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Hamburg Engineering

Instrumentation & Industry Solutions

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Fluids Measurement Expert

Hamburg Engineering

Hamburg Engineering

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Product Gallery-III

Company Profile

Als Spezialist für Präzisionsamaturen, Komponenten und Systemlösungen in der Mess- und Regeltechnik sowie Fluid- und Gastechnik sind wir Ihr Ansprechpartner für die Beratung und Umsetzung von applikationsbedingten Lösungen. Mit unserem breitgefächerten Produktportfolio auf dem Markt, bieten wir Ihnen die Möglichkeit, in sämtlichen Sparten der Fluid- und Gastechnik auf eine große Vielfalt namhafter Hersteller zurückgreifen zu können.

Weil wir dieselbe Leidenschaft, die wir in die Auswahl und den Vertrieb unserer Produkte legen, in unserem Engagement für unsere Kunden leben, bieten wir Ihnen nicht nur eine reine Handelsbeziehung. Sondern auch Dienstleistungen, die individuell auf Sie abgestimmt sind und Ihnen einen direkten Vorteil in Ihrem Geschäftsfeld eröffnen.

Diese Philosophie leben wir nicht nur, sondern setzen sie in konkreten Maßnahmen um. Deshalb steht bei Hamburg Engineering der Kunde von Beratung und Bestellung, über die Fertigung und Auslieferung, bis zum After -Sales-Service im Vordergrund. Die kontinuierliche Erweiterung unseres Produktportfolios, sowie der maßgeschneiderte Service verschaffen Ihrem Unternehmen entscheidende Vorteile.

Auch für die Zukunft setzen wir einen klaren Fokus: Das Bestreben unsere Produkte noch effizienter aufeinander abzustimmen und Ihnen das beste Preis-Leistungsverhältnis auf dem Markt zu bieten.

Ihr Team von Hamburg Engineering

Facility

Liquid Calibration Facility

Gas Calibration Facility

Calibration Facility for Liquid Turbine

Calibration for Ultrasonic Heat Meter

Calibration for Ultrasonic Flowmeter

Automatic Processing Machine

Painting Process

Flow Meter Production Line

Flowmeter Welding Process

Magnetic Flowmeter Warehouse

Magnetic Flowmeter Warehouse

Turbine & Vortex Warehouse

Application

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Magnetic flowmeter in calibration

Liquid turbine flowmeter
in food and beverage industry

Oval gear flowmeter
in petrochemical industry

Magnetic flowmeter
in under well field

Gas turbine flow meter
in nature gas filling field

Ultrasonic flow meter
for clean water measurement

Turbine flowmeter
in water supply field

Gas roots flowmeter
in gas mixture field

Liquid turbine flowmeter
in water supply plant

Vortex flowmeter
in oxygen measurement

Rotameter system
for mixed gas measurement

Vortex flowmeter in boiler
system for steam measurement

Electromagnetic Flow Meter

LDG-B series

LDG-T series

Description

The magnetic flow meter is one of the most flexible and universally applicable flow measurement systems available. It is a volumetric flow meter which does not have any moving parts and is ideal for waste water applications or any dirty liquid which is conductive or water based. Magnetic flow meter is also ideal for the applications where low pressure drop and low maintenance are required.

Operating Principle

Following Faraday's law of magnetic induction, a voltage is induced in a conductor moving through a magnetic field. In the electromagnetic measuring principle, the following medium is the moving conductor. The voltage induced is proportional to the flow velocity and is supplied to the amplifier by means of two measuring electrodes. The flow volume is calculated by means of the pipe cross section area.

Application

- Waster water industry: transport networks sewage treatment plants, sludges
- Chemical industry: acids alkalis, dosing applications, abrasive or corrosive mediums
- Metal & mining industry: mediums with a high solid content, like ore or excavator mud
- Water industry: Revenue metering, district metering water abstraction, leakage detection
- Pulp & paper industry: pulp, pastes, sludges & other caustic mediums, liquor, additives, bleaches, colourants
- Food & beverage industry: mixing, dosing and filling of drinks under hygienic conditions filling systems applications

Technical Data

Certificates	ISO9001:2008; CE
Diameter	PTFE: DN6-DN600
	Hard ruber: DN50-DN2200
Flow Direction	Positive; Negative
Repeatability Error	±0.1%
Accuracy	±0.5% of rate ; ±0.2% of rate
Medium Temperature	Hard rubber liner: -20...+60°C
	High-temp rubber liner: -20...+90°C
	PTFE liner: -20...+120 °C
	High-temp PTFE liner: -20...+160°C
	PFA: -20...+180°C
Nominal Working Pressure	DN10-DN25≤4.0Mpa
	DN32-DN150≤1.6Mpa
	DN200-DN600≤1.0Mpa
	DN700-DN2200≤0.6Mpa
Velocity	0.3-10m/s
Ambient Temperature	-20...+60 °C
Relative Humidity	5%~95%
Comsumed Power	<20W

Flow Range

Diameter		Flow Rate (m^3/h)		
		V=0.3m/s	V=6m/s	V=10m/s
(mm)	(Inch)	Min	Calibrated	Max
6	1/4"	0.03	0.6	1
10	3/8"	0.1	1.7	3
15	1/2"	0.2	4	6
20	3/4"	0.3	7	11
25	1"	0.5	11	18
32	1-1/4"	0.9	17	29
40	1-1/2"	1	27	45
50	2"	2	42	71
65	2-1/2"	4	72	120
80	3"	5	109	181
100	4"	8	170	283
125	5"	13	265	442
150	6"	20	382	636
200	8"	34	679	1131
250	10"	53	1060	1767
300	12"	76	1527	2545
350	14"	104	2078	3465
400	16"	136	2714	4524
450	18"	171	3435	5726
500	20"	212	4241	7069
600	24"	305	6107	10179
700	28"	415	8310	13850
800	32"	542	10860	18100
900	36"	662	13740	22900
1000	40"	848	16962	28270

Model Selection

Model	Suffix Code											Description
LDG-	❶	❷	❸	❹	❺	❻	-❼	❽	❾	❿	⓫	Electromagnetic Flowmeter
Type	B											B type
	T											T type(DN15- DN100 only)
Diameter		XXXX										Stand for diameter 0006: DN6; 0015: DN15 0100: DN100; 2200: DN2200
Structure			S									Compact Type with local display
			L									Remote Type; 10 meters cable default
Electrode Material				M								SS316L
				T								Titanium
				D								Tantalum
				H								Hastelloy Alloy C
				P								Platinum-Iridium
Signal Output					0							No Output
					1							4-20mA / Pulse
Liner Material						X						Hard Rubber
						P						Propylene Oxide
						F						PTFE
						A						PFA
Power Supply							-0					110-240V AC
							-1					24V DC (20-36V DC)
							-2					Battery Power Supply
Communication								0				No Communication
								1				Modbus RS485
								2				HART
								3				GPRS
								4				Profibus DP
Sensor Grounding									0			No Grounding
									1			Grounding Ring
									2			Grounding Electrode
Connection										DXX		D16:DIN PN16 Flange ; D25: DIN PN25 Flange...
										AXX		A15: ANSI150# Flange; A30: ANSI 300# Flange...
										JXX		J10: JIS 10K Flange; J20: JIS 20K Flange...
										XXX		On request
Body Material											CS	Carbon Steel
											S4	Stainless Steel 304

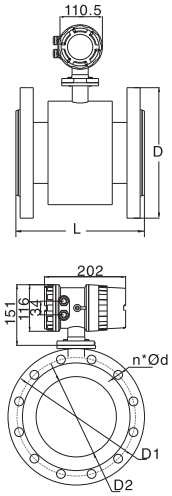
Example:

Model Code: LDG ❶B ❷0150 ❸S ❹M ❺1 ❻F -❼0 ❽1 ❾2 ❿A15 ⓫CS

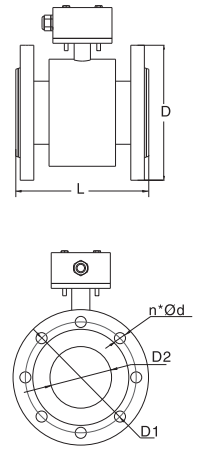
❶ B: B Type
❷ 0150: DN150
❸ S: Compact type with local display
❹ M: SS316L electrode
❺ 1: 4-20mA / Pulse output
❻ F: PTFE liner
❼ 0: 110-240V AC power supply
❽ 1: Modbus RS485 Communication
❾ 2: Grounding electrode
❿ A15: Flange ANSI 150#
⓫ CS: Carbon steel body

Dimensions:

Notice: The dimensions in table below are based on DIN PN16 Flange. Please consult the factory for other flanges: ANSI or JIS.



Compact Type



Remote Type

Flange DIN PN16						
Diameter (mm)	B Type L (mm)	T Type L (mm)	D (mm)	D1 (mm)	D2 (mm)	n*ød
10	160/120	120	90	60	41	4*14
15	160/200	200	95	65	45	4*14
20	165/200	200	105	75	58	4*14
25	200	200	115	85	68	4*14
32	200	200	140	100	78	4*18
40	200	200	150	110	88	4*18
50	200	200	165	125	102	4*18
65	250	200	185	145	122	4*18
80	250/200	200	200	160	138	8*18
100	250/200	250	220	180	158	8*18
125	250	NA	250	210	188	8*18
150	300	NA	285	240	212	8*22
200	350	NA	340	295	268	12*22
250	450	NA	405	355	320	12*22
300	500	NA	460	410	375	12*22

Notice: Two length are available for B type DN10, DN15, DN20, DN80, DN100

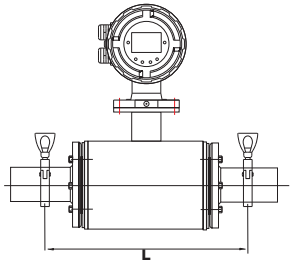
Sanitary Magnetic Flow Meter

Description

The sanitary magnetic flow meter is specifically designed for measurement of food liquids like milk, cream, juice of various fruits, pharma liquids etc. It is available with compact or remote version of transmitter can be installed either horizontally or vertically with a variety of optional end-fittings to meet your requirements.

Length

DN10-DN25: L=200mm
DN32-DN100: L=300mm



Model	Suffix Code										Description
LDGS-	❶	❷	❸	❹	❺	-❻	❼	❽	❾	⓫	**Sanitary Magnetic Flowmeter**
Diameter	XXXX										Stand for diameter 0010: DN10 0100: DN100
Structure		S									Compact Type with local display
		L									Remote Type;10 meters cable default
Electrode Material			M								SS316L
			T								Titanium
			D								Tantalum
			H								Hastelloy Alloy C
			P								Platinum-Iridium
Signal Output				0							No Output
				1							4-20mA / Pulse
Liner Material					F						PTFE
					A						PFA
Power Supply						-0					110-240V AC
						-1					24V DC (20-36V DC)
						-2					Battery Power Supply
Communication							0				No Communication
							1				Modbus RS485
							2				HART
							3				GPRS
							4				Profibus DP
Sensor Grounding								0			No Grounding
								1			Grounding Ring
								2			Grounding Electrode
Connection									TRC		Tri- clamp for sanitary connection
Body Material										S4	Stainless Steel 304

Insertion Magnetic Flow Meter

Hamburg Engineering

Simple Type series

Ball Valve Type series

Description

SURE Insertion Magnetic Flowmeter is designed for measurement of the velocity of liquid. It can be installed in any pipeline of internal diameter from 200mm (8in) to 3000mm (120in),through a small tapping. The complete lack of moving parts of this insertion flow sensor is the source of its reliability. There is no rotor to stop turning in dirty water and there are no bearings to wear out.

