



Description

The KLTF turbine flow meter series (F for flange connections) is used to measure continuous and discontinuous flow rates. They are mainly used for lubrication and non-lubrication media. They are particularly suitable for low and medium viscosity liquids, such as water, emulsions, glycol mixtures and light oils.

Only high-grade steels that can withstand corrosive liquids are used in the production of turbine flow meters. Combined with the use of tungsten carbide bearings, the KLTF guarantees optimum measurement accuracy and an extremely long service life even under the toughest application conditions.

The combination of various turbine wheel dimensions and blade geometries allows a wide range of sizes that can cover a huge measuring range. This makes the KLTF ideal for a variety of applications in the field of metering as well as for monitoring, mixing and dosing.

Short response times, very dynamic performance and high measurement accuracy ensure accurate regulation and control of flow rates in the most demanding applications.

For applications in hazardous areas, we offer intrinsically safe sensors and amplifiers with Ex protection in accordance with ATEX, IECEx, and other standards.

Application

- * Consumption measurement
- * 2-component mixing plants
- * Water (polluted and demineralized)
- * Hydraulic and gear oils
- * Coolants
- * Additives
- * Solvents
- * Pharmaceutical liquids
 - » Filling and dosing systems.
 - » Test benches.
 - » Fuels and derivatives such as fuel oil, gasoline, and kerosene.
 - » Cryogenic liquids.
 - » Oil derivatives and thermal (hot) oil.
 - » Refrigerants.
 - » Alcohol derivatives.

Liquid Turbine Flow Meter

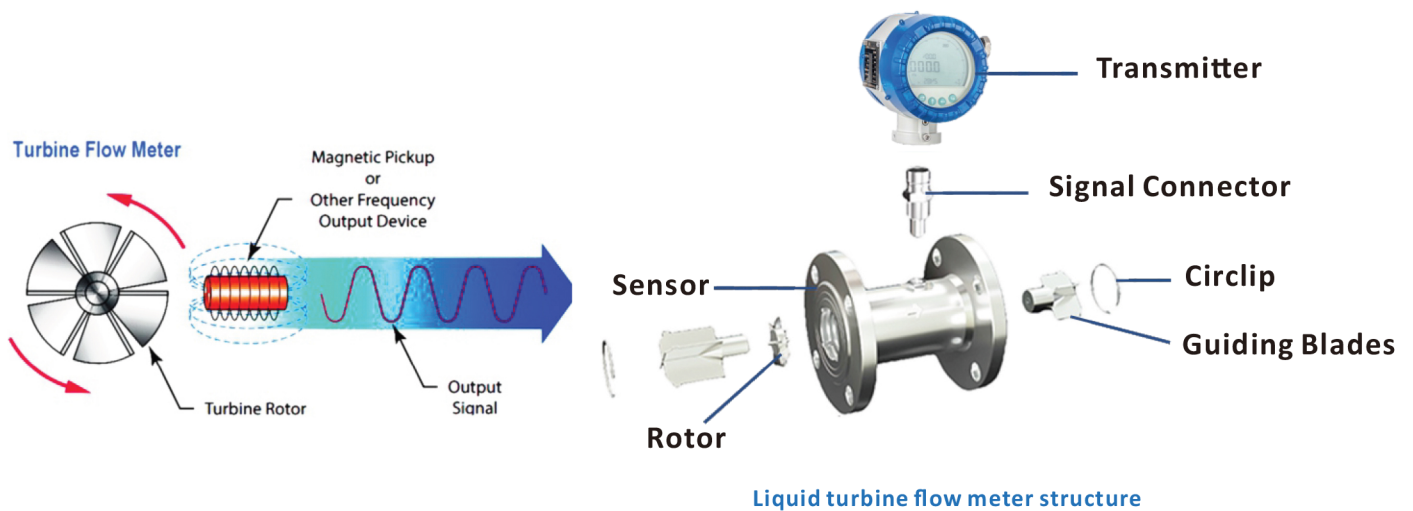
KLTF Series

Working Principle

Turbine flow meters use the mechanical energy of the fluid to revolve the rotor in the flow stream. Blades on the rotor are angled to transform energy from the flow stream into rotational energy.

