.3	26.8	15.7
18	900	3102	39.4	37.2	41.1	31.0	26.8	15.7
20	150	2645	38.4	36.5	40.3	27.5	29.0	17.7
20	300	2941	38.4	38.0	41.8	30.5	29.0	17.7
20	600	3285	38.4	38.7	42.6	32.0	29.0	17.7
20	900	3900	43.3	39.6	43.4	33.8	29.0	17.4
24	150	3789	42.3	40.7	44.6	32.0	33.3	21.3
24	300	4261	42.3	42.7	46.6	36.0	33.3	21.3
24	600	4722	42.3	43.2	47.1	37.0	33.3	21.3
24	900	6303	49.2	45.2	49.1	41.0	33.3	20.9

iSonic Installation Recommendations

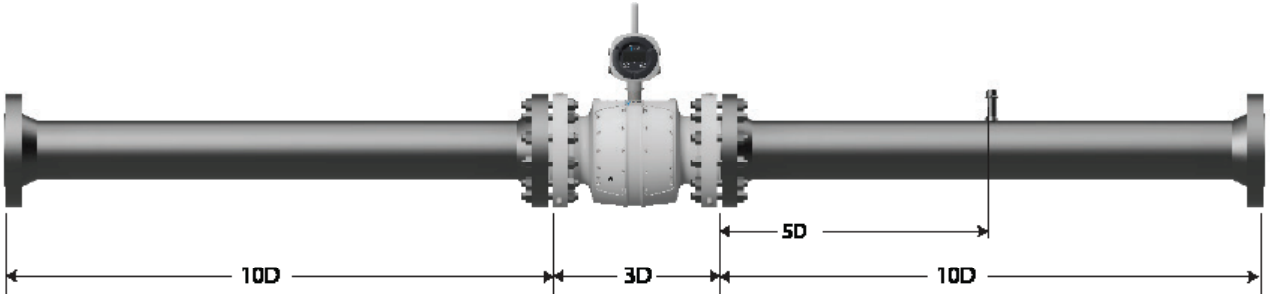
Installation – iSonic 8X does not require a flow conditioner



Installation – compact, iSonic 8X does not require a flow conditioner



Installation – bi-directional, flow conditioner not required for iSonic 8X



iSonic Technical Specifications

Path Arrangement		6 paths – Cross Configuration (3 inch only) 4 paths or 8 path - cross configuration
Size		3" to 24" (Standard) other sizes on request
Measurement Principle		transit time
Repeatability		≤0.05% (standard calibration)
Accuracy		Class 0.5 (per AGA9/R137 and ISO 17089-1)
Pipe requirements	With or Without Flow Conditioner	Upstream straight length ≥ 5D，Downstream straight length ≥ 3D
Gas Temperature Range		–40 °C to +110 °C
Pressure Range		0 psig to 2250 psig (Standard 150#, 300#, 600#, 900#) 100 psig to 3750 psig (Extended 1500#)
Ingress protection		IP66
Environment		
Ambient temperature		–40 °C to +70 °C
storage temperature		–40 °C to +70 °C
Ambient humidity		≤95%，non-condensing
Conformities and Haz Loc Approvals		
Conformities		OIML R 137-1&2:2012 ISO 17089-1 ATEX: 2014/34/EU AGA-Report No. 9
Hazardous Approvals		ATEX/IECEx Ex db ia mb IIB+H2 T6…T4 NEC/CEC (US/CSA) Explosion-proof / Intrinsically Safe: Class I, Div. 1 Groups B, C, D, T6…T4
Inputs/Outputs		
Analog Outputs	2	4 to 20mA, electrically isolated
Analog Inputs	2	4 to 20mA
Digital Outputs	4	2 x status, 2 x pulse f_{max} = 10kHz passive, electrically isolated, internal or external power, open collector
Communication Ports	RS485	Modbus RTU 3 x RS485
	Ethernet	1 x Ethernet 1 x Wi-Fi
	Cloud communication	4G
Power		
Voltage		12-30 VDC
Power Consumption		5W, (6W during 4G communication)
Data Storage		
Archived data	Meter	Every Minute (10,000 records) Hourly (10,000 records) Daily (5,000 records)
	Cloud	Every Minute (10,000 records), on demand Hourly (no limit) Daily (no limit)
Alarm/Event Log	Meter	Event Log (10,000 events) Parameter modification Log (1,000 modifications) Alarm Log (1,000 alarms)
	Cloud	Event Log (no limit) Parameter Modification Log (no limit) Alarms Log (no limit)