Reverse flow output are optional. A rapidly reversing magnetic field is produced in the lower housing. As the fluid moves through this field, a voltageis generated that is measured and translated into a frequency signal proportional to flow rate. This square wave signal can be sent directly to a PLC, control or converted to 4 to 20 mA

Technical Data

Diameter	300-3000mm
Velocity	0.5-6m/s
Accuracy	±2.5% FS
Liquid Conductivity	>5μS/cm
Straight Pipe	5D(D means diameter) for inlet; 3D for outlet
Liquid Temperature	-20...+150°C
Ambient Temperature	-20...+60°C
Pressure	1.6Mpa
Protection	IP65(compact type) ; IP68(remote type)
Signal Output	4-20mA / Pulse
Communication	RS485; Hart
Power Supply	24V DC; 110-240V AC; Battery

Flow Range

Diameter	**Flow Rate(m^3/h)**			
(mm)	**V=0.5m/s**	**V=1m/s**	**V=6m/s**	**V=10m/s**
300	127	254	1526	2545
350	173	346	2077	3464
400	226	452	2713	4523
450	286	572	3434	5725
500	353	707	4239	7069
600	509	1017	6104	10180
700	692	1385	8308	13847
800	904	1809	10852	18086
900	1145	2289	13734	22891
1000	1413	2826	16956	28260
1200	2035	4069	24417	40694
1400	2769	5539	33234	55390
1600	3617	7235	43407	72346
1800	4578	9156	54937	91562
2000	5652	11304	67824	113040
2200	6839	13678	82067	136778
2400	8139	16278	97667	162778
2600	9552	19104	114623	191038
2800	11078	22156	132935	221558
3000	12717	25434	152604	254340

Model Selection

Model	Suffix Code							Description
LDGC-	❶	❷	❸	❹	-❺	❻	❼	**Insertion Magnetic Flowmeter**
Diameter	XXXX							Stand for diameter 0200: DN200 3000: DN3000
Structure		S						Compact type with local display
		L						Remote type with 10 meters cable
Electrode Material			M					SS316L
			T					Titanium
			D					Tantalium
			H					Hastelloy Alloy C
			P					Platinum-Iridium
Signal Output				0				No Output
				1				4-20mA / Pulse
Power Supply					-0			110-240V AC
					-1			24V DC (20-36V DC)
					-2			Battery Power Supply
Communication						0		No Communication
						1		Modbus RS485
						2		Hart
						3		GPRS
						4		Profibus DP
Connection							S	Simple Type
							B	Ball Valve Type

Electromagnetic Heat Meter

Hamburg Engineering

Description

Electromagnetic heat meter is a thermal conversion system contains the heat released by the hot fluid measurement instruments measure. It uses a high precision, high reliability magnetic flow meter with platinum RTD for temperature so that the heat meter has very excellent measurement performance. It can be widely used in metering residential quarters office building s and enterprises, centra heating, heating, air conditioning heat.

Model	Suffix Code											Description
LDGH-	❶	❷	❸	❹	❺	❻	-❼	❽	❾	❿	⓫	**Magnetic Heat Meter**
Type	Pt1000											Pt1000 temperature sensors
Diameter		XXXX										Stand for diameter 0006: DN6 2200: DN2200
Structure			S									Compact Type with local display
			L									Remote Type; 10 meters cable default
Electrode Material				M								SS316L
				T								Titanium
				D								Tantalum
				H								Hastelloy Alloy C
				P								Platin-Iridium
Signal Output					0							No Output
					1							4-20mA / Pulse
Liner Material						X						Hard Rubber
						P						Propylene Oxide
						F						PTFE
						A						PFA
Power Supply							-0					110-240V AC
							-1					24V DC (20-36V DC)
							-2					Battery Power Supply
Communication								0				No Communication
								1				Modbus RS485
								2				HART
								3				GPRS
								4				Profibus DP
Sensor Grounding									0			No Grounding
									1			Grounding Ring
									2			Grounding Electrode
Connection										DXX		D16: DIN PN16 Flange; D25: DIN PN25 Flange ...
										AXX		A15: ANSI 150# Flange; A30: ANSI 300# ...
										JXX		J10: JIS 10K Flange; J20: JIS 20K Flange...
										XXX		On request
Body Material											CS	Carbon Steel
											S4	Stainless Steel 304

Liquid Turbine Flow Meter

LWGY-N1 series

LWGY-N2 & A series

LWGY-E series

Operating Principle

Fluid entering the meter first passes through an inlet flow straightener that reduces its turbulent flow pattern. Fluid then passes through the turbine, causing the turbine to rotate at a speed proportional to fluid velocity. As each turbine blade passes through the magnetic field generated by the meter's magnetic pickup, an AC voltage pulse is generated. These pulses provide an output frequency that is proportional to volumetric flow.

Description

The liquid turbine flow meter in the series LWGY are specially designed for usage in water, diesel, gasoline and other fluid measurement and control systems. They operate according to the turbine principle, i.e. the speed of an impeller turning in the fluid flow is measured and converted into pulse or 4-20mA signals

Technical Data

- Output: Pulse ; 4-20mA
- Accuracy:±1.0 of Rate ; ±0.5% of Rate
- Operating Temp.: -20...+60°C
- Fluid Temp.: -20...+150°C
- Body Material: SS304 ; SS316
- Rotor Material: 2Cr13 ; CD4MCu
- Bearing Material: Tungsten Carbide

Flow Range

Diameter (mm)	Standard Range (m^3/h)	Extended Range (m^3/h)
4	0.04-0.25	0.04-0.4
6	0.1-0.6	0.06-0.6
10	0.2-1.2	0.15-1.5
15	0.6-6	0.4-8
20	0.8-8	0.45-9
25	1-10	0.5-10
32	1.5-15	0.8-15
40	2-20	1-20
50	4-40	2-40
65	7-70	4-70
80	10-100	5-100
100	20-200	10-200
125	25-250	13-250
150	30-300	15-300
200	80-800	40-800

Model Selection

Model	Suffix Code									Description
LWGY-	❶	❷	❸	❹	❺	❻	❼	❽	❾	Liquid Turbine Flowmeter
Diameter	XXX									Stand for diameter 004: DN4; 006: DN6 100: DN100; 200: DN200
Converter Type		N1								24V DC; Pulse output; No display
		N2								24V DC; Pulse output; No display; Ex
		A								24V DC; 4-20mA output; No display; Ex
		E1								Battery power supply; No output; Ex ; Digital display
		E2								24V DC; 2- wire 4-20mA output; Ex ; Digital display
		E3								24V DC; Pulse output; Ex; Digital display
		E4								24V DC; 0-20mA output; Ex; Digital display
		E5								24V DC; 3-wire 4-20mA / Pulse output; EX; Digital display
		G								220V AC; 4-20mA output; Ex; Digital display
		FE								FE: Fluidwell E series converter(Refer to page 23)
		FF								FF: Fluidwell F series converter(Refer to page 24)
		Notice:								*1) Modbus RS485 is optical for E2, E3, E4, E5 and "G" type* *2) Dual Power(24V DC+ Battery) is optional for E2, E3, E4, E5 and G*
Accuracy			10							±1.0% of rate
			05							±0.5% of rate
Flow Range				S						Standard Range
				E						Extended Range
Body Material					S4					SS304
					S6					SS316
Rotor Material						Cr				2Cr13
						CD				CD4MCu
Explosion Proof							BT			Exd II BT6
							NA			No explosion proof
Connection								THM		Male thread; Available from DN4...DN50
								THF		Female thread; Available from DN4...DN50
								WAF		Wafer connection
								DXX		D16: DIN PN16 Flange; D25: DIN PN25 Flange...
								AXX		A15: ANSI 150# Flange; A30: ANSI 300# Flange...
								JXX		J10: JIS 10K Flange; J20: JIS 20K Flange...
Temperature Rating									T1	-20...+80°C
									T2	-20...+120°C
									T3	-20...+150°C

Example:

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

LWGY 050 E5 10 S S4 Cr BT D16 T2

❶ 050: DN50
❷ E5: 3- wire 4-20mA / Pulse output; 24V DC power supply
❸ 10: 1.0% of rate accuracy
❹ S: 0.2-1.2m3/h
❺ S4: SS304 body material
❻ Cr: 2Cr13 rotor
❼ BT: Exd II BT6
❽ D16: Flange DIN PN16
❾ T2: -20...120°C

Dimensions

(1) Thread Connection

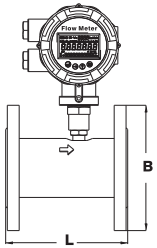
Diameter (mm)	L (mm)	Thread Criteria
4	270	G ½"
6	270	G ½"
10	390	G ½"
15	75	G 1"
20	80	G 1"
25	100	G 1-¼"
32	140	G 2"
40	140	G 2"
50	150	G 2-1/2"

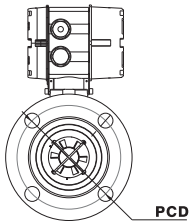
Male Thread Connection

Notice: Other thread criteria is available on request. (Female / Male thread is optional for G, NPT, BSP)

(2) Flange Connection

Notice: The standard flange is DIN PN16; but ANSI and JIS Flange are available on request.





Diameter		L	B Flange Diameter	PCD Bolt Circle Diameter	Bolt Hole Quantity
(Inch)	(mm)	(mm)	(mm)	(mm)	
1/2"	15	75	95	60	4
3/4"	20	80	105	70	4
1"	25	100	115	79	4
1-1/4"	32	140	140	89	4
1-1/2"	40	140	150	99	4
2"	50	150	165	121	4
2-1/2"	65	170	185	140	4
3"	80	200	200	152	4
4"	100	220	220	191	8
5"	125	250	250	216	8
6"	150	300	285	241	8
8"	200	360	340	298	8

Notice: Dimensions above is for DIN PN16 Flange.

Sanitary Liquid Turbine Flow Meter

Description

The sanitary liquid turbine flow meter is specifically designed for measurement of food liquids like milk, cream, juice of various fruits, pharma liquids etc. It is available with compact or remote version of transmitter can be installed either horizontally or vertically with a variety of optional end-fittings to meet your requirements.

