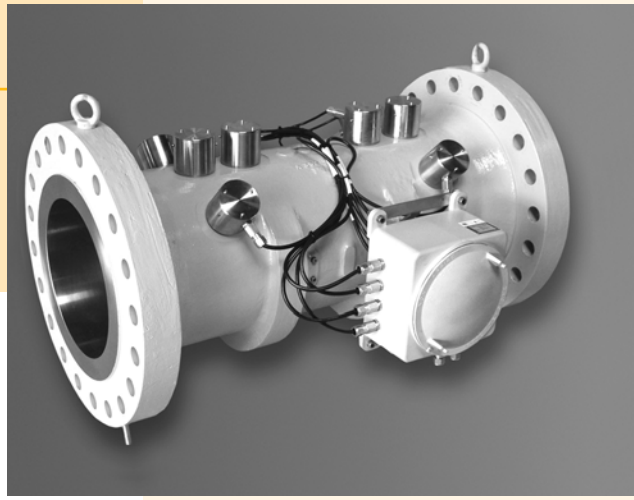
Q.Sonic

Ultrasonic Gas Flow Meters for custody transfer measurement



Applications

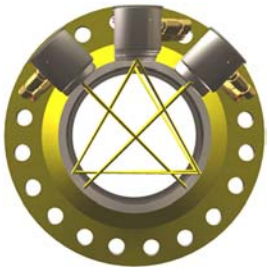
Media: Natural gas
Industry: Gas exploration, gas transmission, gas distribution

Brief information

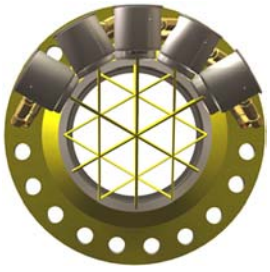
Ultrasonic Gas Flow Meter applications have expanded considerably since their introduction over two decades ago. Tougher applications demand technically advanced solutions and Elster-Instromet continues to meet the challenge. The 4th generation ultrasonic meters produced by Elster-Instromet today are the most sophisticated on the market and contain many advancements including those listed aside. The Q.Sonic line of ultrasonic flow meters are the only ones featuring extended diagnostics with the possibility of detecting fouling and ultrasonic flow pattern recognition with dynamic k-factor calculation.

Fit for purpose with integrity in measurement: In practice, there are no simple solutions and a “one size fits all” solution cannot be optimal. Thus Elster-Instromet developed a range of Ultrasonic Gas Flow Meters, each model designed to best meet the individual operational demand.

Q.Sonic-3 - Meeting industry standards: With more than 1000 3-path meters in operation worldwide, the Q.Sonic-3 is the industry standard for custody transfer! The Q.Sonic-3 complies with AGA Report 9 and ISO standard CD17089.



Q.Sonic-4 - Exceeding industry standards: In addition to the 2 double reflection paths of the Q.Sonic-3 the Q.Sonic-4 has 2 single reflection paths crossing each other at an angle of 90º. This makes the meter less sensitive to asymmetric flow distortions and results in a 10D straight upstream requirement. The meter is designed for short upstream lengths which are most common with offshore applications and measurement and regulation stations.



Q.Sonic-5 - The highest standard: The Q.Sonic-5 has the highest level of flow profile recognition in the industry and has long been recognized as the most accurate and flexible ultrasonic meter available. Due to the unique path pattern it gives the most reliable diagnostic data to maintain lowest uncertainty.

Main features

- **No moving parts**
- **No pressure drop**
- **Large turn down ratio**
- **Bi-directional**
- **ISO CD17089 compliant**
- **AGA-9 compliant**
- **Highest noise immunity**
- **Flow profile detection**
- **Highest repeatability**
- **CMB signal processing**
- **Swirl and asymmetry detection**
- **Reflective technology**

ELSTER Instromet

Q.Sonic: Ultrasonic Gas Flow Meters for custody transfer measurement

USM specification

		Q.Sonic-3	Q.Sonic-4	Q.Sonic-5
Diameter	[mm]	100-1600		
	[inch]	4-64		
Velocity range	[m/s]	≤ ± 30		
Pressure range	[bar]	8 - 150 (lower or higher pressures optional)		
Gas temperature range	[°C]	-20 / +80 (lower or higher temperatures optional)		
Ambient temperature range	[°C]	-20 / +60 (lower temperatures optional)		
Repeatability		≤ 0.05% *)		
Uncertainty		≤ 0.3% (high pressure flow calibrated) *)		
		≤ 0.5% typical, without flow calibration *)		
		0.2% non-linearity *)		
	Swirl angle [°]	≤ 20	≤ 20	≤ 20
	Asymmetry	≤ 5%	≤ 15%	≤ 20%
Rec. upstream pipe length	without FC**)	20D	10D	10D
Rec. upstream pipe length	with FC**)	10D	5D	5D
AGA-9 compliance		yes		
Power supply		24V DC		
Power consumption		<10W		
Outputs		2x RS232, 2x RS485 (up to 500m) ***)		
		4x optocoupler 0-10KHz, free configurable		
		Analogue 0-20mA optional		
Response time		1 update / s		
Data logging		> 35 days of hourly records acc. to API manual of petroleum measurement standards, chapter 21		
Position T transmitter		3-5D upstream or 2-5D downstream		
Position P transmitter		on the meterbody		
Safety marks		FM: Class1, Division 1, Group D ATEX: Zone 1, Gas Group IIA, IIB & IIC		
Pipe material		A333/LF350, optional: WSTE355, SS, duplex		
Ingress protection		IP65		
Upstream pipe condition		1% difference in diameter vs USM		
Downstream pipe condition		1% difference in diameter vs USM		
Options				
Application related path substitution: Uncertainty in case of path failure		≤ 0.3%		
Noise suppression with CMB		typical 15-20dB		

*) between 5% Q_{max} and 100% Q_{max} **) FC = flow conditioner ***) Series-IV electronics

Flow range

Diameter		turn down	Q_{min}	Q_{max}	Q_{min}	Q_{max}	**Meter body length**
			m^3/h	m^3/h	cf/h	cf/h	
4“	100mm	1:30	30	800	1,100	28,300	5D
6“	150mm	1:40	45	1,800	1,600	63,600	4D
8“	200mm	1:50	60	3,000	2,200	106,000	4D
10“	250mm	1:65	75	5,000	2,700	176,600	4D
12“	300mm	1:90	90	8,000	3,200	282,600	3D
16“	400mm	1:120	100	12,000	3,600	423,800	3D
20“	500mm	1:130	150	19,000	5,300	671,000	3D
24“	600mm	1:140	200	28,000	7,100	988,900	3D
30“	750mm	1:150	300	45,000	10,600	1,589,300	3D
36“	900mm	1:150	425	65,000	15,100	2,295,600	3D
42“	1,050mm	1:150	525	80,000	18,600	2,825,300	3D
48“	1,200mm	1:150	700	100,000	24,800	3,531,600	3D

The volume shown is indicated, for exact calculation the pipe wall thicknes is required. Volumes given in local approvals may differ.
Larger dimensions up to 64” (1600mm) are available. The meter body length can differ from the value in the table when using non–standard meter bodies.

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