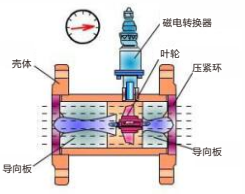
The selection is detailed on page 4

FT61

Gas Turbine Flowmeter

Working principle

When the air flow enters the flow meter, it first passes through the leading fluid of the independent movement and accelerates. Under the action of the fluid, the turbine blade and the flow direction of the fluid form a certain Angle. At this time, the turbine generates rotational torque and starts to rotate after the turbine overcomes the resistance moment and frictional moment. When the resistance moment reaches equilibrium, the rotational speed is stable, and the rotational speed of the turbine is linearly related to the flow rate. The magnetic resistance of the sensor is periodically changed by the magnet on the rotating sending disk, so that the pulse signal proportional to the volume flow rate of the fluid is induced at both ends of the sensor. The signal is amplified and shaped by the preamplifier, and the pressure and temperature signals detected by the pressure and temperature sensor are simultaneously transmitted to the flow integrator for processing, and the standard volume flow rate and the standard volume total amount are directly displayed.



Product application

Mainly applicable to liquefied natural gas (LNG) liquid nitrogen, liquid oxygen, liquid CO2, liquid argon, liquid ammonia

Liquid plant, receiving station, terminal, laboratory, gas plant

Low temperature pump valve manufacturer test center

Product description

The gas turbine flowmeter has been optimized by absorbing the advanced technology of international flow meters, integrated the theories of aerodynamics, fluid mechanics, electromagnetism and other theories, and developed by itself. It is a new generation of high-precision and high-reliability gas precision metering meters integrating temperature and pressure, flow sensors and intelligent flow integrators. It has excellent low-pressure and high-pressure metering performance. It has multiple signal output modes and low sensitivity to fluid disturbance.

Functional characteristics

Using the new sensor, low starting flow, small pressure loss, anti-vibration and anti-pulsation flow performance, not easy to corrode, good reliability, long service life.

With new microprocessor and high-performance integrated chip, it has high calculation precision, powerful function and superior performance.

Using advanced micro-power high technology, low power consumption. It can be operated by internal battery for a long time, and can be operated by external power supply.

According to the flow frequency signal, the instrument coefficient can be divided into eight sections for automatic linear correction, which can improve the calculation accuracy of the instrument according to the needs of users.

Using EEPROM data storage technology, with historical data storage and query functions, three kinds of historical data recording methods for users to choose.

The meter head can be rotated 180°, easy to install and use.

High accuracy, generally up to ± 1.5% R, ±1.0% R.

Good repeatability. Short-term repeatability can reach 0.05%-0.02%, precisely because of its good repeatability, it is the preferred flowmeter in trade settlement.

It can detect the temperature, pressure and flow rate of the measured gas, can automatically track and compensate the flow rate, and display the gas flow rate under the standard state (Pn= 101.325KPa. Tn= 293.15K), and can query the temperature, pressure, time, date and other data in real time.

✆ 400-860-9760

For more product information, please visit www.ludwig-schneider.com.cn

LUDWIG
INSTRUMENT

Technical parameter

Executive standard	Measurement of gas flow in closed piping - gas turbine flowmeter(GB/T8940-2003)
Meter diameter (mm) and connection method	25、40、50、65、80、100、125、150、200、250、300 Flange connection
	25、40、50 Threaded connection is available
Precision class	±1.5%R (±1%R Special requirement)
Range ratio	1:10,1:20,1:30
Instrument material	Body: 304 stainless steel or cast aluminum
	Impeller: anti-corrosion ABS or high quality aluminum alloy
	Converter: Cast aluminum
Conditions of use	Medium temperature: -20℃~+80℃
	Ambient temperature: -30℃~+60℃ Relative humidity: 5%~90%
	Atmospheric pressure: 86KPa~106KPa
Working power supply	A. External power supply: +24VDC±15%, ripple < ±5%, suitable for 4-20mA output, pulse output, RS485, etc
	B. Internal power supply: 1 set of 3.0V10AH lithium battery, the battery voltage can work normally at 2.0V-3.0V. An undervoltage indication occurs when the voltage is below 2.0
Overall power consumption	A. External power supply: 1W
	B. Internal power supply: average power consumption 1W, can be used for more than three years.
Signal output function	Pulse signal, 4-20mA current signal, control signal
Communication output function	RS485 communication
Real-time recording function	Overstop record, daily record, fixed time interval record
Signal line interface	Internal thread M20×1.5 or other
Explosion-proof class	Ex ia IIC T3... T6, Ex db IIC T6... T1 Gb
Class of protection	IP65，IP66，IP67 Selectable