-DN4-DN100

-Viscosity from 1 to 10 cst

-Pressure resistant to 10 bar

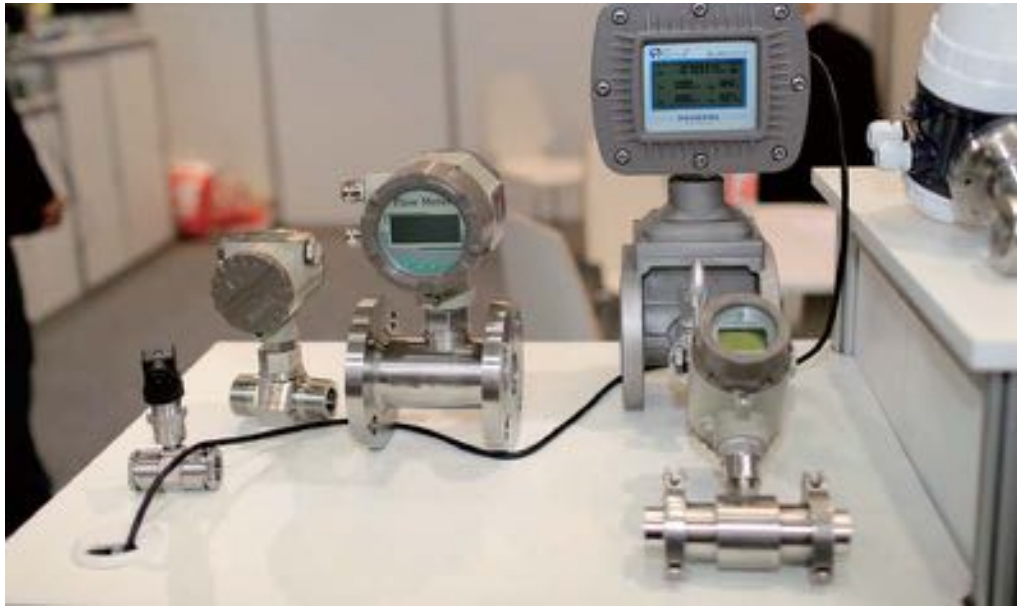
-Communication: Modbus RS485

Model Selection

Model	Suffix Code									Description
LWS-	❶	❷	❸	❹	❺	❻	❼	❽	❾	Sanitary Liquid Turbine Flowmeter
Diameter	XXX									Stand for diameter 004: DN4; 100: DN100
Converter Type		N1								24V DC; Pulse output; No display
		N2								24V DC; Pulse output; No display; Ex
		A								24V DC; 4-20mA output; No display; Ex
		E1								Battery power supply; No output; Ex; Digital display
		E2								24V DC; 2- wire 4-20mA output; Ex; Digital display
		E3								24V DC; Pulse output; Ex; Digital display
		E4								24V DC; 0-20mA output; Ex; Digital display
		E5								24V DC; 3-wire 4-20mA / Pulse output; EX; Digital display
		M								110-240Vac; 4-20mA output; Ex; Digital display
		FE								Fluidwell E series converter (Refer to page 22)
		FF								Fluidwell F series converter (Refer to page 23)
		Notice:								*1) Modbus RS485 is optional for E2, E3, E4, E5 and G type*
										2) Dual Power(24V DC+ Battery) is optional for E2, E3, E4, E5 and G
Accuracy			10							±1.0% of rate
			05							±0.5% of rate
			02							±0.2% of rate
Flow Range				S						Standard Range
				E						Extended Range
Body Material					S4					SS304
					S6					SS316
Rotor Material						Cr				2Cr13
						CD				CD4MCu
Explosion Proof							BT			Exd II BT6
							NA			None
Connection								TRC		Tri-clamp for sanitary connection
Temperature									T1	-20...+80°C
									T2	-20...+120°C
									T3	-20...+150°C

Dimensions

Diameter (mm)	L (mm)	A (mm)	B (mm)	d (mm)	D (mm)
4	50	Φ46	Φ40.5	4	Φ50
6	50	Φ46	Φ40.5	6	Φ50
10	50	Φ46	Φ40.5	10	Φ50
15	100	Φ46	Φ40.5	15	Φ50
20	100	Φ46	Φ40.5	20	Φ50
25	100	Φ46	Φ40.5	25	Φ50
32	120	Φ46	Φ40.5	32	Φ50
40	140	Φ59	Φ53.5	40	Φ64
50	150	Φ73.5	Φ68	50	Φ78
65	170	Φ86	Φ80.5	65	Φ91
80	200	Φ100.5	Φ94	80	Φ106
100	220	Φ113	Φ106	100	Φ119



Mini Turbine Flow Meter

Description

Mini flow meter is based on turbine theory and designed for measuring micro-flow. This meter has extremely high accuracy especially under the condition of high temperature and high pressure. The Electronic pulse transmitter is also integrated in this min flow meter. It can maintain the 2% accuracy and 0.25% repeatability. Because of smart structure design, no debris can store in the working process and it's clear after work.

- 55*40*47mm dimension
- About 300g
- NSF, CE authentication
- Coffee machine application

Technical Data

Items	Diameter (mm)	Measuring Range (L/min)	K-Factor (Ml/imp)
Measuring Range	1.15	0.035-1.6	0.5
	1.3	0.01-1.86	0.6
	1.5	0.045-2.08	0.67
	2	0.085-2.32	1.02
	2.5	0.12-2.4	1.44
	3.7	0.15-3.0	2.28
Pressure	Maximum 20.0 bar		
Temperature	-10°C to 100°C		
Accuracy Level	±2%		
Repeatability Accuracy	±0.25%		
Connection	G 1/4 female thread (ordered to meet need from customers)		
Material	Shell: Green Brass(lead-free brass)		
	Bearing: INO*18/8(1.4305) stainless steel		
	Turbine: PVDF (polyvinylidene fluoride)		
	Magnets: SrFeO ceramics		

Gas Turbine Flow Meter

LWQ-E series

LWQ-D1 & D2 series

LWQ-D4 series

Operating Principle

The operation of the International Gas Turbine Meter is based on the measurement of the velocity of gas. The flowing gas is accelerated and conditioned by the meters straightening section. The straightening vanes prepare the gas flow profile by removing undesired swirl, turbulence and asymmetry before the gas flows to the turbine wheel. The dynamic forces of the flowing fluid cause the rotor to rotate.

The turbine wheel is mounted on the main shaft, with special high precision, low friction ball bearings. The turbine wheel has helical blades that have a known angle relative to the gas flow. The conditioned and accelerated gas drives the turbine wheel with an angular velocity that is proportional with the gas velocity.

Technical Data

Output (Depending on Converter Model)	Pulse 4~20mA
Accuracy	±1.0% of Rate ±1.5% of Rate
Operating Temperature	-20...+60°C
Fluid Temperature	-20...+80°C
Body Material	SS 304 SS 316 Cast Aluminum Cast Steel(D4:DN50-DN200)
Rotor Material	Aluminum alloy Plastic ABS
Bearing Material	SS304

Description

The Gas turbine flow meter in the series LWQ are specially designed for use in natural gas, compressed, air and other fluid measurement. And the volume and mass flow rate are available.

- DN 20- DN400
- Temp.& Press. compensation
- Communication: RS485 / Hart
- Connection: Thread / Flange
- Ten units are optional

Flow Range

Diameter	Standard Flow Range		Extended Flow Range	
(mm)	Code	m^3/h	Code	m^3/h
20/25	S	2.5-25	W	4-40
40	S	5-50	W	6-60
50	S1	6-65	W1	5-70
	S2	10-100	W2	8-100
65	S	15-200	W	10-200
80	S1	15-300	W	10-160
	S2	20-400		
100	S1	20-400	W	13-250
	S2	32-650		
125	S	25-700	W	20-800
150	S1	32-650	W	80-1600
	S2	50-1000		80-1600
200	S1	80-1600	W	50-1000
	S2	130-2500		
250	S1	130-2500	W	80-1600
	S2	200-4000		
300	S	200-4000	W1	130-2500
			W2	320-6500
400	S	400-8000	W	260-8000

Model Selection

Model	Suffix Code								Description
LWQ-	❶	❷	❸	❹	❺	❻	❼	❽	**Gas Turbine Flowmeter**
Diameter	XXX								Stand for diameter 020: DN20; 050: DN50 100: DN100; 400: DN400
Converter Type		N							24V DC; Pulse output; No display; Ex
		A							24V DC; 4-20mA output; No display; Ex
		E1							Battery power supply; No output; Ex; Digital display
		E2							24V DC; 2- wire 4-20mA output; Ex; Digital display
		E3							24V DC; Pulse output; Local display; Ex ; Digital display
		E4							24V DC; 0-20mA output; Local display; Ex; Digital display
		E5							24V DC; 3-wire 4-20mA / Pulse output; EX; Digital display
		FE							Fluidwell E series converter (Refer to page 23)
		FF							Fluidwell F series converter(Refer to page 24)
		D1							24V DC; 2-wire 4-20mA output; Digital display; Temperature & Pressure Compensation
		D2							24V DC; 3-wire 4-20mA output; Digital display; Temperature & Pressure Compensation
		D4							24V DC; 4-20mA output; Modbus RS485; Digital display Temperature & Pressure Compensation
		Notice:							***1) Modbus RS485 is optional for E2, E3, E4, E5, D1, D4***
									2) Battery Power(24V DC + Battery) is optional for E2, E3, E4, E5, D1, D2, D4
									3) D4 converter only configures with cast steel body
Accuracy			10						±1.0% of rate
			15						±1.5% of rate
Flow Range				S					Standard Range
				E					Extended Range
Body Material					S4				SS304
					S6				SS316
					CA				Cast Aluminum
					CS				Cast Steel (Only for D4 type)
Rotor Material						AB			ABS Plastic
						AA			Aluminum Alloy
Explosion Proof							BT		Exd II BT6
							CT		Exia II CT4
							NA		None
Connection								THM	Male Thread; Available from DN4…DN50
								THF	Female Thread; Available from DN4…DN50
								DXX	DN16: DIN PN16 Flange; D25: DIN PN25 Flange…
								AXX	A15: ANSI 150# Flange; A30: ANSI 300# Flange…
								JXX	J10: JIS 10K Flange; J20: JIS 20K Flange…

Vortex Flow Meter

LUGB-D series LUGB-V series

Description

The vortex flowmeter is used for measuring the flow velocity of gases or liquids in pipelines flowing full. The measuring principle is based on the development of a Karman vortex shedding street in the wake of a body built into the pipeline. The periodic shedding of eddies occurs first from one side and then from the other side of a bluff body (vortex-shedding body) installed perpendicular to the pipe axis. Vortex shedding generates a so-called "Karman vortex street" with alternating pressure conditions whose frequency is proportional to the flow velocity.

Application Range	(1) Gas; (2) Liquid;(3) Steam
	Measured Value
Primary Measured Value	Flow Rate
Secondary Measured Value	Volume flow(Pressure and Temperature is available)
	Temperature
Process Temperature	T1 Level: -20…+100°C
	T2 Level: -20…+250°C
	T3 Level: -20…+350°C
Ambient Temperature	-10…+50°C
	Pressure
EN 1092-1	DN200…DN300: PN10
	DN100…DN200: PN16
	DN15…DN80: PN25
	Other pressure on request
ASME B16.5	1/2"…8":150 lb RF
	Other pressure on request
JIS	1/2"…8": 10K
	Other pressure on request
Reference Condition	Flow conditions similar to EN 29104
	Medium: Water/ Gas/ Steam
	Electrical Conductivity:≥300μS/cm
	Temperature: -10…+30°C
	Inlet Section:≥10DN
	Operating pressure: 1 bar/ 14.5 PSIG
Accuracy	For Liquid: ±1.0% of rate
	For Gas and Steam: ±1.5% of rate
Body Material	SS304
	SS316
Converter Material	Standard: Polyurethane coated die-cast aluminum

Model Selection

Model	Suffix Code								Description
LUGB-	❶	❷	❸	❹	❺	❻	❼	❽	Vortex Flowmeter
Fluid	L								Liquid
	G								Gas / Air
	S								Steam
Diameter		XXX							Stand for diameter 015: DN15; 050: DN50 100: DN100; 300: DN300
Structure			S						Compact type
			L						Remote type
Converter Type				N					24V DC; Pulse output; No display; Ex
				A					24V DC; 4-20mA output; No display; Ex
				B					Battery power supply; No output; Ex
				C					24V DC; 4-20mA / Pulse output; Digital display ; Ex
				V					24V DC; 4-20mA / Pulse output (V type is only for Gas/ Steam application); Digital display; Ex
				D					24V DC; 3-wire 4-20mA output; Temperature & Pressure Compensation; Digital display; Ex
				Notice:					*1) Modbus RS485 is optional for C, V, D series*
									2) Dual power (24V DC +Battery) is optional for C, V , D series
Body Material					S4				SS304
					S6				SS316
Explosion Proof						BT			ExdIIBT6
						CT			ExibIICT4
						NA			No explosion proof
Connection							WAF		Wafer connection
							DXX		D16: DIN PN16 Flange; D25: DIN PN25 Flange…
							AXX		A15: ANSI 150# Flange; A30: ANSI 300 # Flange…
							JXX		J10: JIS 10K Flange; J20: JIS 20K Flange…
Temperature Rating								T1	-20…+100°C
								T2	-20…+250°C
								T3	-20…+350°C

