AIPUXIN AUTOMATION INSTRUMENT

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> ⚠ The installation and wiring of the instrument must be performed by professionals in strict accordance with applicable specifications!

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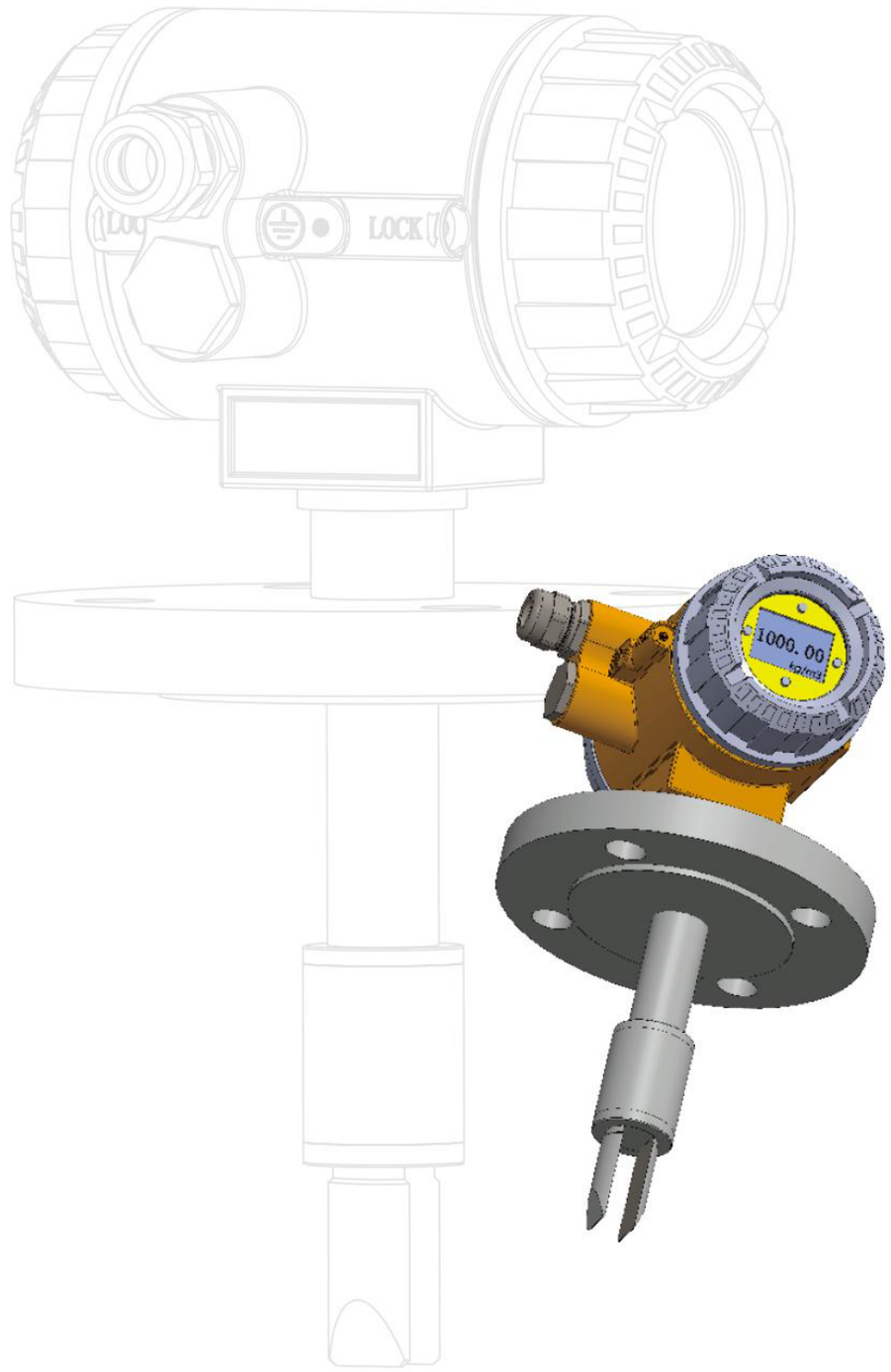
Instructions for use January 2025

Tuning Fork Density Meter User Manual



Industrial automation control online

density/concentration detection

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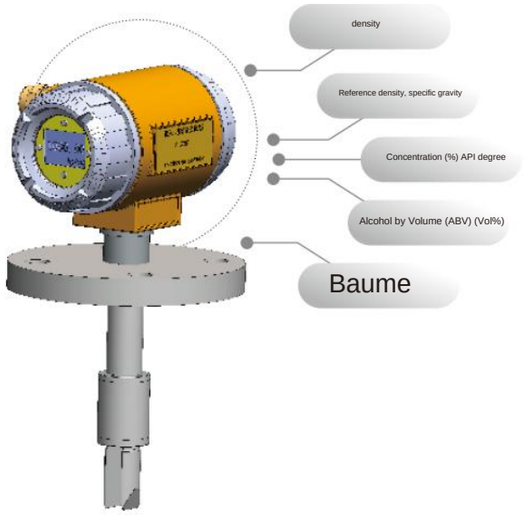
Introduction of Vibrating Density Meter

The tuning fork density meter (APX) provides accurate Online density and concentration measurement. This convenient, reliable and high-precision The instrument is widely used in petrochemical industry, food industry, pharmaceutical industry, etc. Widely used. At the same time, it strengthens the slurry and corrosive liquids (such as acid and alkali) Interface detection, concentration control and mixing operation of process media.

Working principle:

The tuning fork density meter is mainly based on the frequency change of the tuning fork vibration. Liquid density. When the tuning fork vibrates in a liquid, its vibration frequency changes with The frequency changes with the density of the liquid.
There is a certain relationship between density and vibration. The frequency can indirectly obtain the density of the liquid.



Multi-parameter display

Density, concentration and temperature are displayed simultaneously

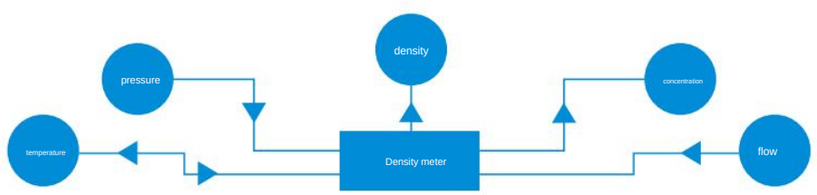
Chinese/English dual interface, menu-based settings

Multiple probe options

316L, PTEF, PFA, Hastelloy,

Zirconium, tantalum, titanium, duplex stainless steel, etc.