When the fluid moves faster, the rotor spins proportionally faster. Shaft rotation can be sensed mechanically or by detecting the movement of the blades. Blade movement is often detected magnetically, with each blade or embedded piece of metal generating a pulse.

Turbine flow meter sensors are typically located external to the flowing stream to avoid material of construction constraints that would result if wetted sensors were used. When the fluid moves faster, more pulses are generated. The transmitter processes the pulse signal to determine the flow of the fluid.



The relationship between the meter coefficient and instantaneous flow rate, frequency, pulsenum, and the cumulative total is as follows:
 $K=f/Q$ and $K=N/V$

where:

f—flow signal frequency (Hz)

Q—instantaneous flow rate (m^3/s , or L/s)

N—number of pulses

V—total volume (m^3)

K—meter coefficient ($1/m^3$ or $1/L$)

What are the Advantages of Turbine Flow Meters?

- **Economical price compared to other technology types**
- **High accuracy:** Turbine flow meters typically provide highly accurate flow measurements and are suitable for applications requiring high accuracy, such as industrial process control and scientific experiments.
- **Fast response time:** They have a fast response time to quickly capture and react to changes in flow rate, suitable for applications requiring real-time monitoring.
- **Easy to install and maintain**
- **Universal mounting positions**
- **Provides direct volumetric flow measurement**
- **Many can be coupled with monitoring electronics**
- **Minimal pressure-drop**

Features

- Light oil & purity liquid measurement
- Modbus RS485 communication
- Backlight option
- Working Max Temp. +150°C
- Unit of GPM, KG/H, Ft³/h, LPM, m³/h, Ton/h
- Totalizer rest



Applications

- **Industrial Process Control:** Turbine flow meters are used in industrial process control, such as chemical, oil production, to ensure accurate flow measurement in processes.



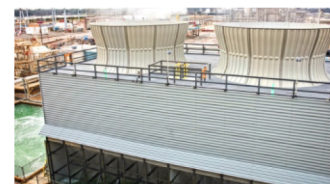
- **Water Supply and Wastewater Treatment:** Turbine flow meters are used in water supply and wastewater treatment systems to monitor and record water flow to ensure efficient use of water resources and environmental compliance.

- **Environmental Monitoring:** Turbine flow meters are used in environmental monitoring applications such as air quality and water quality monitoring for environmental protection and scientific research.



- **Food and Pharmaceutical Industry:** Turbine flow meters are used in food and pharmaceutical production to accurately monitor liquid and gas flow to ensure product quality and compliance.

- **Oil Industry:** Combined with level gauges and other instruments, it provides real-time monitoring of the tank's level and flow changes.



- **Circulating Water System Monitoring:** Monitor the flow of cooling water and process water to ensure the normal operation of the system and energy conservation.


- **Energy Industry:** In thermal power plants and nuclear power stations, they are used to monitor the flow of cooling water and other media, providing critical data support for the operation of power generation equipment.



- **Paper Industry:** In the monitoring and control of pulp flow, which is crucial for ensuring the stability of the production process and the quality of the paper products.

- **Metallurgy:** In the metallurgy industry, liquid turbine flowmeters play a significant role in measuring and controlling the flow of various liquids used in the production process.