Example:

	❶	❷	❸	❹	❺	❻	❼	❽
LUGB	S	100	S	D	S4	CT	D16	T2

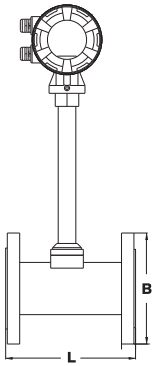
❶ S: Steam application
❷ 100: DN100
❸ S: Compact type with local display
❹ D: 24V DC power supply; temperature and pressure compensation
❺ S4: SS304 body material
❻ CT: ExibIICT4
❼ D16: Flange DIN PN16
❽ T2:-20…+250°C

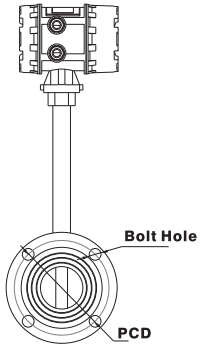
Flow Range

Diameter		Liquid	Gas
(mm)	(Inch)	Flow (m^3/h)	Flow (m^3/h)
15	1/2"	1.2 to 6.2	5 to 25
20	3/4"	1.5 to 10	8 to 50
25	1"	1.6 to 16	10 to 70
40	1-1/2"	2.5 to 26	22 to 220
50	2"	3.5 to 38	36 to 320
65	2-1/2"	6.2 to 65	50 to 480
80	3"	10 to 100	70 to 640
100	4"	15 to 150	130 to 1100
125	5"	25 to 250	200 to 1700
150	6"	36 to 380	280 to 2240
200	8"	62 to 650	580 to 4960
250	10"	140 to 1400	970 to 8000
300	12"	200 to 2000	1380 to 11000

Notice: The flow range as above is for reference only. Consult the factory if you have special requirement. Refer to the nameplate or certificate for actual flow range.

Dimensions





DIN Flange Meter Dimension

Size Code		L	DIN Flange Pressure Rating	Flange Diameter (B)	Bolt Hole Diameter	Bolt Circle Diameter (PCD)	Bolt Hole Quantity
(Inch)	(mm)	(mm)	Mpa	(mm)	(mm)	(mm)	
1/2"	15	180	1.6	95	14	65	4
3/4"	20	180	1.6	105	14	75	4
1"	25	180	1.6	115	14	85	4
1-1/4"	32	180	1.6	140	18	100	4
1-1/2"	40	180	1.6	150	18	110	4
2"	50	180	1.6	165	18	125	4
2-1/2"	65	200	1.6	185	18	145	4
3"	80	200	1.6	200	18	160	8
4"	100	200	1.6	220	18	180	8
5"	125	220	1.6	250	18	210	8
6"	150	220	1.6	285	22	240	8
8"	200	220	1.6	340	22	295	12
10"	250	250	1.6	405	26	355	12
12"	300	300	1.6	460	26	410	12

Swirl Flow Meter

LUX series

Description

Intelligent Swirl flow meter developed by our company is a new flow instrument at the leading level in China. This instrument has a combined function of flow capacity, temp and pressure measuring. It can also conduct auto compensation of temperature, pressure and compressibility factor. It is an ideal gas dosing instrument for petroleum, chemical, electricity and metallurgic industries LUX-U/H.

Feature

- No mechanical moving parts with long service-life
- Requires no special maintenance even after long-time operation
- Dual detect technique to effectively increase detecting signal intensity and reduce obstruction caused by pipeline vibration
- Vibration-proof techniques to effectively suppress vibration and undesired signal caused by pressure oscillation
- Gauge head of the flow meter can rotate by 360 degree; it makes application and installation more convenient.

Model	Suffix Code								Description
LUX-	❶	❷	❸	❹	❺	❻	❼	❽	Swirl Flowmeter
Fluid	L								Liquid
	G								Gas / Air
Diameter		XXX							Stand for diameter 020: DN20; 050: DN50 100: DN100; 300: DN300
Structure			S						Compact type
			L						Remote type
Converter Type				N					24V DC; Pulse output; No display; Ex Temperature & Pressure Compensation
				A					24V DC; 4-20mA output; No display; Ex Temperature & Pressure Compensation
				B					Battery power supply; No output; Ex; Digital display Temperature & Pressure Compensation
				U1					24V DC; 2-wire 4-20mA output; RS485; Ex; Digital display Temperature & Pressure Compensation
				U2					24V DC; 3-wire 4-20mA output; RS485; Ex; Digital display Temperature & Pressure Compensation
				H					24V DC; 3-wire 4-20mA output; Hart; Ex; Digital display Temperature & Pressure Compensation
Body Material					S4				SS304
					S6				SS316
Explosion Proof						BT			ExdIIBT6
						NA			No explosion proof
Connection							DXX		D16: DIN PN16 Flange; D25: DIN PN25 Flange...
							AXX		A15: ANSI 150# Flange; A30: ANSI 300# Flange...
							JXX		J10: JIS 10K Flange; J20: JIS 20K Flange...
							THR		Thread connection
Temperature Rating								T1	-20...+80°C
								T2	-20...+150°C

Fluidwell Turbine Flow Meter - E series

Sure Instrument is the officially appointed strategic partner for FLUIDWELL in China.

The E series is a popular model in our range of explosion proof flow rate indicators. The E-series distinguishes itself by its quality and functionality driven European design and manufacturing.It is more than fulfilling the rules for explosion proof design, it is about safety during the daily operation. Often, the environment is much tougher than the explosion proof requirements demand. Thus dangerousconditions may be experienced due to a broken enclosure or a poorly made flame path. Ruggedness and reliability is where Fluidwell stands for and it is now available in a comprehensive well designed and purpose driven explosion proof flow rate indicator / totalizer.

Fluidwell Converter+SURE Sensor

- Explosion proof according ATEX, IECEx, FM and CSA c-us.
- Easy-to-operate through glasses keypad
- Aluminum or high grade stainless steel Exd enclosure
- Data logging to survey information
- USB communication for configuration or local data extraction
- Integrated HART communication protocol
  Modbus RS232/ RS485 communication option
- Easy K-factor and engineering unit configuration for volumetric or mass
- Display shows flow rate, total, measuring units and a flow rate indicating speedometer
- 7 digit flow rate/ total and 11 digit accumulated total
- Easy configuration with clear alphanumerical display
- Bright bi-color LED backlight
- Auto backup of settings and running totals
- Power requirements: Loop powered, batter or 9-27V DC
- Operational temperature: -40°C to 70°C.

Totalizer Information

Solid die cast or high grade SS316L enclosure

Flow rate indicating speedometer in percentage

Display with bright backlight

Displayed function 11digits(7mm,0.28")

Bottom

Side entry thread 1/2" NPT; 3/4"NPT; M20; M25

USB connector via side entry

Displayed function

Engineering units

7 digits(12mm, 0.47")

Easy-to operate through glass keypad

Operational temperature:-40℃to+70℃

Bottom entry thread 3/4"NPT; 1" NPT; M25

Notice: Flowmeter model selection refer to Page 09(Liquid turbine flow meter)
Page 12(Sanitary liquid turbine flow meter)
Page 15(Gas turbine flow meter)

Fluidwell Turbine Flow Meter - F series

Sure Instrument is the officially appointed strategic partner for FLUIDWELL in China.

F series is an extensive selection of indicators, controllers and monitoring systems for liquid and gas applications as well as for level ,pressure and temperature measurement in industrial environments. Save on installation and maintenance costs. Experience less troubles and hassle. Porfit from its ruggedness and flexibility in mounting and vast range of function. Appreciate its simplicity and user-friendliness and broad and flexible applicability. It comes to high performance standard products and solutions for safe and hazardous area applications.

Fluidwell Converter+SURE Sensor

- Resistant to harsh weather conditions(rain, snow, salty atmospheres temperatures between -40°C and 80°C without use of expensive protective cabinets
- Divers mounting possibilities(walls, pipes, directly onto outdoor sensors, panel mount with minimal depth clearance)
- Unparalleled easy, user-friendly installing and programming by own crew saving cost of expensive specialists
- Long life lithium battery(up to 7 years) for less maintenance costs, time and fuss. Fit and forget
- Plain and sensible menu-driven structure, without confusing abbreviations and difficult codes
- Impressive functional coverage guarantees full range of safe area and intrinsically safe products according ATEX, FM, CSA c-us and IECEx

Totalizer Information

LED backlight, red flashingin case of an alarm

Displayed function

Trend indication

Clear 17mm(0.67") numeric digits

Displayed functior

Resistant to harsh weathe conditions like snow, rain an -40 °C to 80°C

Intrinsically Safe available: ATEX, IECEx, FM and CSA

Measurement units

Status indication

Clear 8mm(0.31") alphanumeric digits

Robust IP67(NEMA4X) field enclosure.

3 rugged buttons and user-friendly menu-structure

Notice: Flowmeter model selection refer to Page 09(Liquid turbine flow meter)
Page 12(Sanitary liquid turbine flow meter)
Page 15(Gas turbine flow meter)

N410 Batch Controller

Sure Instrument is the officially appointed strategic partner for FLUIDWELL in China.

Advantage

- Save time and cost with the easy to operate numerical keypad.
- Key information at a glance as the display simultaneously shows actual value, preset value, batch process indication, relay status and measuring units.
- Easy installation with the rugged aluminum DIN-size panel mount enclosure.

Feature

- Five control inputs for remote START, HOLD, RESUME, keypad lock and external alarm.
- 7 large digits for actual value, flow rate, total and 10 smaller digits for present value, accumulated total and batch count.
- Selectable on-screen engineering units; volumetric&mass.
- Power requirements: 24V DC / 110 - 230V AC.
- Sensor supply: 8.2 / 12 / 24V DC.
- No-flow monitoring.
- Automatic overrun correction.
- Modbus communication option RS232 / RS485

Output

- Two field replaceable, heavy duty, mechanical relays (make-and-break/NO-NC), configurable for i.e. batching with one-stage or two-stage control.
- One transistor output for connection to PLC's or other controlling equipment.

Input

- Ability to process various types of volumetric or mass flowmeter signals:Reed-switch, open collector, NPN, PNP or active 8/12/24V pulse signals.

Application

- Accurate batching or filling of liquids where the batch size changes frequently.
- The N410 offers the perfect solution for batch control applications where a user-friendly instrument is required. Whether you focus on its clear display information, the very easy to operate numerical keypad or the easy menu-driven configuration structure.

Model Selection

Model	Suffix Code								Description
N410-	❶	❷	❸	❹	❺	❻	❼	❽	Batch Controller
Input Signal	P								NPN, open collector, reed-switch, active pulse signals
Communication		CB							Rs232 communication - Modbus RTU
		CH							Rs485 communication- 2wire- Modbus RTU
		CX							None
Panel Mount Front Enclosure			HB						Aluminum front panel - IP67(NEMA4X)
Additional Input Signal				IR					Remote control input to start, hold, reset, keypad lock and external alarm
Digital Output Signal					OR				2 field replaceable, mechanical relays(NO-NC) and 1 passive transistor output
Power Requirement						PG			24V DC and 110-230V AC, both with sensor supply
Hazardous Area							XX		Safe areas only
Other Option								ZS	PNP input signal instead of NPN input signal
								ZX	None

Example

	❶	❷	❸	❹	❺	❻	❼	❽
N410-	P	CH	HB	IR	OR	PG	XX	ZS

❶ P: NPN, open collector, reed-switch, active pulse signals
❷ CH: RS485 communication- 2wire- Modbus RTU
❸ HB: Aluminum front panel - IP67
❹ IR: Remote control input to start, hold, reset, keypad lock and eternal alarm
❺ OR: 2 field replaceable, mechanical relays(NO -NC) and 1 passive transistor output
❻ PG: 24V DC and 110-230V AC, both with sensor supply
❼ XX: Flange DIN PN16
❽ ZS:PNP input signal instead of NPN input signal

Ultrasonic Flow Meter

TUF-2000H

Hand-held Ultrasonic Type

TUF-2000H works on the transit time method. This is based on the principle that sound waves traveling with the flow will move faster than those traveling against it. The resulting difference in transit time is directly proportional to the flow velocity of the liquid and consequently to the flow rate.

