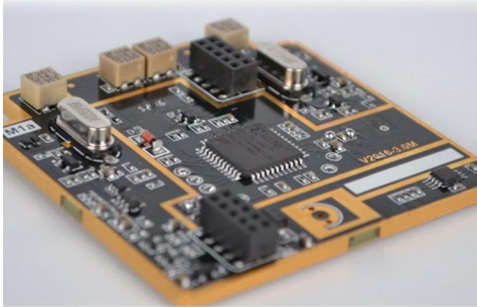


Tuning fork densitometer uses acoustic frequency signal source to excite the metal tuning fork, and makes the tuning fork vibrate freely at the center frequency. This frequency has a corresponding relationship with the density of liquid. Therefore, the density or concentration of liquid can be measured by analyzing the frequency.



Working Principle

The resonant fork density meter operates based on the principle of component vibration. The component part is the fork portion that immerses into the measured liquid. The fork part induces vibration by the built-in piezoelectric device fixed at one end of the fork body. The oscillation frequency is detected by the secondary piezoelectric device fixed at the other end of the fork body and then amplified through the circuit on the top. Liquid density is closely related to the vibration frequency when the measured liquid flows. When the density of the measured liquid changes, the vibration frequency during liquid flow also changes accordingly. The density of the measured liquid can be accurately calculated through the following equation:

$$D = K_0 + K_1T + K_2T^2$$

D= density of uncalibrated measured medium (KG/M3)

T= perturbation frequency (MS).

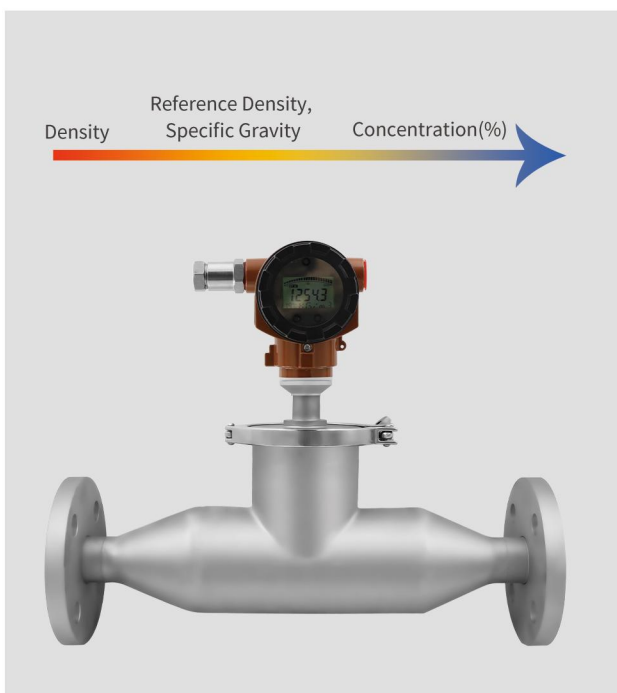
K0, K1, K2= constants

Features

- Density, standard density, or special calculated values (solid percentage, concentration, specific gravity, etc.).
- Unique straight-through design, length up to 4 meters
- The integrated transmitter can perform analog and digital communication.
- Strict testing and calibration during the production ensure accuracy and performance.
- Continuous real-time measurement can be carried out in pipelines, bypasses, and tanks.
- There are various anti-corrosion materials, including 316L, HaC, zirconium, and other materials.
- Optimized design - not easily affected by vibration and pressure changes
- Automatically compensate for temperature during density detection to reduce the effect on the density of the measured medium

Applications

- Density measurement of lime slurry, gypsum slurry, and other liquids in the desulfurization industry.
- Density measurement of ammonia water, urea solution, and other liquids in the desalination industry.
- Density measurement of sulfuric acid, hydrochloric acid, nitric acid, and other liquids in the chemical industry.
- Density measurement of slurry, coal slurry, petroleum, and finished oil.
- Density measurement of syrups, starch, emulsions, and fruit juice.
- Density measurement of pharmaceutical liquids and concentrates.
- Density measurement of chemicals and liquid chemicals such as alcohol, methanol, ethanol, and ethylene glycol.