- Integral I/O allows direct input of external temperature, pressure and flow measurements for more accurate output.

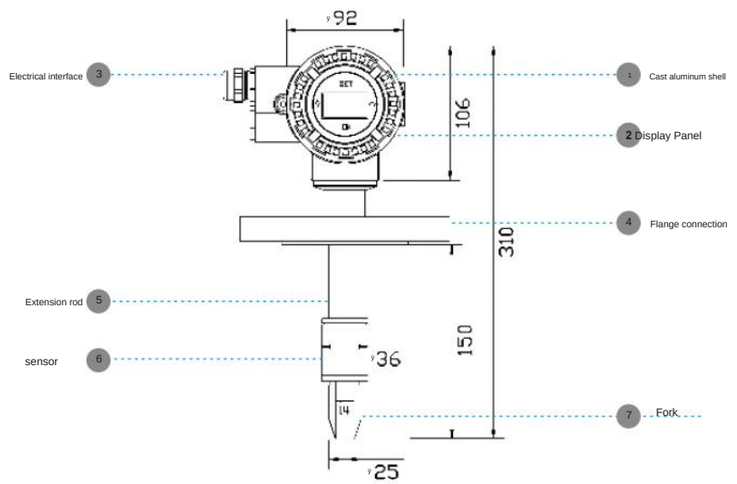


Product Specifications

Measuring range	0 – 2.5 g /cc (0 – 2500 kg/m^3) 0.1~100.0%
Calibration range	650-2000kg/m^3
Measurement accuracy	±0.002 g /cc (±2 kg/m^3) 0.1%
Repeatability	± 0.0002 g /cc (± 0.2 kg/m^3)
Operating temperature range	-50℃ ~ +150℃ (Customizable)
Maximum working pressure	4MPa (customizable)
Fluid viscosity range	0 – 600 cP (customizable)
Temperature coefficient	Less than 0.1 kg/m^3/℃ (after correction)
Pressure Effects	Negligible
Built-in temperature sensor	Digital sensor (PT100)
Wetted material	316L, 2205 stainless steel, Ha C, titanium alloy, etc.
Fork coating	PTFE, PFA, etc.
Power supply	24VDC ≥50 mA
Analog signal output	4-20mA RS485 Modbus RTU
Process connection	Flange, thread
	IDF and RJT Hygienic
Protection level	Ip66
Shell	Aluminum Alloy

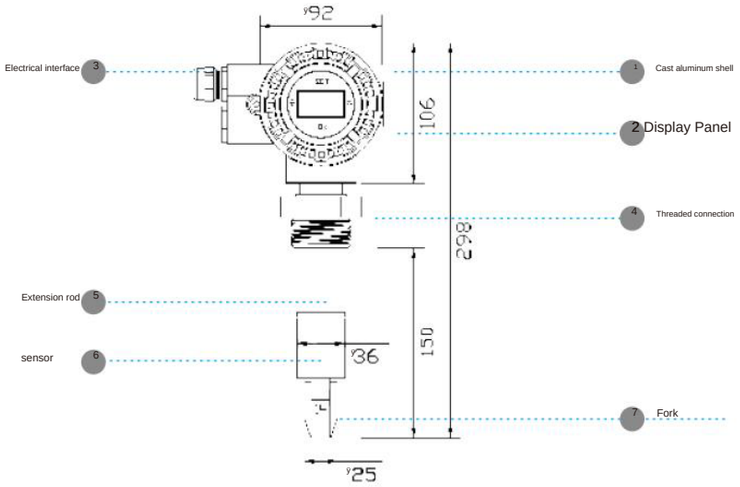
Product size

Product front view (flange type)



Product size

Product front view (threaded type)



Flange Type

Thread Type

Hygienic

Features

·Adopt 4-wire transmitter 4-20mA output; ·Real-time display

of six-digit density value (five decimal places), real-time indication of concentration and temperature; ·You can directly enter

the instrument menu to set parameters and debug on site, which is easy to operate; ·It has pure water

calibration, measurement value fine-tuning and temperature compensation functions;

·Online real-time measurement, which can be directly used for production process

control; ·Parts in contact with liquid are made of 316 stainless steel, zirconium, etc., which are safe, hygienic and have good corrosion resistance;

Application conditions

Pipes and terminals

Liquid interface stratification

Improve switching accuracy and product quality and reduce scrap, waste or degradation of multi-

product lines Leak detection

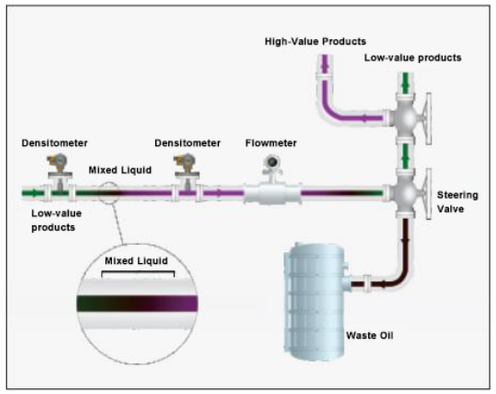
Detecting material leaks

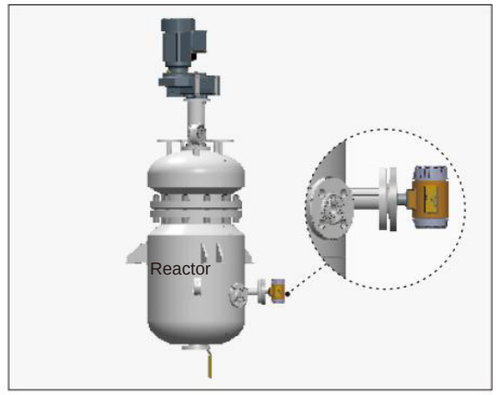
Real-time measurement of density, concentration, and temperature in the reactor solves the problem

of high-precision density measurement in the reactor No sampling

measurement is required, and real-time monitoring of material density changes is more

environmentally friendly and safe





1. Installation Preparation

1.1 Unpacking and Inspection

ÿ Check whether the outer packaging is intact and whether the number of instruments, accessories and attachments are complete according to the packing list. ÿ If the instrument is found to be damaged during transportation, the carrier and supplier should be notified immediately. The damaged instrument cannot be returned directly to the supplier, otherwise the carrier will not compensate. Keep the packaging box and damaged parts for the carrier's inspection.

