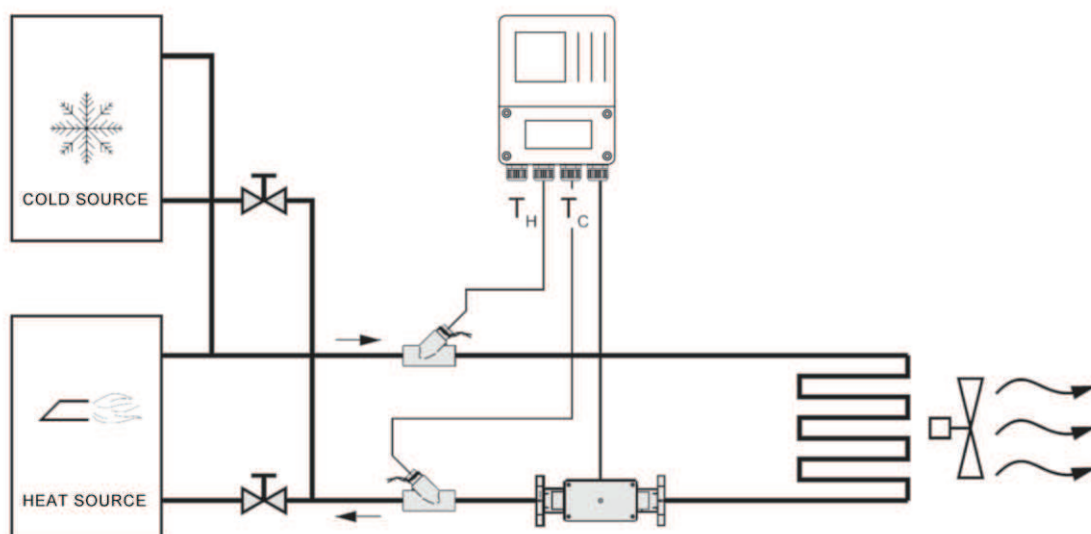


Electromagnetic BTU/ Heat Meter



Industry Application

Magnetic heat meter is mainly used in heating, refrigeration and other energy metering system.



Performance parameter

Power	220VAC/24VDC
Communication	RS-485
Communication protocol	Modbus RTU、BACnet
Maximum communication distance	400m
Accuracy grade	level 2
Temperature sensor	PT1000
Temperature measuring accuracy	±0.1℃
Medium temperature	2 180℃
Range of temperature difference	2K~80K
Storing data	18 months of historical data
Installation location	Inlet and return water pipe optional
Ambient temperature	-10℃~55℃
Protection level	IP65

Comparison of mechanical, ultrasonic and electromagnetic heat meter

	Mechanical	Ultrasonic	Magnetic type
Advantage	•The structure and simple production process, low price; •Low power consumption.	•No moving parts inside the measuring tube, Congestion problem is not serious; •Can meet the corrosion of the heat carrying fluid on the measurement requirements; •No special requirements for the installation.	•Without obstruction, little pressure loss, high accuracy. Energy saving effect is remarkable, without mechanical inertia, the reaction is very sensitive. • Wide measuring range. Liquid flow rate is available at 0.3~10m/s. Diameter from small to large, a series of complete. •excellent repeatability and linearity. Measurement of fluid has nothing to do with the physical properties of the medium, such as temperature, pressure, viscosity, density, etc.. •Strong adaptability to the pipeline and environment vibration; can meet the requirements of the measurement of the corrosion of the heat carrying fluid. •Good reliability and anti-interference.
Shortcoming	• Wearing parts more, easy scaling, low reliability and stability; • Impeller shaft core is easy to wear, poor durability and short service life; •Pressure loss, lower heating network transmission efficiency, Difficult to transform the old pipe network; •Flow measurement accuracy is not high, the fluid speed is low can not be effective measurement.	•Point - speed sampling, detection accuracy is not high; •Required for descaling treatment on heat carrying fluid; •Water quality has great influence on the measuring instrument; •Measured fluid temperature changes have significant effect on the accuracy; •Caused greater pressure loss; •Accuracy and reliability of vibration impact measurement.	•Cannot measure the conductivity is low ($< 30\mu\text{S}/\text{cm}$) liquid, such as petroleum products and organic solvents etc.; •Can not measure the gas, steam and liquid containing more larger bubbles; •Relatively high power consumption.