Liquid Turbine Flow Meter Product Series

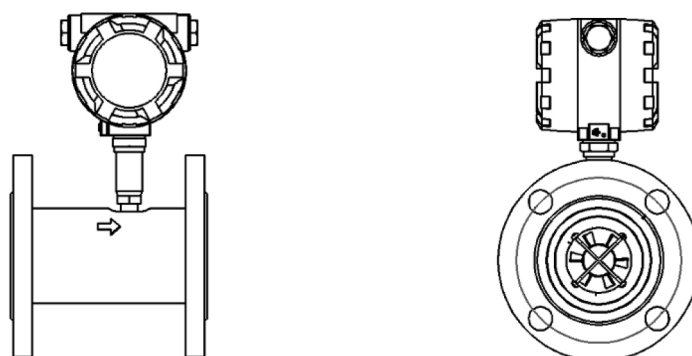
			
A/N2 Type	N1-Pulse Type	E-Digital Type	Tri - Clamp Type
			
Thread Type	N3-Hirschmann Type	G-Digital Type	Wafer Type

Technical Data

Output	Pulse; 4-20mA	
Accuracy	±1.0 of Rate; ±0.5% of Rate; ±0.1% of Rate	
Ambient Temp.	-20... +60 °C	
Fluid Temp.	-40... +80 °C -40... +150 °C	
Body Material	SS304; SS316	
Rotor Material	2Cr13; CD4MCu	
Bearing Material	Tungsten Carbide	
Connection	Flange of DIN, JIS, ANSI	DN4- DN300
	Thread of G, BSP, NPT	Female thread: DN4-DN50 Male thread: DN4-DN80
	Tri - Clamp	DN4-DN100
	Wafer	DN15 - DN200
Communication	RS485	
Power Supply	24V DC; Battery; 220V AC (Only for G type) 24V DC; Battery; 220V AC	
Protection	IP65	
Explosion Proof	Exd II CT6 Gb	
Electrical Connection	M20*1.5, 1/2 NPT is optional for A and E series M20*1.5, A and E series, 1/2 NPT optional	
kinematic Viscosity	No more than 5 CST	

Diameter	Standard Range (m ³ /h)	Accuracy with A or N type converter	Accuracy with E or G type converter	Extend Range (m ³ /h)	Accuracy with E or G type converter	Max. Pressure loss (Kpa)
4	0.04-0.25	±2.5%	±1.0% ±0.5%	0.04-0.4	±1.0% ±0.5%	120
6	0.1-0.6	±1.5%	±1.0% ±0.5%	0.06-0.6	±1.0% ±0.5%	80
10	0.2-1.2	±1.0%	±1.0% ±0.5%	0.15-1.5	±1.0% ±0.5%	50
15	0.6-6	±1.0%	±1.0% ±0.5%	0.5-5	±1.0% ±0.5%	35
20	0.8-8	±1.0% ±0.5%	±1.0% ±0.5%	0.45-9	±1.0% ±0.5%	35
25	1-10	±1.0% ±0.5%	±1.0% ±0.5% ±0.2%	0.5-10	±1.0% ±0.5%	35
32	1.5-15	±1.0% ±0.5%	±1.0% ±0.5%	0.8-15	±1.0% ±0.5%	35
40	2-20	±1.0% 0.5%	±0.2%	1-20	±1.0% ±0.5%	35
50	4-40	±1.0% ±0.5%	±1.0% ±0.5%	2-40	±1.0% ±0.5%	35
65	7-70	±1.0% ±0.5%	±0.2%	5-70	±1.0% ±0.5%	25
80	10-100	±1.0% ±0.5%	±1.0% ±0.5%	7-100	±1.0% ±0.5%	25
100	20-200	±1.0% ±0.5%	±0.2%	10-200	±1.0% ±0.5%	25
125	25-250	±1.0% ±0.5%	±1.0% ±0.5%	13-250	±1.0% ±0.5%	25
150	30-300	±1.0% ±0.5%	±0.2%	15-300	±1.0% ±0.5%	25
200	80-800	±1.0% ±0.5%	±1.0% ±0.5%	40-800	±1.0% ±0.5%	25
250	100-1000	±1.0% ±0.5%	±0.2%	-	-	-
300	120-1200	±1.0% ±0.5%	±1.0% ±0.5%	-	-	-

Technical Drawings



Display



Section 1
 Section 2
 Section 3
 Section 4
 Section 5

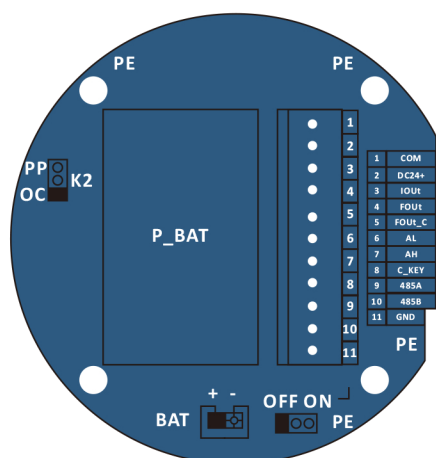


Section 1
 Section 4
 Section 3
 Section 2
 Section 5

Section 1	Functional region which consists of battery situation, communication, current, frequency, flow percentage (Temperature could be available on request)
Section 2	Units section which consists of 10 units: m ³ /h, L/h, L/min, US Gal/min, UK Gal/min, US Gal/h, UK Gal/h, kg/h, t/h, ft ³ /h
Section 3	Flow rate (7 digital figure at max)
Section 4	Alarm sign which consists of SET prompt and alarm prompt
Section 5	Total flow(11 digital figure at mini) with two decimal places