1.2 On-site acceptance

ÿ Check whether the model and specifications of the transmitter are consistent with the order selection parameters, and whether the accompanying documents are complete. ÿ Ensure that the environment, process temperature and process pressure are within the range of use of the selected density meter. ÿ The hazardous area level specified by the protection and explosion-proof level of the density meter is suitable for the current installation environment. ÿ Confirm that the instrument calibration type code is consistent with the pipeline specifications. If it is not consistent, edge effects may cause reduced measurement accuracy. ÿ Ensure that you have enough space to inspect and maintain the instrument. ÿ Check that you have all the equipment required to install the instrument. Depending on the application, you may need to install additional components to achieve optimal performance of the instrument.

Standard configuration:

Tuning fork density meter 1
Electrical connector 1 piece Sealing gasket 1 piece Instruction manual 1 piece Certificate of conformity 1 piece
Warranty card 1 serving
1 delivery list

1.3 Notes

·For PTFE-coated density meters, be sure to install a sheath on the tuning fork when not in use. The tuning fork is easily damaged by hard objects. ·Do not use it to measure liquids that are incompatible with its structural materials. ·Do not subject the meter to excessive vibration (continuously exceeding 0.5G). Vibration intensity exceeding 0.5G may affect the meter accuracy.

·For optimal instrument performance, ensure that the operating conditions correspond to the instrument selection.

·Ensure that all pipe connections comply with local and national regulations and industry guidelines.

·After wiring is completed, properly tighten the transmitter housing cover and electrical interfaces to ensure that the housing protection level meets the hazardous area certification requirements. ·After installation, pressure test the instrument and connected pipes to ensure that the pressure reaches 1.5 times the maximum working pressure.

·Insulate the instrument, inlet and bypass loop pipes to ensure stable temperature. The insulation layer should cover the process connection point.

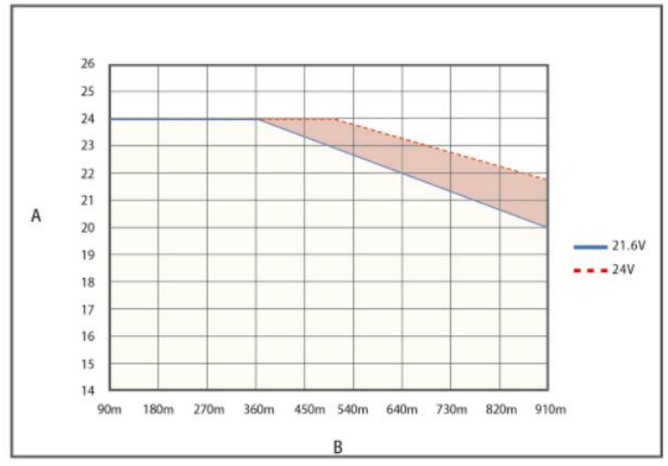
1.4 Power Requirements

The following are the DC power requirements to operate the instrument: ÿ Minimum recommended voltage: 21.6 VDC with 300m of 0.20mm² power cable

ÿ At startup, the power supply must provide a minimum voltage of 19.6V and a minimum instantaneous current of 0.5A at the meter power terminals.

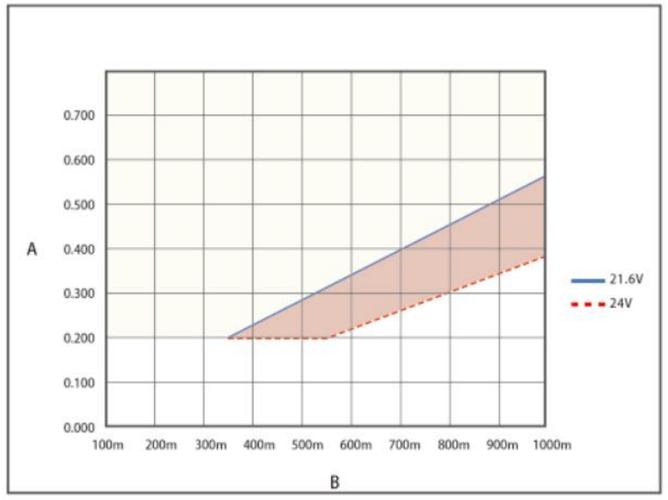
Recommendations for power cables for flameproof instruments

Figure 1-1: Minimum wire gauge (square meter) (AWG specification)



A. (AWG) Maximum B. Installation distance

Figure 1-2: Minimum wiring area



A. Minimum wiring area (mm) ² B. Installation distance

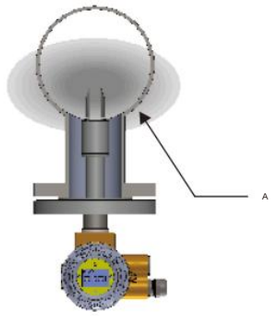
1.5 Pre-installation considerations

Many external factors can affect whether the instrument can operate properly. To ensure that the system operates correctly, the factors described in this section should be considered when designing and installing the system.

1. Edge effect The edge

effect refers to the waveform distortion caused by reflection from the pipe wall in the process medium. If the pipe wall is within the effective measurement area of the instrument, the edge effect will cause measurement inaccuracy.

Figure 1-3: Measurement area boundary or sensitivity (plan view)



A. Sensitivity or effective area

Factory calibration compensates for edge effects. The meter can be calibrated for free flow DN50, DN65 or DN80 pipes. If the meter is installed in a pipe that does not match the calibration specifications, compensation will not be accurate and process measurement will be inaccurate. Verify that the pipe specification for which the meter was calibrated matches the pipe specification you plan to use.

2. Flow Effects Keep the

flow rate and velocity constant and within the specified limits of the meter. The flow of the media provides a steady flow of heat into the meter mounting location, and the flow promotes self-cleaning of the meter forks and the dissipation of air bubbles and solid contaminants around the meter. If the meter is installed in a bypass (for example, in a flow chamber), a valve should be installed in the main process line, or a pitot tube or sample pump should be used to maintain flow. When using a sampling pump, the pump should be located upstream of the meter.

3. Effect of Gas Entrainment

Gas entrainment or gas carryover may interrupt the flow measurement. Transient gas entrainment can be corrected by configuring the instrument, but frequent interruptions or severe gas entrainment must be avoided to ensure accurate and reliable flow measurement. The possibility of gas entrainment should be minimized by: ÿ Keep the pipeline full of fluid at all times. ÿ Expel any gas before the instrument installation location.