TUF-2000P

Portable Ultrasonic Type

TUF-2000P is available in a variety of configuration that permit the user to select an ultrasonic meter with feature suitable to meet particular application requirements. It could also provides the data printed service. Built-in min thermal printed with instant and timing print function and uplink over 20 measuring data to computer or internet.

TUF-2000S

Wall Mounted Ultrasonic Type

TUF- 2000S is a fixed mounted transit-time ultrasonic flow meter, with clamp-on transducers for non-invasive liquid measurement. Our microprocessor based, user friendly, field programmable flow measurement technique allows no interruption of the process flow and has low installation cost.

Sensor

Cables

Charger (Power Supply)

Mounting Device

Aluminum Alloy Box

Model Selection

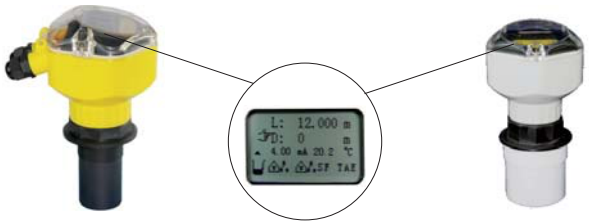
Model	Suffix Code ❶	Suffix Code ❷	Description
TUF-2000			**Ultrasonic Flowmeter**
Host Type	S		Wall Mounted Type
	H		Handheld Type
	P		Portable Type
Sensor Type		TS	DN15-DN100mm; -40…+90°C
		TM	DN50-DN700mm; -40…+90°C
		TL	DN300-DN6000mm; -40…+90°C
		HTS	DN15-DN100mm; -40…+160°C
		HTM	DN50-DN700mm; -40…+160°C

Optional: Thickness Gauge

Specification

Liquid Types	Most clean liquids; liquids containing small amounts of suspended solids or gas bubbles	
Measuring Principle	Transit-Time	
Converter Model	TUF-2000P	Portable with Printer
	TUF-2000H	Hand-Held
	TUF-2000S	Wall-Mounted
Pipe Size	DN15…DN6000	
Sensor Model	TS	DN15…DN100
	TM	DN50…DN700
	TL	DN300…DN6000
	HTS	DN15…DN100
	HTM	DN50…DN700
Max.Fluid Temperature	TS; TM; TL:-40…+90°C	
	HTS; HTM: -40…+160°C	
Accuracy	±1%~±2% value of reading (0.5-30m/s)	
	±1.0% value of reading(online calibration)	
Power Supply and Output (Depending on Model)	(1) Rechargeable Battery(RS232)	
	(2) 110-230Vac(4-20mA/Pulse/RS485)	
	(3) 24V DC(4-20mA/Pulse/RS485)	
Pipe Material	Cast Iron; Stainless Steel	
	Ductile Iron Copper; PVC; Aluminum,	
	Asbestos Fiberglass…etc	
Liner Material	Tar Epoxy, Rubber, Morta	
	Polypropylene,Polystyrol	
	Polystyrene,Polyester,Ebonite	
	Polyethylene,Teflon…etc	
Language	English;Chinese(Other's on request)	
Engineer Unit	M^3;Liter;US Gallon	
	Gallon;Million Gallon;Cubic Feet	
	US Barrels;Imperial Barrels; Oil Barrel	
Totalizer	7 digit; Forward; Reverse & Net Values	
Flow Rate	5 digit with decimal point	
Host Material	Cast Aluminium	
Weight	Around 7 KG/PCS	

Ultrasonic Level Flow Meter



Description

This instrument determines the height from the bottom to the surface of the liquid under test by measuring the air propagation time, the time required for an ultrasonic wave emitted from the detector installed above the tested liquid to reflect on the level of the liquid, and then return to the detector. This product can be widely used for a high degree of measurement of the level of a variety of liquid; solid materials can also be used for distance measurement.

Model Selection

Model	Suffix Code						Description
ULM-	❶	❷	❸	❹	❺	❻	Ultrasonic Level Meter
Distance	XX						05: 5m 10: 10m 15: 15m 60: 60m XX: On request
Power Supply		AC					220V AC
		DC					24V DC
Output Signal			1				2-wire 4-20mA
			2				4-wire 4-20mA
Communication				1			None
				2			RS485
Relay Output					1		None
					2		One Relay Output
					3		Two Relay Output
Probe Material						PO	Polyoxymethylene
						PV	PVDF
						PT	PTFE

❶ ❷ ❸ ❹ ❺ ❻

ULM 05 AC 1 1 1 PT

❶ 05: 0...5 meter
❷ AC: 240V AC power supply
❸ 1: 2 wire 4-20mA output
❹ 1: No communication
❺ 1: No relay output
❻ PT: PTFE material

Technical Data

Maximum Measurable Distance (Depending on the model)	(1)05m; (2)10m; (3)15m; (4)20m; (5)25m; (6)30m; (7)40; (8)50m (9) 60m
Accuracy	±0.25% of Rate ±0.5% of Rate
Resolution	(1)Range< 10m:05m (2)Range >10m:10m
Frequency	40 KHz
Output Signal	4-20mA/RS485(Optional)
Power Supply	220V AC /24V DC
Case Material	PA6/ABS
Blind Area	0.2-0.9m
Maximum Load	750Ω
Ambient Temperature	−20...+55°C

Feature

- Provides reliable, accurate, and non-contact level measurement
- Non-contact technology offers no moving parts to wear, jam, corrode
- FM approved explosion-proof making it ideal for use in hazardous locations
- Easy programming with 6 digit LCD display and simple menu structure
- Output range is adjustable with choices of inputting tank dimensions or by filling and emptying the tank while calibrating and it automatically and scaling to levels it senses
- Window cover allows easy viewing of display
- Fail-safe output options and diagnostic capabilities

Oval Gear Flow Meter

Hamburg Engineering

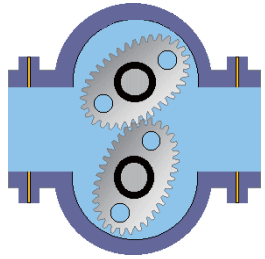
Description

Oval gear flow meter is a pointer display. It is a kind of light volume flow meter of which the print wheel has cumulative count and zero. This flow meter is widely used in various industrial areas to control the liquid flow.

It is applicable to all types of liquid measuring, such as crude oil, diesel, gasoline and so on, with great range and high precision, convenient use and maintenance. Different materials selected can meet the petroleum, chemical, pharmaceutical, food, metallurgy, electricity, transportation and other fields of liquid flow measurement.

Operating Principle

Fluid enters inlet port and then passes through the metering chamber. Inside the chamber, fluid forces the internal gears to rotate before exiting through the outlet port. Each rotation of the gears displaces a specific volume of fluid. As the gears rotate, a magnet on each end of the gear passes a reed switch in the top mounted register's circuit board.



Flow Range

Diameter (mm)	Flow Range(m^3/h)		Temperature
	±0.5% Accuracy	±0.2% Accuracy	
10	0.08~0.4	0.08~0.4	-20°C~+80°C (High Temp.is available on request)
15	0.3~1.5	0.5~1.5	
20	0.4~3	0.8~3	
25	0.8~6	1.5~6	
40	1.5~15	3~15	
50	3~24	8~24	
65	6~40	10~40	
80	8~60	12~60	
100	13~100	20~100	
150	19~190	38~190	
200	34~340	68~340	

Screw Rotor Flow Meter

Model Selection

Model	Suffix Code							Description
LC-	❶	❷	❸	❹	❺	❻	❼	Oval Gear Flowmeter
Diameter	XXX							010: DN10 100: DN100 200: DN200
Converter Type		M0						Mechanical Display; No Output
		M1						Mechanical Display; Pulse Output; 24V DC
		M2						Mechanical Display; 4-20mA Output; 24V DC
		B						LCD Display; No Output; Battery Power
		L1						LCD Display; Pulse Output; 24V DC Power
		L2						LCD Display; 4-20mA Output; 24V DC Power
		L3						LCD Display; 4-20mA + Pulse Output; 24V DC Power
Reset Function			Y					Yes
			N					None
Accuracy				02				±0.2% of Rate
				05				±0.5% of Rate
Structure					S			Standard Type
					T			High Temperature Type(280°C)
					V			High Viscosity Type(3000 cst)
Body Material						CI		Cast Iron
						CS		Cast Steel
						S4		SS 304
						S6		SS 316
Connection							DXX	D16: DIN PN16 Flange; D25: DIN PN25 Flange...
							AXX	A15: ANSI 150# Flange; A30: ANSI 300# Flange...
							JXX	J10: JIS 10K Flange; J20: JIS 20K Flange...

For example

❶	❷	❸	❹	❺	❻	❼
LC	100	M0	Y	02	T	S4	D16

❶ 100: DN100
❷ M0: Mechanical Display, no output with reset
❸ Y: Reset function
❹ 02: Accuracy: 0.2% of rate
❺ T: High temperature type
❻ S4: SS304 body material
❼ D16: Flange DIN PN16

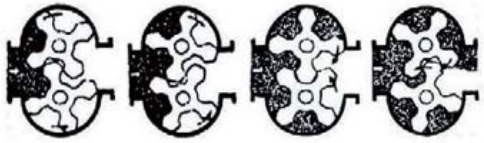
Description

Screw rotor flow meter (Herein after referred to as the flow meter) is a precision instrument which is used to measure and control the flow rate of liquid in the pipe. It can choose different materials to manufacture and widely used in petroleum, chemical industry, light industry, commercial and scientific research departments and so on. Especially suitable for crude oil, refined oil and other liquid measure in light industries.

This flow meter assembly with indicator and word round counter can shows cumulate of flow. Zero counters can also indicate grand total each time and output electric pulse message for second meter and computer inspecting as automatic controller and data handler

Operating Principle

This flow meter belongs to volumetric flow meter, measuring chamber is sealed cavity (refers to the dash area) made up of empty slot of screw rotor (measurement element) and in wall of measurement chamber .,rotor can export 8 times cavity volume per cycle, so, flow of liquid has a direct ration with screw rotor rotating speed, totally value of rotation translated into measurement of liquid flow.



Flow Range

Diameter (mm)	Flow Range(m^3/h)		Temperature
	±0.5% Accuracy	±0.2% Accuracy	
25	1-10	2-20	-20°C~+80°C (High Temp.is available on request)
40	2.5-25	4.2-22	
50	3.6-36	6-30	
65	7-70	14-70	
80	7-70	16-80	
100	15-150	20-120	
150	25-250	44-22	
200	40-400	72-360	
250	60-600	108-540	

Variable Area Flow Meter

Model Selection

Model	Suffix Code							Description
LLS-	❶	❷	❸	❹	❺	❻	❼	Oval Gear Flowmeter
Diameter	XXX							025: DN25 100: DN100 250: DN250
Converter Type		M0						Mechanical Display; No Output
		M1						Mechanical Display; Pulse Output; 24V DC
		M2						Mechanical Display; 4-20mA Output; 24V DC
		B						LCD Display; No Output; Battery Power
		L1						LCD Display; Pulse Output; 24V DC Power
		L2						LCD Display; 4-20mA Output; 24V DC Power
		L3						LCD Display; 4-20mA + Pulse Output; 24V DC Power
Reset Function			Y					Yes
			N					None
Accuracy				02				±0.2% of Rate
				05				±0.5% of Rate
Structure					S			Standard Type
					T			High Temperature Type(280°C)
					V			High Viscosity Type(3000 cst)
Body Material						CS		Cast Steel
						S4		SS 304
						S6		SS 316
Connection							DXX	D16: DIN PN16 Flange; D25: DIN PN25 Flange...
							AXX	A15: ANSI 150# Flange; A30: ANSI 300# Flange...
							JXX	J10: JIS 10K Flange; J20: JIS 20K Flange...