Flow integrator working principle

Flow integrator is composed of temperature and pressure detection analog channel, flow sensor channel and micro-processing unit, and is equipped with external interface to output various signals. The microprocessor in the flowmeter compensates the temperature and pressure according to the gas phase equation and automatically corrects the compression factor. The gas phase equation is as follows:

Shizhong:

Qn=Zn/Zg ■ (Pg+Pa)/Pn ■ Tn/Tg · Qg

Qn-Volume flow under standard conditions(m^3/h)

Qg-Uncorrected volume flow(m^3/h)

Pg-Gauge pressure at the pressure detection point of the flowmeter(KPa)

Pa-Local atmosphere(KPa)

Tg-The absolute temperature of the medium(℃) (3. 15+t) k

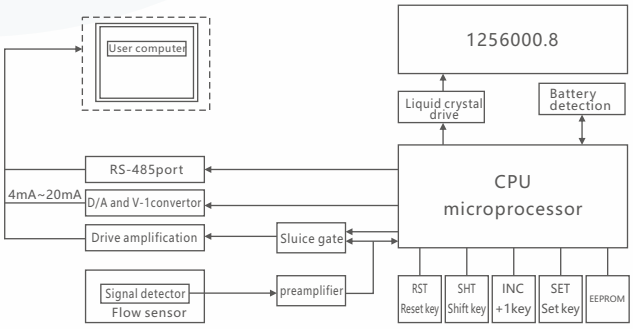
t-Celsius temperature of the measured medium(℃)

Zn-Compressibility under standard conditions

Zg-Coefficient in working condition

Tn-Absolute temperature at standard state(293.15K)

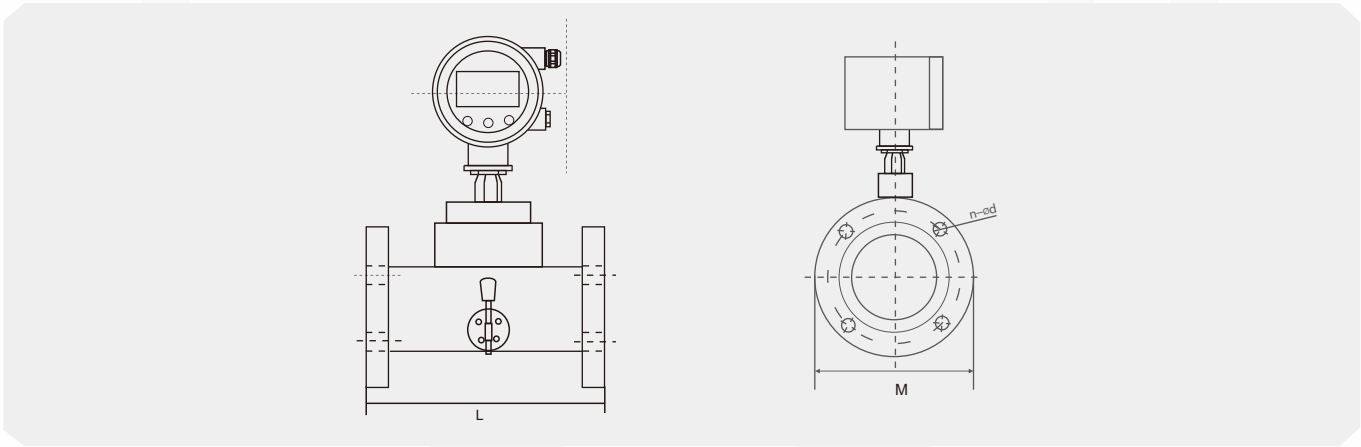
Pn-Standard atmosphere(101.325KPa)