ÿ Avoid sudden pressure drops or temperature changes, which could cause dissolved gases to escape from the fluid. ÿ Maintain a back pressure on the system sufficient to prevent gases from escaping the fluid. ÿ Keep the flow rate at the sensor within specified limits. ÿ Pay attention to the flow direction in the pipe to avoid turbulence.

4. Slurry measurements

For optimal measurement in the presence of solids: ÿ Avoid sudden changes in flow rate, which can cause deposits and lead to the forks becoming covered with solids and rendering them inoperable.

ÿ Install the meter far enough downstream from any pipe fittings that could cause solid particles to centrifuge (such as bends) or to settle.

5. Temperature Gradients and Insulation

For high viscosity fluids, minimize temperature gradients in the fluid and in the pipes and fittings immediately upstream and downstream of the instrument. Minimizing temperature gradients reduces the effects of viscosity changes. Try to avoid rapid changes in fluid temperature. Follow these instructions to reduce thermal effects on the instrument system:

ÿ Be sure to thoroughly insulate the instrument and surrounding pipes.

— Avoid insulating the transmitter housing. — Use rock wool or any equivalent heat jacket material with a thickness of at least 25 mm but preferably 50 mm. — Enclose the insulation in a sealed protective housing to prevent moisture intrusion, air circulation and compression of the insulation. ÿ Avoid direct heating or cooling of the instrument or connected upstream and downstream pipes, otherwise temperature gradients may occur. If cooling due to flow losses must be prevented, resistance heating can be used. If resistance heating is used, the thermostat used should operate at a temperature lower than the lowest operating temperature of the system.

6. Pressure and temperature limits of the process connection You

must ensure that the pressure and temperature limits of the instrument are not exceeded – if necessary, use suitable safety accessories. The pressure and temperature ratings of the instrument connection comply with the relevant flange standards. Check the latest standards for process connections.

1.6 Perform a pre-installation instrument check

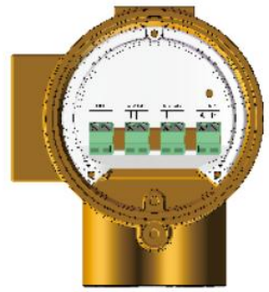
Before installation, check the meter to make sure it has not been damaged during transportation.

1. Check the appearance of the meter for any physical damage. 2.

Place and secure the meter in a vertical position so that the flow arrow points upward. 3. Connect the power cord and power on the meter.

Remove the cover on the back of the transmitter housing to gain access to the terminal blocks.

Figure 1-4: Power Terminal Blocks



Power supply: 24 VDC

4. Perform a known density calibration check.

Follow the known density calibration procedure to make the current meter calibration consistent with the pure water inspection factory calibration. If the meter passes the test, it means that it has not drifted or changed during transportation. Inspection

method: Pour pure water into a container with a diameter of 100mm and a height of 150mm, immerse the sensor completely and keep it 3cm above, below, left and right from the container wall, read the current density and temperature, and judge the state of the density meter.

2. Installation method

If the meter flow rate:

· Below 0.5 m/s, install the meter for free flow applications. · Above 0.5 m/s, install the

meter for T-tube applications or flow chamber applications. In addition, if the pipe can be enlarged and the flow velocity reduced to

0.5 m/s, installed for free flow applications.

2.1 Free fluid applications

1. Free flow application installation (flange connection) ÿ For processes

with the following conditions, free flow (flange type) installation is recommended:

flow	0 to 0.5 m/s (at instrument position)
Viscosity	Up to 2000cP
temperature	-50°C to 200°C

ÿ Before installing the welding base, a 50mm diameter hole must be drilled in the pipe to accommodate the instrument. When welding the welding base to the pipe, it must be concentric with the pre-drilled hole.

Use Figure 2-1 to install the meter in a free flow (flange connection) installation.

ÿ Insert the meter tines directly into the fluid stream. ÿ For

both vertical and horizontal pipes, always install the meter on the side of the pipe. For horizontal pipes, never install the meter on the top of the pipe.

IMPORTANTÿ

During installation, always orient the meter so that the gap between the tines is vertical. This position helps prevent air bubbles or solid matter from accumulating on the meter – solids will settle and air bubbles will rise. You can also use the mark on the flange (transmitter side of the flange) as a reference for tine orientation. Always orient the meter so that the mark is at the 12 o'clock or 6 o'clock position.

The gap between the tuning forks must always be in a vertical orientation (as shown in the figure below) so that: solids settle and entrained gases rise

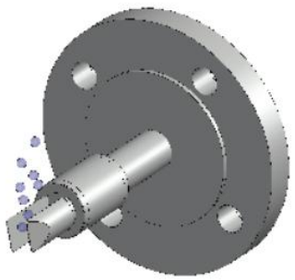
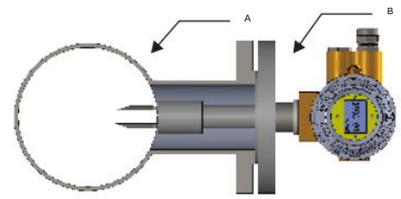


Figure 2-1: Free-flow (flange connection) instrument installation



A. Use DN100 pipes for horizontal installation and DN150 pipes for vertical installation.

B. Adjust the setback so the meter tines are fully inserted into the fluid (approximately 50 mm).

2. Installation for free flow applications (tube expansion device)

Use the following steps to install a pipe expander. A

pipe expander: ÿ

Increases the diameter of the process pipe to reduce flow

velocity ÿ Provides a quick response to density changes

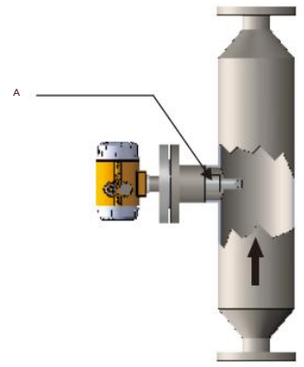
ÿ Provide self-cleaning vibrating tines

The following table will help you determine which type of expansion device to use.

Options	Best Uses
Concentric reducer vertical pipe	Suitable for all fluids and slurries.
Concentric reducer horizontal pipe	Suitable for clean fluids. Do not use for slurry applications as solids will collect at the bottom of the pipe.
Eccentric reducer horizontal pipe	Suitable for slurry applications.