Wiring

E-type converter-DC24V power supply



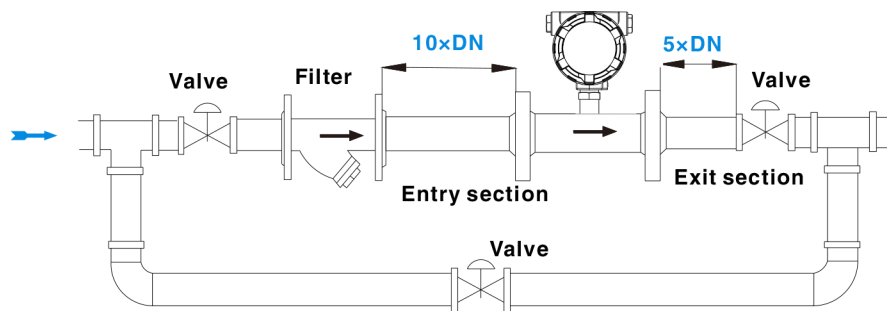
Schematic diagram of power supply terminal board

No.	Symbol	Description	Note
1	COM	24V-	
2	DC24+	24V+	Loop Powered Positive
3	IOUT	Current output	Loop Powered Negative
4	FOUT	Calibration pulse output	For calibration only
5	FOUT_C	Pulse or equivalent pulse output	
6	AL	Instantaneous flow lower limit alarm	
7	AH	Instantaneous flow upper limit alarm	
8	C_KEY	Positive end of external button wiring	Use with GND
9	485A	RS485 communication terminal A	
10	485B	RS485 communication terminal A	
11	GND	Negative terminal of external button wiring	Use with C_KEY

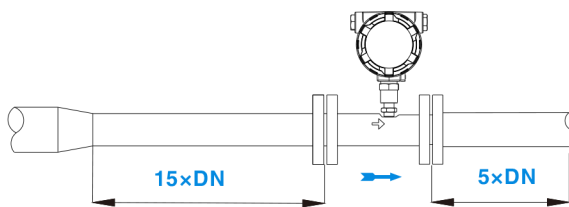
Installation

Installation Environment

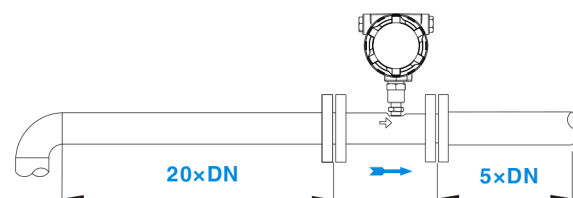
1. The flow meter should avoid being installed in places with large temperature changes and high temperature radiation from the equipment. If it must be installed, measures for heat insulation and ventilation must be taken.
2. The flow meter is best installed indoors. If it must be installed outdoors, rainwater, flooding and sun exposure should be avoided, and moisture-proof and sun-proof measures must be taken.
3. The flow meter should be avoided to be installed in an environment containing corrosive gas, and ventilation measures must be taken when it must be installed.
4. For the convenience of installation, maintenance and maintenance, there should be sufficient installation space around the flow meter.
5. The typical installation piping system of the liquid turbine flow meter is shown in the figure below. The configuration of each part in the figure depends on the situation of the measured object, not necessarily all of them.



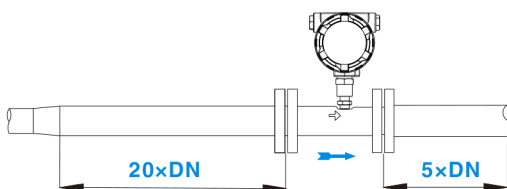
6. The sensor installed horizontally requires that the pipeline should not have a visually detectable inclination (generally within 5°), and the vertical deviation of the sensor pipeline installed vertically should also be less than 5°. In places where the flow cannot be stopped, a bypass pipe and a reliable stop valve should be installed, and the bypass pipe should not leak during measurement.
7. Connect a short pipe to replace the sensor at the position where the sensor is installed in the newly laid pipeline. After the "line sweeping" work is completed and the pipeline is cleaned, the sensor is formally connected.
8. If the fluid contains impurities, a filter should be installed on the upstream side of the sensor, and the precipitated impurities should be cleaned and discharged regularly in the pipeline; if the measured liquid contains gas, a gas eliminator should be installed on the upstream side of the sensor. The sewage outlet and air elimination port of the filter and air eliminator should lead to a safe place.