Measure caliber and flow range and pressure

Nominal diameter (mm)	Standard range (m³/h)		Extended range (m³/h)		Normal pressure rating (MPa)	Special high pressure class(MPa)	Installation mode
DN25	S	2.5-25	W	4-40	1.6	2.5,4.0	Flange (thread)
DN40	S	5-50	W	6-60	1.6	2.5,4.0	Flange (thread)
DN50	S1	6-65	W1	5-70	1.6	2.5,4.0	Francois
	S2	10-100	W2	8-100			
DN65	S	15-200	W	10-200	1.6	2.5,4.0	Francois
DN80	S1	13-250	W	10-160	1.6	2.5,4.0	Francois
	S2	20-400					
DN100	S	20-400	W	13-250	1.6	2.5	Francois
	S2	32-650					
DN125	S	25-700	W	20-800	1.6	2.5	Francois
DN150	S1	32-650	W	80-1600	1.6	2.5	Francois
	S2	50-1000					
DN200	S1	80-1600	W	50-1000	1.6	-	Francois
	S2	130-2500					
DN250	S1	130-2500	W	80-1600	1.6	-	Francois
	S2	200-4000					
DN300	S	200-4000	W1	130-2500	1.6	-	Francois
			W2	320-6500			

Size mm



Diameter (mm)	L	M	n	d	Conventional withstand voltage MPa
25	150	115	4	M12	1.6
32	240	140	4	Φ18	
40	150	150	4	M16	
50	150	165	4	M16	
65	150	185	4	M16	
80	150	200	8	M16	
100	150	220	8	M16	
125	180	250	8	Φ18	

FT61-Selection composition

Selection example **FT61**

1	2	3	4	5	6	7	8	9	10	11	12	13
A	H	1-10	O	S	A	O	U	X	B	0.5	100	13.9

1.Instrument signal output	A	4~20mA
	B	4 to 20mA, HART protocol signal
	C	4-20mA, switching output
	D	4~20mA+RS485
	E	4 to 20mA+MODBUS
	F	4 to 20mA+RS485+MODBUS
	Z	4~20mA+ pulse output
2.Precision class	G	Accuracy level 1.0
	H	Precision 1.5
3.Range range	R( )	Range (Note range range)
4.Body material	N	304 stainless steel
	O	316L stainless steel
	T( )	Other materials
5.Connection mode	S	Francois
	U	Chuck connection
6.Flange connection specification	L	DN15
	M	DN20
	N	DN25
	A	DN32
	B	DN40
	C	DN50
	D	DN65
	E	DN80
	F	DN100
	G	DN125
	H	DN150
	I	DN200
	J	DN250
	K	DN300
	T( )	Other connection specifications
7.Pressure rating	N	PN10
	O	PN16
	P	PN25
	Q	PN40
	R	PN63
	S	PN100
	T( )	Other pressure levels
8.Impeller material	T	304SS
	U	316L
	V	Duplex steel (recommended for corrosive media or food industry)
	T( )	Other materials (Remarks)

FT61-Selection composition

Selection example **FT61** | A (1) | H (2) | 1-10 (3) | O (4) | S (5) | A (6) | O (7) | U (8) | X (9) | B (10) | 0.5 (11) | 100 (12) | 13.9 (13)

9.Explosion-proof requirement	X	Intrinsically safe explosion protection
	Y	flameproof
	Z	Non-explosion proof
10.Name of the medium	A	General gas
	B	Saturated steam
	C	Superheated steam
	D	gas
11.Dielectric density	M( )	(Note medium density)
12.Medium temperature	M( )	(Note temperature)
13.Medium viscosity	N( )	(Note medium viscosity)

Instructions:

It indicates that the signal output of FT61 gas turbine flowmeter is 4-20mA , the accuracy level is 1.5, the measuring range is 1-10m³/h, the body material is 316 stainless steel, the flange connection specification is DN25, the pressure resistance level is PN16, the impeller material is 316 stainless steel, the safety and explosion-proof type, the medium is saturated steam. The density is 0.5kg/m³, the medium temperature is 100℃, and the medium viscosity is 13.9.

Product Certification

Compliance and approval; Rodwig flow meters meet key standards and certifications for process measurement technology; To ensure the highest reliability in such settings;

CE Ex SIL

Ludwig China Representative Office
Ludwig Automation Instrument (Guangzhou) Co., Ltd | Ludwig International Trade (Shanghai) Co., Ltd
LUDWIG More product information is available www.ludwig-schneider.com.cn
✆ 400-860-9760 ✉ lw@ludwig-schneider.com.cn
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