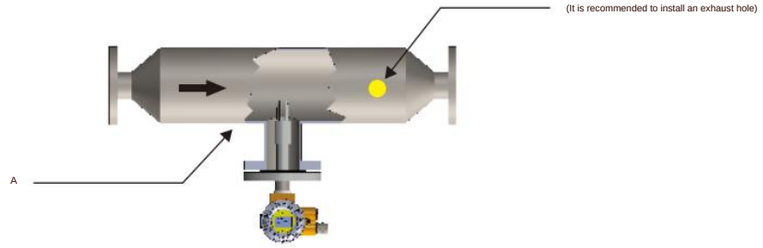
Use any of the following options to expand the main process pipeline

Figure 2-2: Concentric reducer vertical pipe (front view)



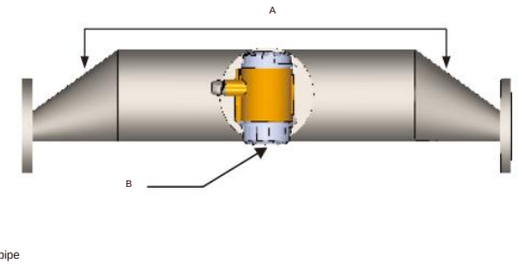
A. APX is inserted directly into the fluid

Figure 2-3: Concentric reducer horizontal pipeline (top view)



A. Top view of horizontal pipe

Figure 2-4: Horizontal pipe with eccentric reducer (front view)



A. Eccentric expansion device/reducing pipe

B. The instrument is inserted into the fluid in the expansion device

If an eccentric reducer is used, the pipe must maintain 500 mm of upstream straight run (on both sides for bi-directional flow applications) to avoid a jet effect and overall "jetting" on the tines of the tuning fork.

3. Installation in free flow applications (welded base connection)

The free-flow mounted weld base has a 1½ threaded connection for welding onto DN100, DN150, DN200 or DN250 pipes. The weld base mounting ensures that the instrument's tuning fork is correctly positioned and fully immersed in the medium.

ÿ Free flow (welded base) installation is recommended for processes with the following conditions:

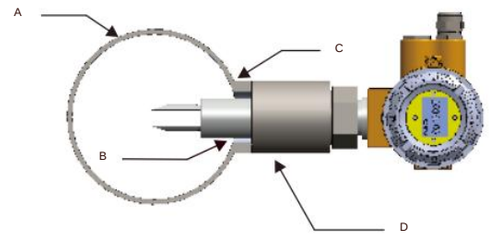
flow	0 to 0.5 m/s (at instrument position)
Viscosity	Up to 2000cP
temperature	-50°C to 200°C

NOTE: If temperature variations are a critical factor in the process, a reduced mass taper lock connection can effectively track temperature variations.

ÿ Before installing the weld base, a 50 mm diameter hole must be drilled in the pipe to accommodate the instrument. When welding the weld base to the pipe, it must be concentric with the pre-drilled hole.

Refer to Figure 2-5 for information on mounting the meter in free flow applications (using welded base)

Figure 2-5: Free-flow (welded base) meter installation



A. DN100 pipe for horizontal installation; DN150 pipe for vertical installationB. 50 mm instrument opening on pipeC. WeldingD. Free flow welding base

2.2 T-type casing application

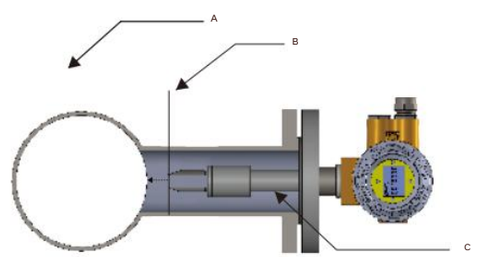
1. DN50 T-type bushing installation (flange joint) ÿ For the following process conditions, two-inch T-type bushing (flange) installation is recommended:

flow	0.5 to 5 m/s (at the pipe wall)
Viscosity	Up to 100cP, 250cP under some conditions
temperature	-50°C to 200°C

Note: Flow velocity and fluid viscosity at the pipe wall must be within the limits shown to ensure timely fluid renewal in the casing. This installation will not respond as quickly to step changes in viscosity as a free-flow installation.

The insulation quality of the flange may affect the instrument's response time to temperature changes.

Figure 2-6: Instrument T-type bushing (flange joint) installation



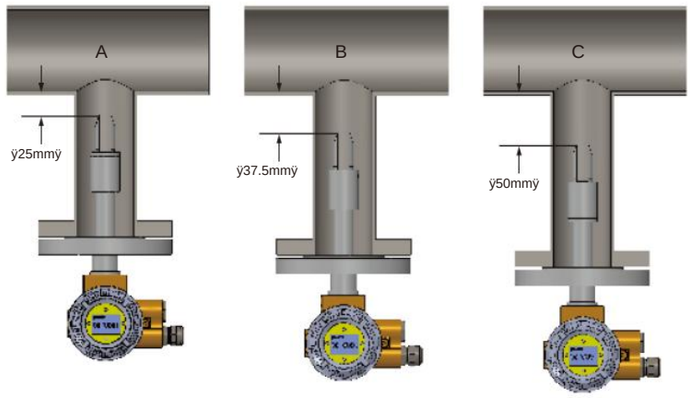
A. Horizontal or vertical installation for DN100 or larger diameter pipes B. The distance

between the instrument fork and the main pipe wall is determined by the maximum flow rate of the process.

Tip: For sanitary applications, the conventional DN50 sanitary tube is too thin for this application (it may vibrate with the tuning fork, causing measurement errors). It can be replaced with a DN80 sanitary tube and fitting, or with a special sanitary fitting.

Adjust the T-piece size so that the instrument fork is 25 mm set back from the main pipe wall. For higher flow rates, increase this value by 10 mm for every 1 m/s increase in main flow rate.

Figure 2-7: Pipe wall installation



A. Flow velocity ÿ 3 m/s B. 3 <

Flow velocity ÿ 4 m/s

C. 4 < velocity ÿ 5 m/s

2. DN80 T-type sleeve installation (flange joint)

For slurry applications, install the APX in a T-piece pipe. The T-piece should be DN80 and installed at an angle to ensure self-draining. Flow velocities as low as 1.0 m/s are acceptable, with 3 m/s being the preferred choice. Flow velocities of 5 m/s should be used with caution as there is an increased risk of clogging of the T-piece. Additional cleaning may be required.