For example

❶	❷	❸	❹	❺	❻	❼
LLS	100	M0	Y	02	T	S4	D16

❶ 100: DN100
❷ M0: Mechanical Display, no output with reset
❸ Y: Reset function
❹ 02: Accuracy: 0.2% of rate
❺ T: High temperature type
❻ S4: SS304 body material
❼ D16: Flange DIN PN16

Description

The Variable Area Flow meter is an instrument for measuring the flow of liquids or gases in pipelines. It includes a vertical tube through which the fluid flows whose diameter increases from the bottom to the top and a float which can move vertically in the tube. As the flow increases this float moves to a higher position until its resistance to the fluid flow is balanced by the float's buoyed weight in the fluid, a value which is constant and independent of the flow rate. The position of the float is a measure of the flow rate. The flow rate values can be read on a scale.

Feature

- Mechanical display and LCD display
- Robust and universal
- The short-stroke design allows the measurement of high flow rate using a relative short metering tube
- Special application is for hazardous, dangerous or aggressive fluid, for high temperature and high pressure rates
- All stainless steel design provides a safe measurement of a variety of liquids, gases and steam- The measuring section can be equipped with a heating jacket
- Standard rotameter is mounted in a vertical pipeline with flow direction upwards

Exia II CT4

Technical Data

Application Range	(1)Gas;(2)Liquid;(3)Steam
Turndown Ratio	10:1
Accuracy(Refer to the accuracy on the nameplate)	±1.0% ; ±1.5%
Temperature	
Max.Process Temperature	T1 level:100°C
	T2 level: 250°C
	T3 level: 350°C
Pressure	
Nominal Operating Pressure	DN15...DN50: ≤4.0Mpa
	DN65...DN200:≤1.6Mpa
Max.Pressure Rating	DN15:32Mpa;DN25:25Mpa;DN50:20Mpa
	DN80:10Mpa;DN100:6.4Mpa
	DN125...DN150:4.0Mpa
Connection	Thread; Tri-clamp; Wafer; Flange

Exd II BT4

Flow Range

DN	Code	Fluid:Water(L/h)		Fluid Air (Nm^3/h)	Pressure Loss (Kpa)
		Normal Type SS304	Corrosion Type PTFE	Normal Type SS304	
15	1A	2.5-25	--	0.07-0.7	1.5
	1B	4.0-40	2.5-25	0.11-1.1	1.5
	1C	6.3-63	4.0-40	0.18-1.8	1.5
	1D	10-100	6.3-63	0.28-2.8	3
	1E	16-160	10-100	0.48-4.8	3
	1F	25-250	16-160	0.7-7	3
	1G	40-400	25-250	1.0-10	3.5
	1H	63-630	40-400	1.6-16	3.5
20 & 25	2A	100-1000	63-630	3-30	1.5
	2B	160-1600	100-1000	4.5-45	3
	2C	250-2500	160-1600	7-70	5
	2D	400-4000	250-2500	11-110	8
32	3A	400-4000	400-4000	12-120	3
	3B	500-5000	500-5000	15-150	4
	3C	600-6000	--	18-180	8
40	4A	500-5000	400-4000	12-120	3
	4B	600-6000	500-5000	16-160	5
50	5A	630-6300	600-6000	18-180	3
	5B	1000-10000	630-6300	25-250	4
	5C	1600-16000	1000-10000	40-400	8
65	6A	1200-12000	1200-12000	48-480	8
	6B	1600-16000	1600-16000	60-600	16
	6C	2000-20000	2000-20000	75-750	22
80	8A	2500-25000	1600-16000	60-600	14
	8B	4000-40000	2500-25000	80-800	14
100	10A	6300-63000	4000-40000	--	30
150	15A	20000-100000	--	--	45

Model Selection

Model	Suffix Code										Description
SH250-	❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	**Variable Area Flowmeter**
Diameter	XXX										015: DN15 100: DN100 200: DN200
Converter Type		N									Mechanical Display; No Output
		A1									Mechanical Display; 0-1000Hz Output
		A2									Mechanical Display; 4-20mA Output; 24V DC power
		B									LCD Display; No Output; Battery power
		C									LCD Display; Pulse ; 24V DC power
		D									LCD Display; 4-20mA; 24V DC power
		E									LCD Display; 4-20mA +Pulse Output; 24V DC power
		Notice:									***Rs485 and Hart are optional for C, D and E converter***
Reset Function			Y								Yes
			N								None
Flow Range				XX							Refer to the Range Table
Fluid					L						Liquid
					G						Gas
Material						S4					Body and Float: SS304
						S6					Body and Float: SS316
						SF					Body: SS304; Float: PTFE
						XX					On request
Installation							H				Horizontal Installation
							V				Vertical Installation
Structure								1			Standard Structure
								2			Heat Insulation
								3			Damper for Gas Measurement
								4			High Temperature
								5			High Pressure
Explosion Proof									NA		Safety Field without Ex-proof
									BT		ExdIIBT4
									CT		Exia II CT4
Connection										DXX	D16: DIN PN16 Flange; D25: DIN PN25 Flange...
										AXX	A15: ANSI 150# Flange; A30: ANSI 300# Flange...
										JXX	J10: JIS 10K Flange: J20: JIS 20K Flange...
										WAF	Wafer Connection
										THR	Thread Connection (Diameter <=DN50)
										TRC	Tri-clamp Connection(Diameter<=DN50)

Example:

	❶	❷	❸	❹	❺	❻	❼	❽	❾	❿
SH250	**050**	**N**	**Y**	**5C**	**L**	**S4**	**V**	**1**	**BT**	**A15**

❶ 050: DN50
❷ N: Mechanical Pointer Display without Output
❸ Y: Reset function
❹ 5C: 1.6-16m3/h
❺ L: Liquid measurement
❻ S4: SS304 body material
❼ V: Vertical installation
❽ 1: Standard Structure
❾ BT: ExdIIBT4
❿ A15: Flange ANSI 150#

Totalizer

Description

SX2000F is a set flow temperature and pressure compensation, trade settlement, power records, data is stored as a multi-functional integrated flow totalizer. In accordance with the relevant international standards, national and industry standards, this instrument has established a variety of flow mathematical models for different flow sensors and media in order to have accurate flow measurement and calculation. It can be widely used in the trade settlement and calculating management network of petrochemical, chemical, metallurgy, electric power, light industry, medicine, city gas, heating and other industries.

Unit

Set the channel units to participate In the compensation calculation. Group of units for each channel are as following.

Differential pressure: Pa, kPa

Frequency: Hz

Volume: L/h, m3/h, km3/h

Flow: use flow units, channel units are not available, kg/h, L/min, t/h, m3/h, km3/h

Temperature: °C

Data Records

- While recording the instantaneous flow rate, temperature, pressure, differential pressure, the amount of the instantaneous frequency
- Record interval of 1 min / 2 min / 5 min / 10 min / 20 min / 30 min / 60 min optional

Measuring Medium

- Saturated steam (temperature & pressure compensation)
- Superheated steam
- Water
- General liquids
- Single gas (support 18 kinds of standard gas: air Air, nitrogen N2, oxygen O2, helium He, hydrogen H2, argon Ar, C0, carbon dioxide CO2 , hydrogen sulfide H2S, ammonia NH3, methane CH4, ethane C2H6, propane C3H8 and butane C4H10, ethylene C2H4, acetylene C2H2, propylene C3H6, butene C4H8)
- General gas
- Mixed gas
- Artificial gas

Signal

- Traffic signal: 4-20mA and frequency input support. 4-20mA input to provide a set of DC24V power distribution, provides a set of input frequency and a group DC12V DC24V power distribution.
- Temperature signal: support 4-20mA, PT100, PT1000 inputs.
- Pressure signal: 4-20mA input support. Providing a set of DC24V power distribution
- Switch signal: Support mains failure alarm
- Transmission output: 4-20mA transmitter output support
- Alarm Output: Supports a group of relay contact output

Model Selection

Model	Suffix Code								Description
SX2000F-	❶	❷	❸	❹	❺	❻	❼	❽	Totalizer
Flow Signal	01								4-20mA(24V DC)
	02								Frequency(0...10000Hz)
	03								Pulse
Temperature Signal		NA							None
		04							4-20mA
		05							Thermal Resistance(PT100<-200~650°C>)
		06							Thermal Resistance (PT1000<0~300°C>)
Pressure Signal			NA						None
			07						4-20mA
Alarm Output				NA					None
				08					One Line Alarm
				09					Two Lines Alarm
Communication					NA				None
					10				Modbus- RS485
					11				RS232
Power Supply for Sensor						NA			None
						1P			One channel
						2P			Two channel
Device Power							AC		110-240V AC
							DC		24V DC
USB Storage								NA	None
								U	U Disk(4GB)

Example:

	❶	❷	❸	❹	❺	❻	❼	❽
SX2000F	01	04	07	08	10	NA	AC	U

❶ 01: 4-20mA flow signal
❷ 04: 4-20mA temperature signal
❸ 07: 4-20mA pressure signal
❹ 08: One line alarm output
❺ 10: Modbus RS485 communication
❻ NA: None power supply for sensor
❼ A:110-240V AC device power supply
❽ U: U Disk(4GB) storage

Ultrasonic Heat Meter

Technical Data

Accuracy	±2.0%; ±3.0%
Pressure Drop	< 10kPa/qp
Max.Working Pressure	1.6MPa
Temperature Range	4～95°C
Temperature Difference	3～70K
Min.Temperature Difference	3K
Temperature Resolution	0.01°C
Ambient Range	A Type,B Type
Battery's Lifetime	Over 6 Years
Installation	Horizontal; Vertical; Slope
Sensor	Platinum PT1000
Protection Level	IP54、IP65、IP67、IP68
Digital Display	8 Numbers

Model Selection

Model	Suffix Code						Description
RL-	❶	❷	❸	❹	❺	❻	**Ultrasonic Heat Meter**
Diameter	XXX						Stand for diameter 015: DN15 200: DN200
Accuracy		2					±2% of rate
		3					±3% of rate
Communication			R				RS485
			N				None
Infrared Function				Y			Yes
				N			None
Installation					V		Vertical
					H		Horizontal
					S		Slop
Protection Rating						4	IP54
						5	IP65
						7	IP67
						8	IP68

Description

Ultrasonic Heat meters are gaining wide usage in commercial, industrial and medical applications. Major benefits of utilizing this type of flowmeter are higher accuracy, low maintenance (no moving parts), noninvasive flow measurement, and the ability to regularly diagnose health of the meter. This application note is intended as an introduction to ultrasonic time-of-flight (TOF) flow sensing using the TDC1000 ultrasonic analog-front-end (AFE). Information regarding a typical off-the-shelf ultrasonic flow sensor is provided, along with related equations for calculation of flow velocity and flow rate. Included in the appendix is a summary of standards for water meters and a list of low cost sensors suitable for this application space.