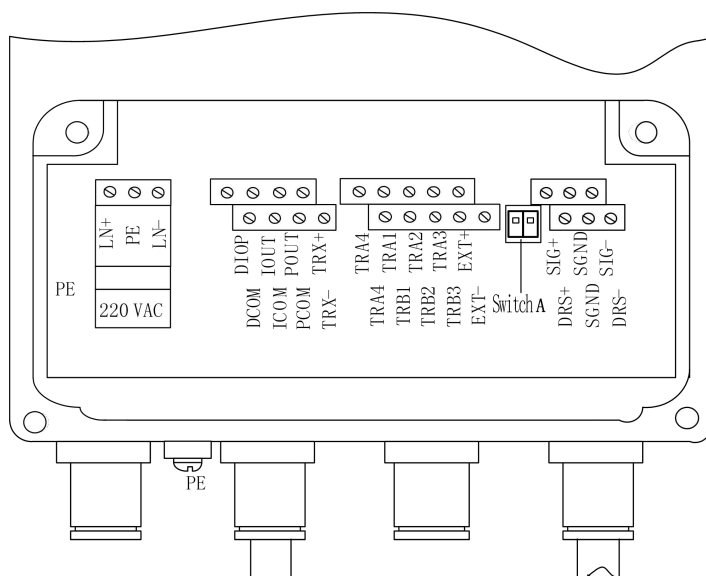
Parts

The main parts of the temperature sensor for electromagnetic calorimeter include: Pt1000 temperature sensor, sheath, welding base.



Terminal wiring diagram

Fig.1 Terminal Drawing

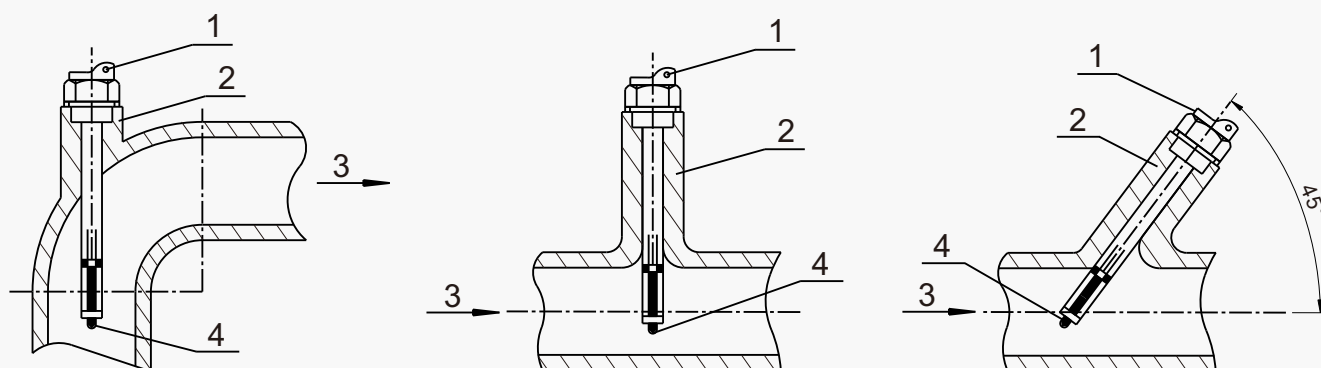


Symbols and Description of Terminals:

Table 1.1

TRA1	Entry Temperature Input	TRA2	Entry Temperature Input
TRA3	Entry Temperature Input	TRB1	Outlet Temperature Input
TRB2	Outlet Temperature Input	TRB3	Outlet Temperature Input
TRA4	Reserved Terminal	TRB4	Reserved Terminal
SIG +	Signal 1	SGND	Signal Ground
SIG-	Signal 2	DRS +	Exciting Shielding 1
DRS-	Exciting Shielding 2	MTDR	Reserve
EXT +	Exciting Current +	EXT-	Exciting Current-
POUT	Frequency Output +	PCOM	Frequency Output Ground
IOUT	Current Output +	ICOM	Current Output Ground
TRX-	Communication Interface	TRX+	Communication Interface
LN-	220V (24V) Power Supply Input	LN+	220V (24V) Power Supply Input
Switch A	PT100 or PT1000	DIOP	Reserved Terminal

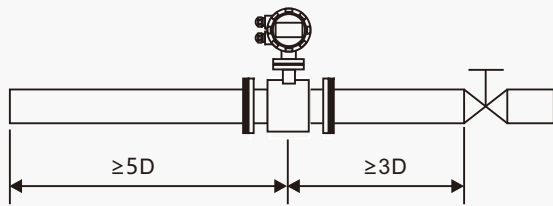
Recommended installation location of temperature sensor