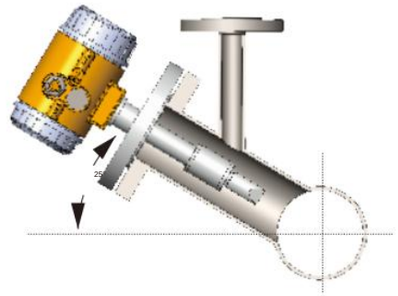
ÿ For the following process conditions, DN80 T-type sleeve (flange) installation is recommended:

flow	0.5 to 5 m/s (at the pipe wall)
Viscosity	Up to 100cP, or 1000cP if the insertion distance does not exceed 25mm.
temperature	-50°C to 200°C

Note: · The flow velocity and fluid viscosity at the pipe wall must be within the limits shown to ensure timely fluid renewal in the casing. This installation will lag behind the free flow installation in responding to step changes in viscosity.

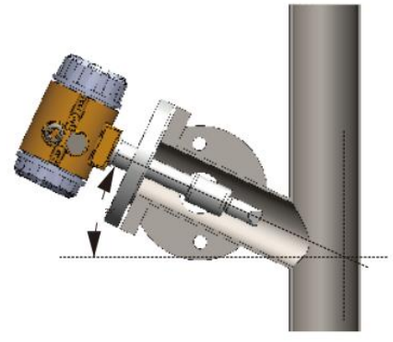
The thermal mass of the flange may affect the instrument's response time to temperature changes.

Figure 2-8: DN80 T-type bushing installation: horizontal pipe



Insert the purge/drain fitting into the upper portion of the T-piece. You can use the purge fitting to flush the pipe as needed.

Figure 2-9: 3 DN80 T-type bushing installation: vertical pipe



Insert the purge/drain fitting into the side of the T-piece. You can use the purge fitting to flush the pipe as needed.

3. T-piece installation (welding base connection)

The weld-in base for T-tube mounting is equipped with a 1½ thread for welding onto DN100, DN150, DN200 or DN250 pipes. The weld-in base mounting ensures that the instrument's tuning fork is correctly positioned and fully immersed in the medium.

ÿ For processes with the following conditions, it is recommended to use T-type sleeve (welded base) installation:

flow	0.5 to 3 m/s (at the pipe wall)
Viscosity	Up to 100cP, 250cP under some conditions
temperature	–50°C to 200°C

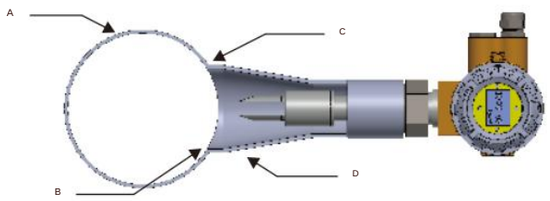
Note: · Flow To ensure continuous renewal of the medium in the casing, the velocity at the pipe wall and the fluid viscosity must be within the limits shown. This installation will respond to step changes in viscosity more slowly than a free flow installation.

If temperature changes are a critical factor in the process, the tapered lock fitting of the welded base with reduced thermal mass can more effectively approximate rapid temperature changes.

ÿ Before installing the weld base, a 50 mm diameter hole must be drilled in the pipe to accommodate the instrument. When welding the weld base to the pipe, it must be concentric with the pre-drilled hole.

Refer to Figure 2-5 for information on instrument T-piece application installation (using weld base). Size the T-piece so that the instrument tines are 25 mm set back from the main pipe wall. For higher flow rates, increase this value by 10 mm for every 1 m/s increase in main flow rate.

Figure 2-10: Instrument T-type bushing (welding base) installation



A. Horizontal or vertical installation for DN100 or larger diameter pipesB. 50 mm instrument opening in the pipeC. The distance between the instrument fork and the main pipe wall is determined by the maximum flow rate of the processD. Welding base (purchase according to pipe diameter)

2.3 Flow chamber installation

The flow chamber is supplied with the following parts: ÿ Welding ends or compression fittings for connection to the process pipe ÿ DN25, DN50 or DN80 inlet and outlet pipes

IMPORTANT: DO NOT change the length of the inlet and outlet tubing. Changing the tubing will adversely affect the temperature response and stability of the fitting.

Check the following conditions:

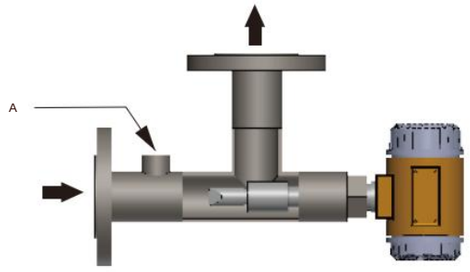
flow	5–40 l/min 5-300 l/min
Viscosity	Up to 1000cP
temperature	–50°C to 200°C
pressure	70bar @ 204°C, depending on process connection

Important: To ensure that the fluid in the flow chamber is regularly renewed, please confirm that the flow rate at the tube wall and the flow velocity are within the limits stated in this table.

ÿ The thermal mass of the flange may affect the instrument's response time to temperature changes.

See Figure 2-11 for an example of a flow cell installation for the meter.

Figure 2-11: Instrument flow chamber installation



A. Optional temperature element mounting port

NOTE: ÿ This flow-through chamber is a direct-insert chamber, has no external temperature well, and uses 19.05mm connections.

ÿ The pressure of the three ferrule fittings on the flow chamber (12.7mm drain, 19.05mm temperature element mounting and 38.1mm instrument mounting nut) Rating is higher than the working pressure of the flow chamber.

2.4 Open tank installation (long stem instrument)

careful

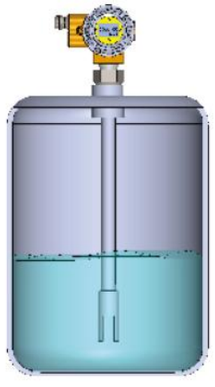
Only the safe area version of the long stem meter can be installed on open tanks.

Check the following conditions:

flow	0.3 to 0.5 m/s (at instrument position) Important: If a stirrer is installed in the tank, the flow velocity in the tank may be higher than 0.5 m/s. (If the meter is mounted close to the side wall). Mounting the meter close to the center of the tank helps reduce The flow rate is displayed on the meter.
Viscosity	Up to 2000 cP
temperature	-40°C to 150°C
Ambient temperature	-40°C to 65°C Important: For open tank installations, the ambient temperature above the tank should be considered. The operating temperature range is +150°C, but for open tank installations, the tank The maximum ambient temperature above is limited to +65°C.

1. Clamp the long-stem instrument to the tank structure and position the clamp after determining the insertion depth of the instrument.