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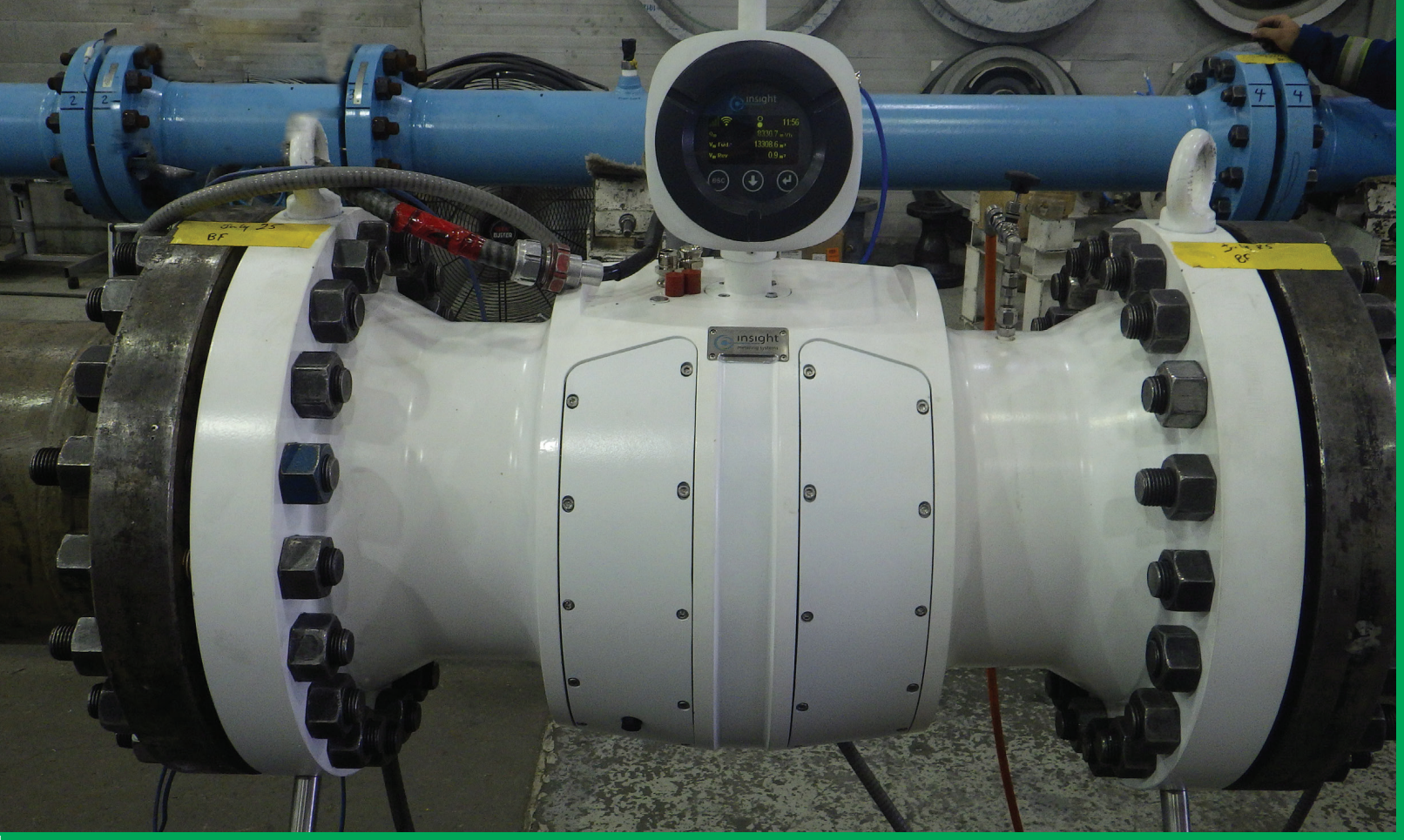
ABOUT US

Insight Metering Systems is a division of LETD (Leading Edge Technology Development, LLC). LETD was founded by Don Augenstein and Bob Beede, two iconic engineers with extensive experience in designing, developing and selling ultrasonic flowmeters. Their partnership and collaboration started when Don worked with Cal Hastings (Caldon) where they succesfuly developed the very first LEFM multipath Westinghouse 8 path ultrasonic flowmeter for liquid hydrocarbons and gas applications.

Don Augenstein and Bob Beede founded Insight metering systems because they identified the need for a company genuinely committed to serve customers in the US and Americas. A company able to offer innovative, accurate and reliable ultrasonic flowmeters, meet customer's delivery requirements, and most importantly, service these meters quickly. Insight metering systems is here to do what others fail to offer. Insight metering systems is here to deliver best in class ultrasonic flowmeters along with best in class customer service.



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