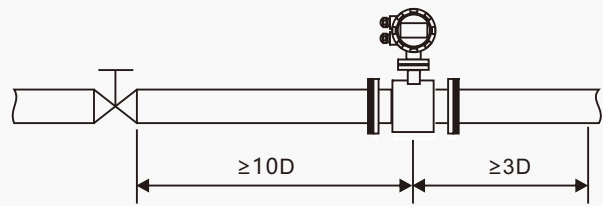
1-Temperature sensor sheath ; 2-Welding base ; 3-Fluid direction ; 4-Temperature sensor probe

安装

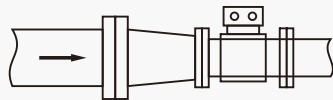
Straight pipe length requirements



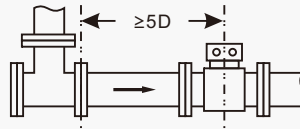
Installation whose valve is the downstream of sensor



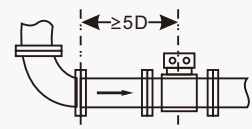
Installation whose valve is the upstream of sensor



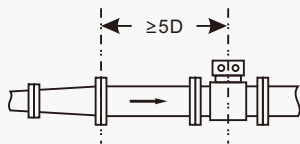
Tapered tube can be seen as a straight pipe



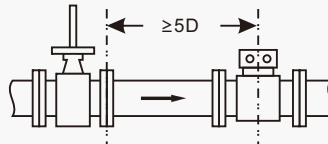
T type junction



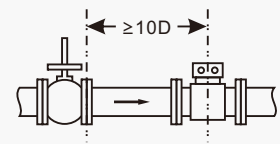
90°C elbow



Expansion tube

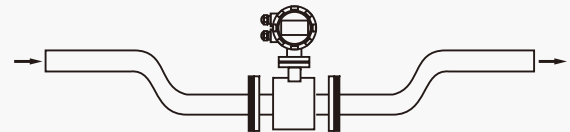
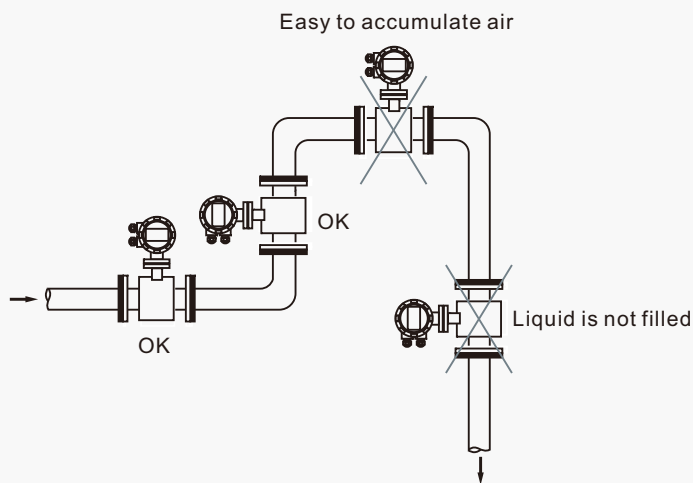


Fully open valve

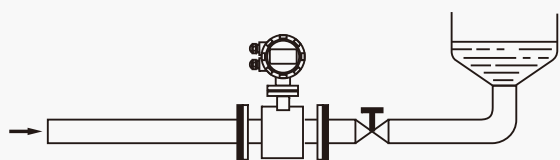
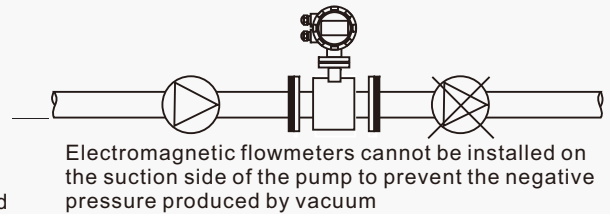