Figure 2-12: Open tank instrument installation (long rod)



2. Verify that the meter forks are away from the tank wall.

Figure 2-13: Instrument placement (away from tank wall)

A.50 mm B.200 mm

3. Verify that the meter forks are immersed in the fluid.

Figure 2-14: Meter placement (immersed in fluid)

Tuning fork full immersion fluid | Tuning fork not in contact with fluid | Tuning fork not completely filled with fluid

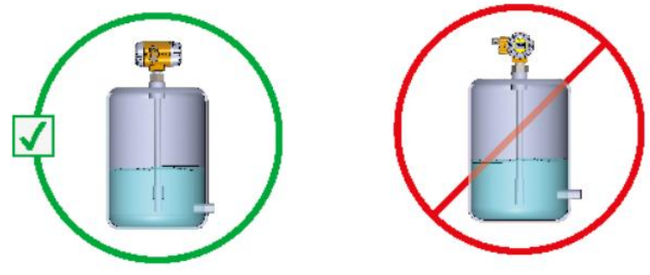
4. Verify that the meter fork is positioned away from objects and turbulence.

Figure 2-15: Instrument placement (distance from objects and disturbances)

A . 200 mm | A . 200 mm | A.200 mm

5. If flow is present, verify that the meter tines are aligned so that the fluid is flowing toward the tines or through the space between the tines.

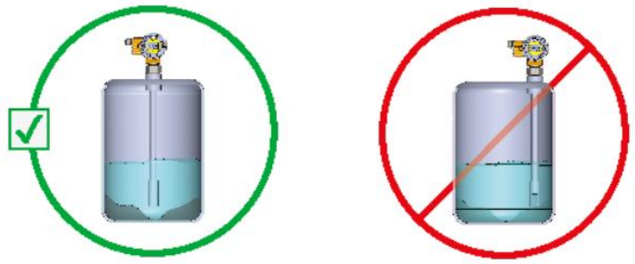
Figure 2-16: Meter placement (flow direction through tuning fork gap)



Fluid direction through tuning fork gap | Flow direction not passing tuning fork gap

6. Make sure the meter forks are clear of deposits.

Figure 2-17: Meter placement (away from sediment)

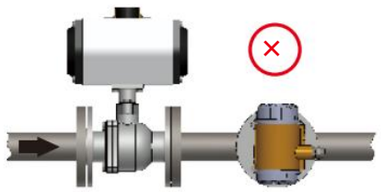


Tuning fork uncontacted deposit

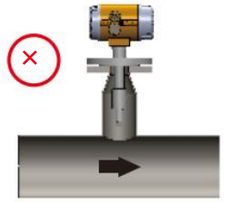
Tuning fork contacts sediment

. Unreasonable installation diagram

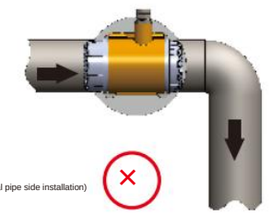
Figure 2-18: Schematic diagram of unreasonable installation of horizontal pipelines



(Horizontal pipe side installation)

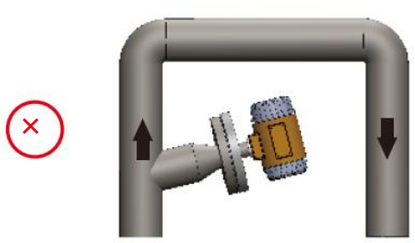


(Horizontal pipe top installation)

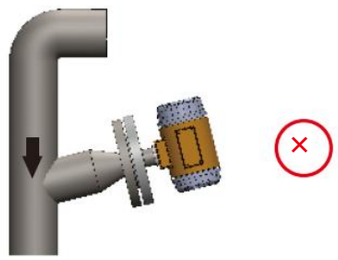


(Horizontal pipe side installation)

Figure 2-19: Schematic diagram of unreasonable installation of vertical pipelines



(Vertical pipe side mounting)



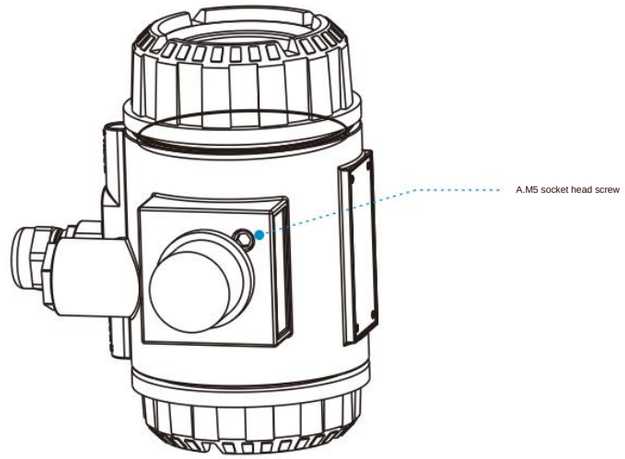
(Vertical pipe side mounting)

2.4 Rotating the electronic components on the instrument (optional)

You can rotate the transmitter of the instrument by 90°.

1. Use a 4mm hexagonal wrench to loosen the hexagon socket screw that secures the transmitter.

Figure 2-20: Parts for fixing the transmitter



A. M5 hexagon socket head screw

2. Rotate the transmitter counterclockwise to the desired orientation, up to 90°.

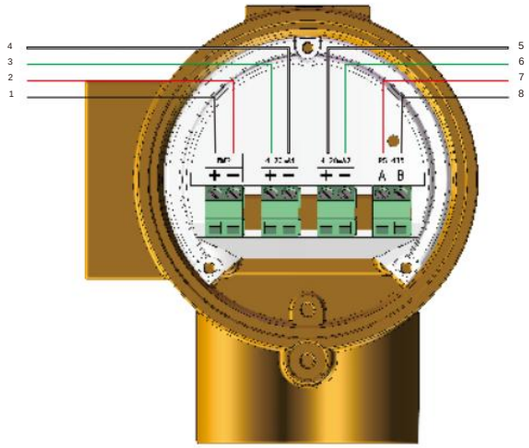
3. Fasten all screws and tighten.

3. Wiring method

3.1 Terminal Blocks

The signal terminal is set in a separate compartment of the electrical box. When wiring, the meter cover on the wiring side can be unscrewed. Connect the power line 24V and the current signal line as marked. It is best not to put the current signal line together with other strong power lines or in the same line slot, and do not pass near strong electric field equipment. The casing of the tuning fork density/concentration meter is grounded. When checking the insulation resistance, the circuit inspection should use a voltage not greater than 45V, and the maximum output current of the density/concentration meter should not exceed 30mA.DC.