Feature

- Size from DN15…200
- LCD display with 8 digitals
- Both measuring the hot or cold medium
- Temperature sensor material is platinum PT1000
- Patented product
- No moving parts
- Flexible installation
- RS485 communication, infrared window, remote control
- Battery's life around 6 years

Flow Range

Diameter (mm)	Min (m^3/h)	Normal (m^3/h)	Max (m^3/h)
15	0.03	1.5	3
20	0.05	2.5	5
25	0.07	3.5	7
32	0.12	6	12
40	0.2	10	20
50	0.3	15	30
65	0.5	25	50
80	0.8	40	80
100	1.2	60	120
125	2.0	100	200
150	3.0	150	300
200	5.0	250	500

Temperature Transmitter

Description

A temperature transmitter is an electrical instrument that interfaces a temperature sensor (e.g. thermocouple, RTD, or thermistor) to a measurement or control device (e.g. PLC,DCS, PC, loop controller, data logger, display, recorder, etc.)Typically, temperature transmitters isolate, amplify, filter noise, linearize, and convert the input signal from the sensor then send(transmit)a standardized output signal to the control device.

Output Signal (Depending on Model)	0-10V;1-5V; 4-20mA
Accuracy	±0.2% FS
Operating Temperature	0…+50℃
Voltage	110-240V AC; 24V DC
Power Consumption	< 3W
Frequency	50-60Hz
Function	Communication: RS485 Total Flow Reset Alarm Output:one or two relays

Feature

-High accuracy 2-wire temperature transmitter
-1000 ohm, Class A platinum RTD sensing element
-4-20mA analog output signal

Model Selection

Model	Suffix Code							Description
TT-	❶	❷	❸	❹	❺	❻	❼	**Temperature Transmitter**
Input Signal	P							Pt100(Thermal Resistance -200…+600 °C); Pt1000 is optional
	C							Cu50(Thermal Resistance -50…+150 °C)
	K							Thermocouple: 0…+1200 °C
	E							Thermocouple: 20…+800 °C
	S							Thermocouple: 0…+1600 °C
Connection		1						M27*2
		2						G1/2"
		3						On request
Detector Diameter			6					6mm
			8					8mm
			10					10mm
			12					12mm
			XX					On request
Display				Y				Local display
				N				None
Explosion Proof					NA			None
					BT			ExdIIBT6
Output						A		4-20mA
						B		0-10V
						V		1-5V
						N		None
Communication							1	Modbus RS485
							2	Hart
							3	No communication

Pressure Transmitter

Ceramic Piezoresistive

Pressure Type	Max Range	Min Range
Relative Pressure	0~600bar	0~0.5bar
Negative Pressure	-100kPa~0	-50KPa~0
Absolute Pressure	0~2bar	0~0.5bar

Diffused Silicon

Pressure Type	Max Range	Min Range
Relative Pressure	0~40Mpa	0~10KPa
Negative Pressure	-100KPa~0	-10KPa~0

Ceramic Capacitor

Pressure Type	Max Range	Min Range
Relative Pressure	0~2Mpa	0~1Kpa
Negative Pressure	-100KPa~0	-1KPa~0

Model Selection

Model	Suffix Code								Description
PT-	❶	❷	❸	❹	❺	❻	❼	❽	Pressure Transmitter
Diaphragm	1								Ceramic Piezoresistive
	2								Diffused Silicon
	3								Ceramic Capacitors
Explosion Rating		NA							None
		BT							ExdIIBT4
Connector Material			S6						SS316
			S4						SS304
Connection				1					M20*1.5(Inner Hole 3mm) Male
				2					M20*1.5(Inner Hole 10mm) Male
				3					G1/2" Male (Inner Hole 3mm)
				4					G 1/2" Male(Inner Hole 10mm)
				5					1/2" NPT Male
				6					On request
Signal Output					A				4-20mA
					1				1-5V
					2				0-10V
Display Type						C			LCD
						E			LED
						N			None
Accuracy							2		0.2%
							5		0.5%
Measuring Form								G	Gage Pressure
								A	Absolute Pressure

Gas Roots Flow Meter

Description

It is a positive displacement, rotary type gas meter designed for continuously measuring and indicating the accurate measurement of gas in a pipeline. Gas Roots flow meters are suitable for handling most types of clean, dry, common gases at either constant or varying flow rates. Meters of standard construction are not directly suitable for handling acetylene, biogas or sewage gas. Contact the factory for information on specially constructed meters made of materials directly compatible with these and other gases.

Application

For some gas industry business accounting which used in some fields,like, restaurant, hotels, gas pressure regulation station, civil boiler, etc... Also available to measure some gases like, propane, nitrogen and others which have not corrosive mediums.

Specification

Connection	DIN PN16, JIS and ANSI
Accuracy	±1.5% of rate
	±1.0% of rate
Condition	Fluid Temperature:-10...+60°C
	Ambient Temperature:-30...+60°C
	Relative Humidity:5%-90% RH
	Atmospheric Pressure:86...106Kpa
Power Supply	Main Power:24V DC
	Backup Battery:3.6V DC Lithium Battery
Power Consumption	<1W
Output	Pulse
	4-20mA
	IC card
	Modbus RS485

Model Selection

Model	Suffix Code						Description
LLQ-	❶	❷	❸	❹	❺	❻	Gas Roots Flowmeter
Diameter	XXX						025: DN25 100: DN100 250: DN250
Flow Range		Q-XX					Refer to table
Converter Type			N				Basic Meter: Mechanical display without output
			C				Digital display; Temperature and pressure compensation; Pulse; 4-20mA; Control signal for IC card; Optical: Modbus RS485
			D				Digital Display; Automatic temperature and pressure compensation Standard output: 4-20mA/ Pulse / Control signal for IC card Optional: Modbus RS485
Accuracy				10			±1.0% of rate
				15			±1.5% of rate
Pressure Rating					WP1		1.0 Mpa
					WP2		1.6 Mpa
Connection						DXX	D16: DIN PN16 Flange; D25: DIN PN25 Flange; DN40: DIN PN40 Flange...
						AXX	A15: ANSI 150# Flange; A30: ANSI 300# Flange; A60: ANSI 600# Flange...
						JXX	J10: JIS 10K Flange; J20: JIS 20K Flange; J40:JIS 40K Flange...

Flow Range

Diameter	Code	Start Rate	Max Flow Rate	Pressure Loss	Pressure Rate	Accuracy	Turndown Ratio	Body Material
		m³/h	m³/h	Pa	Mpa			
DN25	Q-16	0.6	16	120	1.0/1.6	1.5/1.0	20:1	Aluminum Alloy
DN40	Q-20	0.6	20	130	1.0/1.6	1.5/1.0	20:1	
	Q-25	0.6	25	130	1.0/1.6	1.5/1.0	20:1	
	Q-30	0.6	30	130	1.0/1.6	1.5/1.0	20:1	
	Q-40	0.6	40	180	1.0/1.6	1.5/1.0	30:1	
	Q-60	0.6	60	180	1.0/1.6	1.5/1.0	60:1	
DN50	Q-20	0.6	20	140	1.0/1.6	1.5/1.0	20:1	
	Q-25	0.6	25	140	1.0/1.6	1.5/1.0	20:1	
	Q-30	0.6	30	140	1.0/1.6	1.5/1.0	20:1	
	Q-40	0.6	40	200	1.0/1.6	1.5/1.0	30:1	
	Q-60	0.6	60	200	1.0/1.6	1.5/1.0	60:1	
	Q-85	0.6	85	210	1.0/1.6	1.5/1.0	70:1	
DN65	Q-100	0.6	100	220	1.0/1.6	1.5/1.0	70:1	
	Q-140	0.6	140	220	1.0/1.6	1.5/1.0	120:1	
DN80	Q-100	0.8	100	220	1.0/1.6	1.5/1.0	70:1	
	Q-140	0.8	140	240	1.0/1.6	1.5/1.0	100:1	
	Q-200	0.8	200	240	1.0/1.6	1.5/1.0	100:1	
DN100	Q-300	0.8	300	280	1.0/1.6	1.5/1.0	110:1	
	Q-450	0.8	450	300	1.0/1.6	1.5/1.0	110:1	
DN150	Q-650	10	650	580	1.0/1.6	1.5/1.0	80:1	Cast Iron
	Q-1000	10	1000	600	1.0/1.6	1.5/1.0	80:1	
DN200	Q-1600	20	1600	850	1.0/1.6	1.5/1.0	60:1	
DN250	Q-3000	30	3000	1050	1.0/1.6	1.0/1.6	40:1	

Fluorescence Dissolved Oxygen

Hamburg Engineering

CE	Low Voltage Directive 2014/35/EU
	Electromagnetic Compatibility Directive 2014/30/EU
	RoHS 2 Directive 2011/65/EU
	EN 61010-1:2010; EN 61316-1:2013

Operating Principle

The DO7 sensor is based on the ability of selected substances to act as dynamic fluorescence quenchers. The fluorescent indicator is a special platinum porphyrin complex embedded in a gas permeable foil that is exposed to the surrounding water. A black optical isolation coating protects the complex from direct incoming sunlight and fluorescent particles in the water.

The sensing foil is pushed against a sapphire window by a screw mounted securing plate, the foil is excited by modulated green light, and the phase of a returned red light is measured , the duration and intensity of the fluorescence are directly dependent on the amount of oxygen in the surrounding. With little to no oxygen, the response is long and intense. Oxygen quenches the fluorescence response so as the oxygen level increases the response becomes shorter and less intense . DO7 sensor use phase difference to calculate the oxygen level

Application

The DO7 is designed for the continuous measurement of dissolved oxygen in water. Typical applications include:

- The measurement and control of the oxygen in aeration basins
- The monitoring of oxygen in the effluent from a sewage treatment plant,
- The measurement and control of the oxygen content of public water supplies,
- The measurement and control of the oxygen at fish farms.
- The oxygenation of drinking water.

Specification

Measure Principle	Optical measure by luminescence
Range	0.00~20.00ppm; 0.00~20.00mg/l, 0~200%
Resolution	0.01
Accuracy	±0.1mg/l; ±0.1ppm; ±1%
Respond Time	T90<60s
Operate Temp.	0...+50°C
Store Temp.	-10...+60°C
Protection	Immersible, IP68
Pressure	5bar
Weight	0.45kg(Sensor & 3 meters cable)
Material	SS316L, Titanium optional
Digital Output	Modbus RS485
Power	24V DC (18~36V DC)
Dimension	Dia. 1.42", & 8.27" length

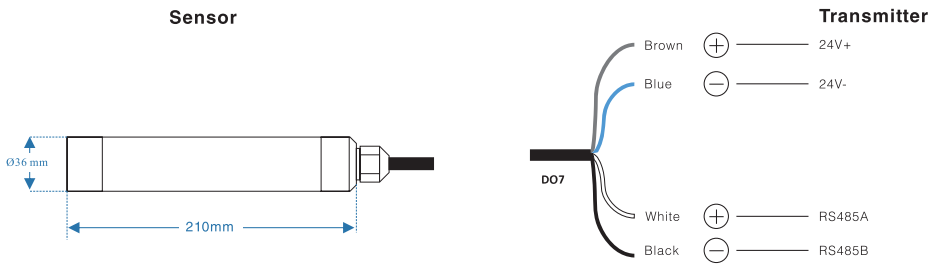
Feature

- High precision and accuracy. Measure absolute oxygen concentrations without field calibrations
- Integrates directly into the DO7 with Smart Sensor technology - “Plug & Play”
- No membrane, stirring/flow, or cleaning required
- Ultra-rugged construction – 316L, Titanium options
- Sapphire sensor window - extremely scratch resistant
- All of the optics and electronics are solid-state with no moving parts
- Optical sensor is not damaged by ambient light, unlike other luminescent DO technologies
- Fully compatible with PC software Delta-Phase ViewTM for easy setup and data logging
- Low sensitivity to fouling
- Fast response time

Model Selection

Model	Suffix Code	Description
DO7-	❶	Optical Dissolved Oxygen
Cable Length	C10	10' cable
	C30	30' cable
	C50	50' cable
	XX	On request

Wire Connection



Transmitter

GDC-01/02 Terminal
Single or Dual-Channel

GDC-04/06/08 Terminal
Multi-channel up to 8

Handheld Terminal

Turbidity & SS Sensor

Operating Principle

The TS7 sensor uses a long life near infrared (880nm) LED light source, and is designed in line with ISO7027 / EN27027 standard scattered light principle. The scattered light method indicates that in the measuring water, the light emitted from the sensor light source is reflected when it encounters the suspended solids. The reflected light also known as the scattered light is the collected by the optical detector arranged at a 90-degree angle with the light source.