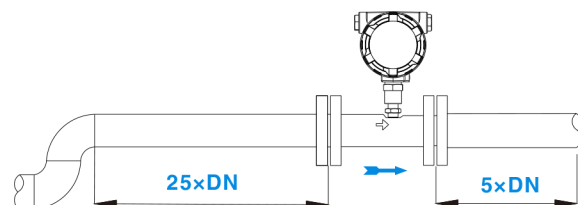
Concentric contraction fully open valve



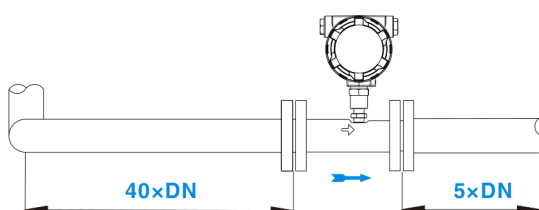
a 90° elbow



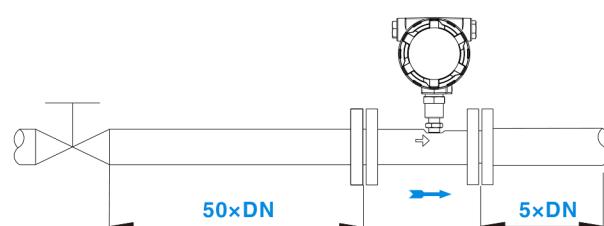
Concentric Expansion Fully Open Valve



Two 90° elbows on the same plane



Two 90° elbows in different planes



Control valve half open valve

Model	Suffix Code										Description
KLTF	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	Liquid Turbine Flow Meter
Diameter											Stand for diameter 004: DN4; 006: DN6 100: DN100; 300: DN300
Converter Type	N1										24V DC; Pulse output; No display; IP51
	N2										24V DC; Pulse output; No display; IP65
	N3										24V DC; Pulse; Horsman; IP65
	A										24V DC; 2-wire 4-20mA output; No display; IP65
	E1										Battery power supply; No output; Digital display; IP65
	E2										24V DC; 2/3 wires 4-20mA/ Pulse output; Digital display; IP65
	E4										24V DC; 3-wire, 0-20mA output; Digital display; IP65
	G										220V AC; 4-wire 4-20mA, pulse; Digital display; IP65
	Notice:										
Accuracy			10								±1.0% of rate
			05								±0.5% of rate
			02								±0.2% of rate (consult with factory)
Flow Range				S							Standard Range
				E							Extended Range
Body Material						S4					SS304
						S6					SS316
Rotor Material							Cr				2Cr13
							CD				CD4MCu
Explosion Proof								CT			Exd II C T6 Gb (N2, A, E, G converter optional)
								NA			No explosion proof
Connection									THM		Male thread; Available from DN4...DN80
									THF		Female thread; Available from DN4...DN50
									WAF		Wafer connection DN15...DN200
									TRC		Tri-clamp connection: DN4...DN100
									DXX		D16: DIN PN16 Flange; D25: DIN PN25 Flange...
									AXX		A15: ANSI 150# Flange; A30: ANSI 300# Flange...
Temperature									JXX		J10: JIS 10K Flange; J20: JIS 20K Flange...
									T1		-20...+80°C
									T3		-20...+150°C

Liquid Turbine Flow Meter Selection Guide

KLTF – N1 – 50 – 10 – S – S4 – Cr – NA – THM – T1

KLTF : Liquid Turbine Flow Meter

N1: 24V DC; Pulse output; No display; IP51

50: DN50

10: ±1.0% of rate

S: Standard Range

S4: SS304

Cr: 2Cr13

NA: No explosion proof

THM: Male thread; Available from DN4...DN80

T1: -20...+80°C