Figure 3-3: APX circuit board wiring diagram



1.DC24V+(100mA) 5.Second channel 4-20mA+ 6.Second channel 4-20mA- 7.RS-485A 2. DC24V- 3. First channel 4-20mA+ 4. First channel 4-20mA- 8.RS-485B

The maximum value of 2500 indicates an alarm and no current is output.

Scan to watch the video

3.2 Grounding wire

The instrument must be grounded in accordance with the standards applicable at the site. It is the customer's responsibility to be aware of and comply with all applicable standards. Perform grounding according to the following instructions:

In the absence of an applicable external standard, follow these guidelines for grounding the sensor:

ÿ Use copper wire, 2.08mm² or larger wire diameter.

ÿ All grounding wires should be as short as possible, with an impedance of less than 1 ohm. ÿ

Connect the grounding wire directly to the ground, or follow factory standards.

4. Troubleshooting

4.1 Common Troubleshooting

In the event of a fault, the following steps can help identify the cause of the problem. It can also help determine whether it needs to be disassembled for repair. The following options help diagnose and repair several basic fault symptoms. For each symptom, first deal with the condition that is easiest to check. If it cannot be eliminated, please contact our service center.

1. No display Check whether the power supply is properly connected, the four wires cannot be connected incorrectly, and the power supply cannot be connected in series with a load; Check whether the circuit is short-circuited and whether the voltage is normal; Check whether the positive and negative poles of the power supply are connected in reverse;

2. Deviation becomes larger or output is unstable

Check if there is any sticky substance on the sensor. If there is, rinse it off or wipe it with a cotton swab and alcohol; Observe whether there is excessive vibration or interference from high-power inverters and motors, and then change the installation position; Check if there are large bubbles or the flow rate is too high, or the liquid does not fully contact the sensor;

3. The output is always fixed. The sensor may be blocked and cannot generate vibration. It should be disassembled and checked. If it is not, the instrument is damaged. When not measuring for a long time, please turn off the power. The fork body cannot collide or bear heavy weight.

6. Selection information

Ordering information:

Basic information of the measured medium

1. Name of the medium to be measured and the properties of the liquid; ÿ pure liquid ÿ solution ÿ slurry ÿ emulsion (the mixture must be uniform) 2.

Medium temperature: commonly used _____ Minimum _____ Max. _____ÿÿ

3. Maximum working pressure: _____MPaÿ

4. Medium density/concentration range: _____,

5. Medium viscosity: _____,

6. Other special properties: _____,

Process connection

1. Process connection: ÿDN50 flange ÿG1.5 inch thread ÿ3 inch sanitary chuck ÿother specifications;

Wetted parts material

1. Wetted material: ÿ316L ÿDuplex stainless steel ÿHastelloy C Titanium Others;

2. Coating material: ÿ PFA coating ÿ PTFE coating ÿ Others

Electrical interface

1. Electrical interface: ÿM20*1.5 ÿ1/2NPT ÿothers;

Power supply

1. Power supply: ÿ24VDC;

Output method

1. Output mode: ÿdensity (4-20mA) ÿtemperature (4-20mA) ÿconcentration (4-20mA) ÿmodbus485 ÿothers;

Installation information

Tank installation: ÿYes ÿNo

1. Tank properties: ÿ storage tank ÿ process tank ÿ reactor;

2. Installation location: ÿ side installation ÿ top

installation; 3. Tank shape and _____,

size: 4. Tank _____,

material: 5. Tank internal description: ÿ stirring ÿ deposition ÿ crystallization ÿ lining ÿ bubbles ÿ description;

Pipeline installation: ÿYes ÿNo

6. Pipeline conditions: ÿ horizontal ÿ vertical upward flow ÿ vertical downward flow; 7. Pipeline

flow rate: 8. Pipeline _____,

size: 9. Pipeline _____,

material: 10. _____,

Installation location: _____,

11. Condition inside the pipe: ÿ Yes ÿ No Full Pipe ÿ Yes ÿ No Air Entrainment

12. Is a three-way connection required? ÿYes ÿNo;

Explosion-proof certification:

Explosion-proof grade requirements: _____; Protection level: _____,

Other requirements

illustrate: _____,

7. Product selection table

APX301 Online Tuning Fork Density Meter (Concentration Meter)											
	Code Type										
	A Ordinary standard type										
	B Explosion-proof type (flameproof grade: Ex d IIC T6 Gb; protection grade: IP66)										
	C Split										
		Code electrical interface									
		M M20X1.5									
		G G1/2									
		N 1/2 NPT									
		C Other specifications (user-selected, please specify separately)									
			Code Process Connection								
			L Thread type (01) G1" thread; (02) G1.5" thread; (02) Other								
			F	Flange type (01) DN25; (02) DN32; (03) DN40; (04) DN50; (05) DN80; (06) DN100; (07) DN125; (08) DN150; (09) Others;							
			W Sanitary type (01) 1.5" chuck; (02) 2" chuck; (03) 3" chuck; (04) Other								
			C Others (user-selected, please specify)								
				Code insertion length							
				A (01) 128mm; (02) 150mm (standard)							
				B rod type extension 70mmÿ3000mm optional							
				C Cable extension 1000mmÿ8000mm optional							
					Code Wetted Material						
					1 316 Stainless Steel						
					2 Anti-corrosion technology: 316 stainless steel + PTFE						
					3 Anti-corrosion technology: 316 stainless steel + PFA						
					C (01) 2205 duplex stainless steel; (02) Hastelloy; (03) Titanium; (04) Zirconium; (05) Others						
						Code voltage					
						D 24V DC±10%					
							Code output (with built-in temperature compensation)				
							A 4-20mA (01) two-wire; (02) four-wire				
							B Two-way 4-20mA four-wire system				
							C RS-485ÿmodbusÿ				
							D HEART				
								Code Temperature			
								A Normal temperature -20-100ÿ			
								B High temperature -20-150ÿ C Ultra			
								high temperature -20-250ÿ Code pressure			
									A Normal pressure -0.1-2MPa		
									B Maximum pressure ÿ4MPa		
									C Ultrahigh pressure ÿ10MPa		
										Code Display	
										M 0—2.5g/cm³ Density	
										Y 0-100% concentration A, B component multi-function display	
										S 0-100°Bé Baume	
										Z () Other user requirements	
											Code Display
											A LCD
											B No display
											C Secondary display
											D Other requirements of users
APX301	A	M	L02 A02		1	D	A01	A	A	M	A