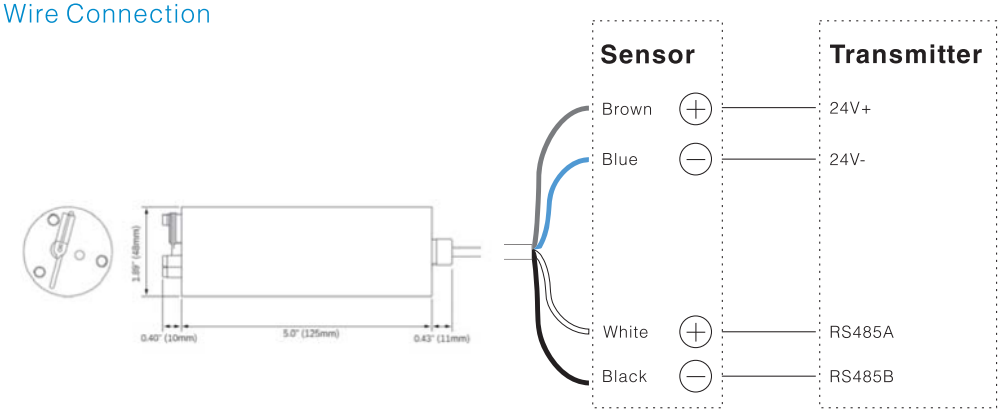
CE	
	Low Voltage Directive 2014/35/EU
	Electromagnetic Compatibility Directive 2014/30/EU
	RoHS 2 Directive 2011/65/EU
	EN 61010-1:2010; EN 61316-1:2013

The turbidity is measured based on the intensity of the detected scattered light and the concentration of the suspended matter in the water. This is called the 90 ° scattered light method. With the simple optical structure, the TS7 sensor has a high and balanced sensitivity to the suspended particles of various sizes. The higher turbidity in the water, the higher the amount of scattered light the TS7 sensor receives. Nephelo metric Turbidity Units(NTU) are the units of measurement used by a nephelo meter meeting EPA design criteria. Turbidity is expressed in NTU, which is based on the light-scattering properties of a standardized formazin polymer solution.

Measuring Principle	Near infrared LED (880nm) and 90° scattered light method in accordance with ISO 1027/EN 27027
Range	0~500NTU; 4000NTU 0~1250 mg/L; 0~50g/L
Resolution	0.01to 1NTU 0.01 to1mg/l
Unit	NTU, FTU, ppm, mg/L, g/L
Accuracy	<±1%FS(Turbidity) <±2%FS(SS)
Repeatability	±2%FS
Operate Temp.	32 to 122 °F (0 to 50°C)
Store Temp .	14 to 140 °F (-10 to 60°C)
Protection	Immersible, >IP68
Pressure	5bar
Power	24V DC ±10% from GDC
Consumption	At regular operation: 50mA(Max) At cleaning operation: 240mA(Max)
Digital Output	Modbus RTU
Auto-Cleaning	Automatic wiper cleaning system
Material	SS316L, Sapphire Glass
Weight	38.8Oz (1.1kg Sensor with 30' cable)

Coriolis Mass Flow Meter

Wire Connection

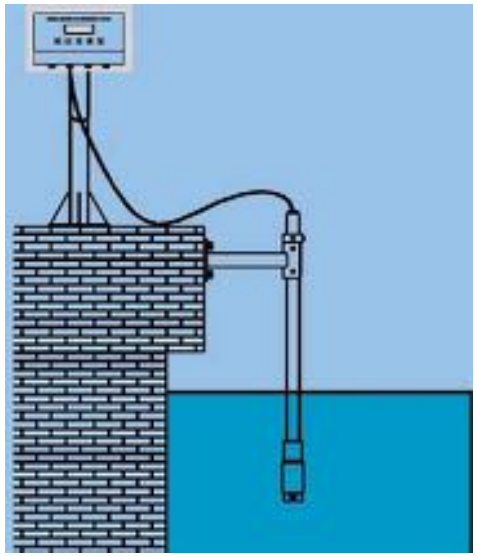


SCM-Series Coriolis Mass Flow Meter directly measures the "Mass" of the medium with high accuracy based on the Coriolis Principle (Coriolis Force). The accuracy would not be affected by any factors like the temperature, pressure, density, viscosity, etc. And the compensation calculation is not required. The Coriolis Mass Flow Meter consists of two parts: the Senor and the Transmitter. The Corioils Mass Flow Meter is designed and produced based on the national standard of explosion- proof standards. The Explosionproof standard is Exd ib Ii Ct5 Gb.

Coriolis Mass Flow Meter could directly measure the " Mass" of the liquid. And the accuracy is the highest among all types of flow meter, saying, 0.1~0.2%. The range of application is very large, and it could be used for the medium that difficult to be measured, like, high temperature, high pressure, high viscosity, double phases, triple phases. The requirements for the installation are low, the straight pipe requirement in front of and behind the Coriolis Mass Flow meters are low. They are more reliable, stable, and maintenance level is low.

Model Selection

Model	Suffix Code	Description
TS7-	❶	Turbidity & SS Sensor
Cable Length	C10	10' Cable
	C30	30' Cable
	C50	50' Cable
	XX	On Request



Application	Suitable for liquid,gas, liquid-solid, Liquid-gas mass measurement or volume measurement
Material of Wet Part	SS316L/ Hastelloy HC
Pressure	Refer to chart shown above. Special orders would be placed for high pressure
Medium Temerature	-50...+150°C -50...+250°C -50...+350°C -100...+350°C
Enviroment Temperature	Sensor: -20°C...+150°C Transmitter: -20°C...+70°C
Flow Rate Measurement Accuracy	0.2%; 0.1% optional
Density Measurement Accuracy	0.002g/cm3;0.001g/cm3 optinal
Repeatability	0.10% Flow Rate±[1/2(Zero Point Stability/ Flow Rate)*100]% flow rate
Output Signal	4~20mA Load Resistance<500Ω(Instantaneous or Density optional) 0~10kHz Instantaneous Flow Rate pulse signal; Standard RS485 Communication
Explosion-proof	Ex d ib II CT5 Gb

Flow Range

Micro Type

Model	DN (mm)	Flow Range (kg/h)	Working Pressure (Mpa)	Connection Type
SCM-1-1-AB	1.5	0~4	0~32	Weld Joints ø6×1.5
SCM-1-1-A	3	0~40	0~32	Weld Joints ø6×1.5
SCM-1-1-B	6	0~100	0~25	Weld Joints ø10×2
SCM-1-2-A	8	0~200	0~20	Weld Joints ø10×1

Medium-Small Type

Model	DN (mm)	Flow Range (kg/h)	Working Pressure (Mpa)	Connection Type
SCM-1-3-A	12	0~500	0~25	Weld Joints ø20×4
SCM-1-3-B	14	0~1000	0~25	Weld Joints ø20×3
SCM-1-4	16	0~3000	0~25	Weld Joints ø20×2
SCM-1-5-A	25	0~10000	0~25	Weld Joints ø31×3

Large-Scale Type

Model	DN (mm)	Flow Range (t/h)	Working Pressure (Mpa)	Connection Type
SCM-1-3-A	10	0-0.5	0~4	Flange 10
SCM-1-3-B	15	0-1.0	0~4	Flange 15
SCM-1-4	20	0-3.0	0~4	Flange 20
SCM-1-5-A	25	0-10	0~4	Flange 25
SCM-1-5-B	40	0-20	0~4	Flange 40
SCM-1-6-A	50	0-30	0~4	Flange 50
SCM-1-6-AB	65	0-50	0~4	Flange 65
SCM-1-6-B	80	0-100	0~4	Flange 80
SCM-1-6-C	100	0-150	0~4	Flange 100
SCM-1-6-D	150	0-300	0~2	Flange 150
SCM-1-6-E	200	0-500	0~2	Flange 150

Micro Type

Medium-Small Type

Large-Scale Type

Model selection

Model	Suffix Code											Description
SCM-	❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	⓫	Coriolis Mass Flowmeter
Diameter	1A											DN3 ; 0-40 kg/h
	1B											DN6 ; 0-100 kg/h
	2A											DN8 ; 0-200 kg/h
	3A											DN10 ; 0-500 kg/h
	3B											DN15 ; 0-1000 kg/h
	4A											DN20 ; 0-3000 kg/h
	5A											DN25 ; 0-10 ton/h
	5B											DN40 ; 0-20 ton/h
	6A											DN50 ; 0-30 ton/h
	6AB											DN65 ; 0-50 ton/h
	6B											DN80 ; 0-100 ton/h
	6C											DN100;0-150 ton/h
	6CD											DN125 ; 0-200 ton/h
	6D											DN150 ; 0-500 ton/h
	6E											DN200 ; 0-800 ton/h
	6F											DN250 ; 0-1000ton/h
Signal Output		1										4-20mA/ 0-10KHz
Communication			1									RS485
			2									Hart
			3									None
Pressure Rating				16								1.6 Mpa
				40								4.0 Mpa
				XX								On request
Temperature Rating					T1							-50...+150°C
					T2							-50...+250°C
					T3							-50...+350°C
					T4							-200...+150°C
Wet Part Material						S6						SS 316
						HC						Hastelloy Alloy C
						PT						PTFE (Only available for large diameter)
						XX						On request
Accuracy Rating							02					0.20% of rate
							15					0.15% of rate
							10					0.10% of rate
Connection								AXX				ANSI Flange; A15: ANSI 150#; A30: ANSI 300#...
								DXX				DIN Flange; D16: DIN PN16; DN25: DIN PN25...
								JXX				JIS Flange; J10K: JIS 10K; J20K: JIS 20K...
								TRC				Tri-clamp type(Sanitary connection)
								THR				Thread connection
Body Material									S4			SS304
									S6			SS316
Structure										S		Compact type with local display
										L		Remote display include bracket
Power Supply											0	24V DC
											1	220V AC

Ultrasonic Gas Flow Meter

Technical Data

Medium	No impurities medium with low flow speed
Implementation Standard	Measuring Natural Gas with Gas Ultrasonic Flowmeter（GBT 18604-2014）
Verification Regulation	The Verification Regulation of Ultrasonic Flowmeter（JJG1030-2007）
Diameter	DN50-DN300
Body Material	SS304
Connection	Flange Connection
Flange Standard	GB/T 9119-2010
Nominal Pressure Rating	1.6MPa

Operation Condition

Calibration Condition	Calibration Device	Sonic Nozzle Calibration Device	
	Environment Condition	Ambient Temperature	20°C
		Relative Humidity	75%
	Fluid Temperature	-20°C...+80°C	
Application Condition	Ambient Temperature	-20°C...+80°C	
	Relative Humidity	5% ~ 90%	
	Atmospheric Pressure	86kPa ~ 106kPa	
	Fluid Pressure	≤ 1.6MPa	

Flow Range

Diameter (mm)	**Standard Flow Range (m^3/h)**
50	4 - 200
80	8 - 540
100	10 - 850
150	19 - 1900
200	34 - 3400
250	53 - 5300
300	76 - 7600
Accuracy	±1.5% of Rate (Optional for ±1.0% of Rate)

Memo

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