Various types of valves

Recommended mounting position

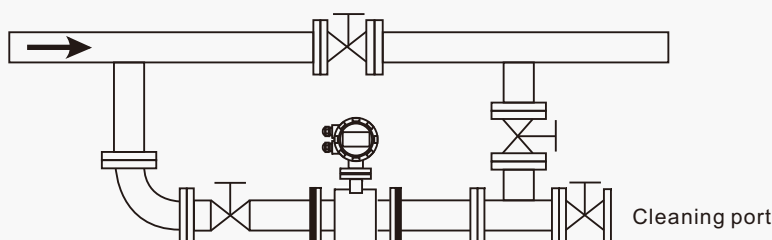


Installation that the sensor is below the pipes



Installation that downstream of the sensor has the back pressure

The connection which is easy to clean pipe



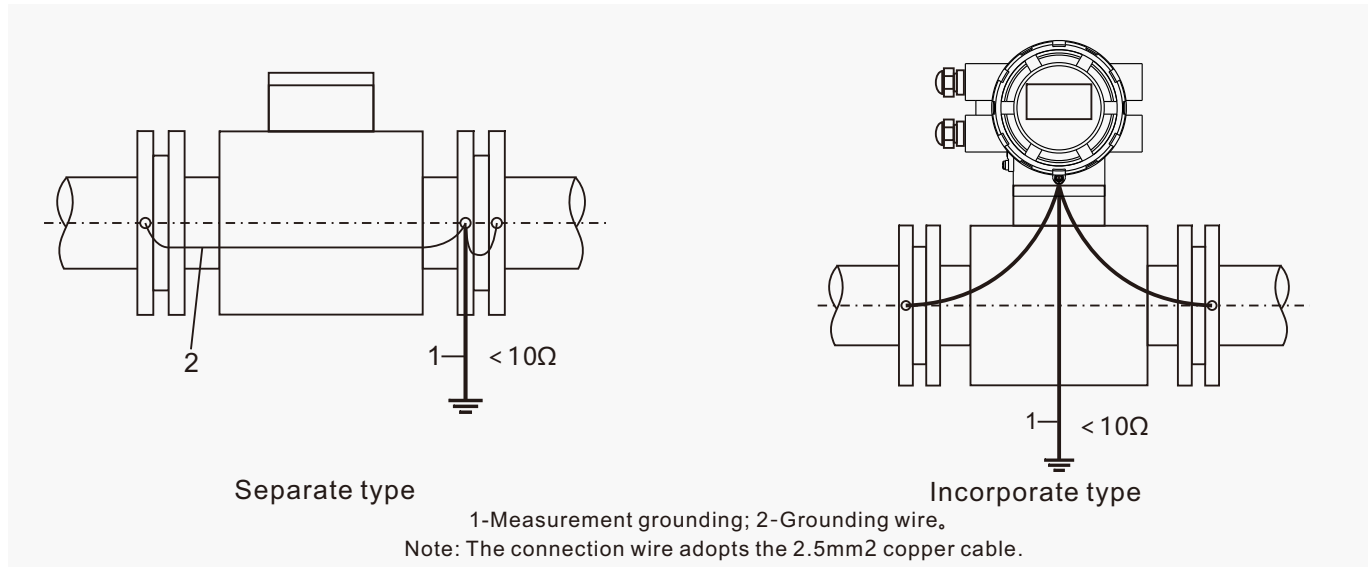
Situation where the pipe needs to be cleaned and the fluid conduit cannot stop, you must install a bypass pipe to be able to continue running during cleaning system.

Grounding

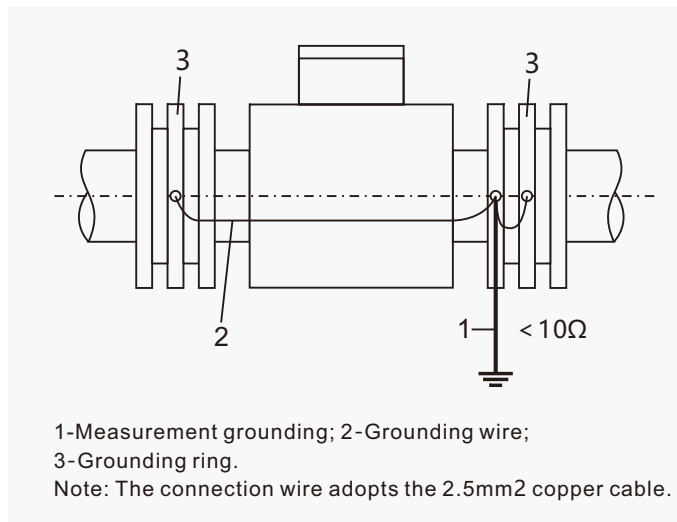
Electromagnetic Flowmeter sensor should be well grounded, the measuring accuracy of flowmeter depends on the grounding effect in a considerable extent.

Sensor grounding at different installation situation

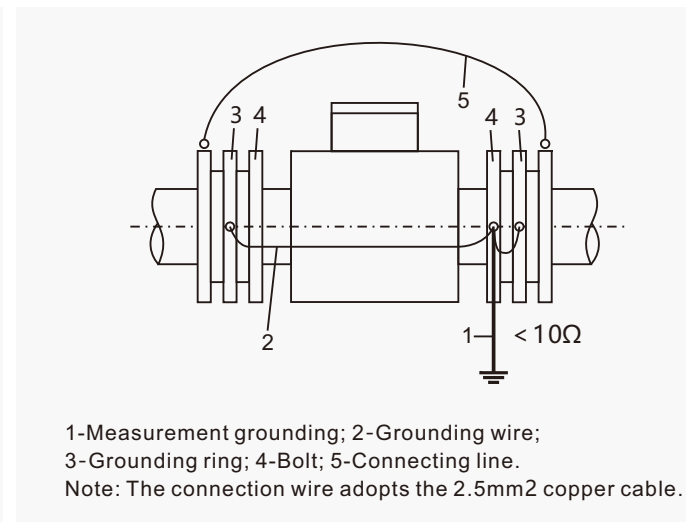
1. Grounding that sensor mounted on metal pipe.



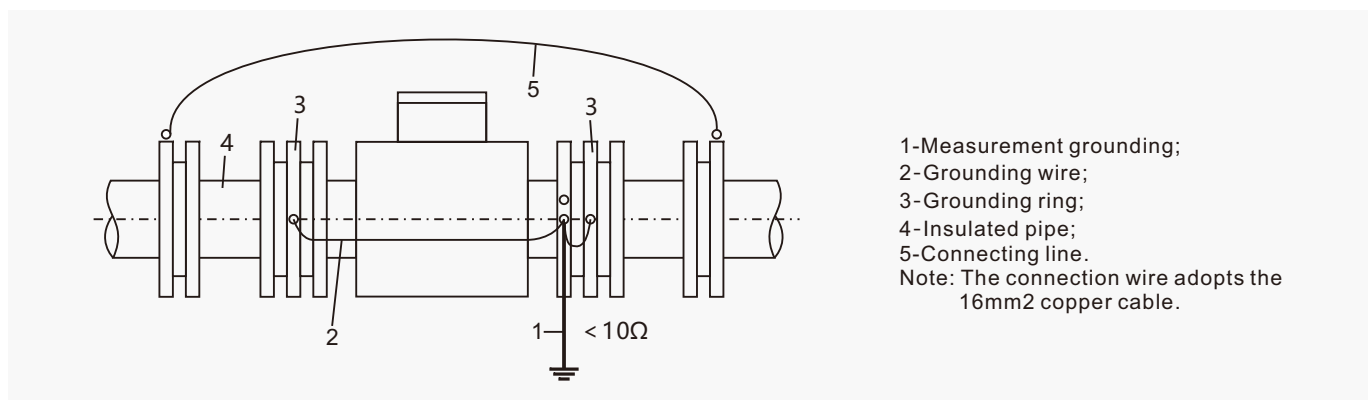
2. Grounding that the sensor mounted on the insulating pipes.



3. Grounding that the sensor installed on the cathodic protection pipe



4. The sensor is installed in the pipeline stray strong current place



Model Selection

HTLD			x	x	x	x	x	x	x	x	x	x
Caliber size	DN3-DN3000											
Structure	Compact	C										
	Remote	R										
	Compact with explosion proof	CEP										
	Remote with explosion proof	REP										
Accuracy	±0.5%		A5									
	±0.2%		A2									
Lining Material	PTFE			PT								
	PFA			PFA								
	Neoprene			N								
	Polyurethane			P								
	Hard Rubber			HR								
	Ceramic			C								
Electrode Material	SS316L				SS							
	Hastelloy B				HB							
	Hastelloy C				HC							
	Titanium				TI							
	Tantalum				TA							
	Platinum-iridium				PI							
	Stainless steel covered with tungsten carbide				TC							
Sensor Material	Carbon Steel					CS						
	SS304					S4						
	SS316					S6						
Power Supply	20~36 VDC						AC					
	85~265 VAC						DC					
Signal Output	4~20 mA + Pulse + RS485							PR				
	4~20 ma + HART							H				
	4~20 mA + Profitbus							P				
	GPRS							G				
Process Connection	Flange	DIN D10: DIN PN10, D16: DIN PN16, D25: DIN PN25, D40: DIN PN40								DXX		
		ANSI A15: ANSI 150#, A30: ANSI 300#								AXX		
		JIS J10: JIS 10K, J20: JIS 20K, J30: JIS 30K								JXX		
	Insertion	Insertion with G2" thread ball valve								IB		
		Insertion with DN50 flange ball valve								IF		
	Tri-clamp								T			
	Wafer								W			
Protection Grade	IP65 Transmitter + IP65 sensor									65		
	IP65 Transmitter + IP68 sensor (remote)									68		
Convertor Type	Square										S	
	Round										R	
Measuring Mode	Flow											F
	Flow + Temperature											FT