Fork Density Meter

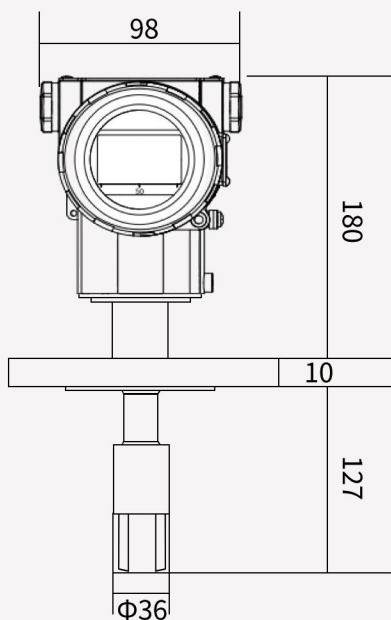
Model	TFD-600	TFD-610	TFD-620
Image			
Application	Liquid	Liquid	Liquid
Measuring Range	0.5 – 2.5 G /CC (500 – 2500 KG/M3)	0.5 – 3.0 G /CC (500 –3000 KG/M3)	0.5 – 2.5 G /CC (500 – 2500 KG/M3)
Measuring Accuracy	± 0.001G /CC (± 1 KG/M3)	± 0.001G /CC (± 1 KG/M3)	± 0.001G /CC (± 1 KG/M3)
Repeatability	± 0.0001G /CC (± 0.1KG/M3)	± 0.0001G /CC (± 0.1KG/M3)	± 0.0001G /CC (± 0.1KG/M3)
Temperature Range	-20°C ~ +80°C	-50°C ~ +150°C	-50°C ~ +150°C
Working Pressure	20 BAR (2MPa)	207 BAR (3000 PSI)	10 BAR (1MPa)
Fluid Viscosity Range	0 – 2000 CP	0 – 10000 CP	0 – 20000 CP
Temperature Coefficient	Less Than 0.1KG/M3/°C (after correction)	Less Than 0.1KG/M3/°C (after correction)	Less Than 0.1KG/M3/°C (after correction)
Pressure Influence	Can be ignored	Can be ignored	Can be ignored
Built-in Temperature Sensor	Digital Sensor	Digital Sensor	Digital Sensor
Contact Material	316L	316L Stainless Steel, Hastelloy Alloy	316L Stainless Steel, Hastelloy Alloy
Fork Coating	Standard Type	Standard Type,PTFE or Electropolishing	Standard Type,PTFE or Electropolishing
Power Supply	24VDC, ≥50 MA	24VDC, ≥50 MA	24VDC, ≥50 MA
Analog Signal Output	4 -20 MA RS485 MODBUS RTU	4 -20 MA 0-1000HZ RS485 MODBUS RTU	4 -20 MA 0-1000HZ RS485 MODBUS RTU
Output Accuracy	Reading of ±0.1% or ±0.05% FS	Reading of ±0.1% or ±0.05% FS	Reading of ±0.1% or ±0.05% FS
Output Repeatability (-40~+85°C)	± 0.05% FS	± 0.05% FS	± 0.05% FS
Process Connection	ANSI 150 ~ 1500 RF DIN 50 PN16 DIN 50 PN40	ANSI 150 ~ 1500 RF DIN 50 PN16 DIN 50 PN40	IDF 和 RJT 卫生型
Protection Level	IP65	IP65	IP65
Housing	Aluminum Alloy	Aluminum Alloy	Aluminum Alloy

Fork Density Meter

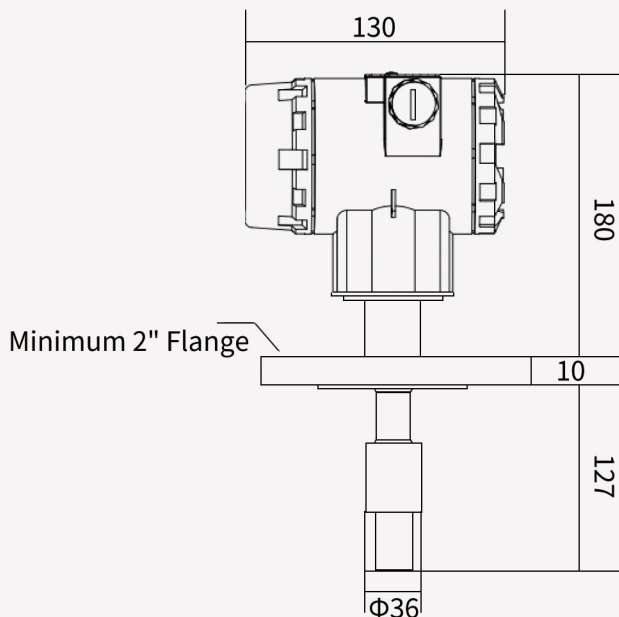
Model	TFD-630	TFD-640	TFD-650
Image			
Application	Liquid	Liquid	Liquid
Measuring Range	0.5 – 3.0 G /CC (500 – 3000 KG/M3)	0.5 – 3.0 G /CC (500 – 3000 KG/M3)	0.5 – 3.0 G /CC (500 – 3000 KG/M3)
Measuring Accuracy	± 0.001G /CC (± 1 KG/M3)	± 0.001G /CC (± 1 KG/M3)	± 0.001G /CC (± 1 KG/M3)
Repeatability	± 0.0001G /CC (± 0.1KG/M3)	± 0.0001G /CC (± 0.1KG/M3)	± 0.0001G /CC (± 0.1KG/M3)
Temperature Range	-50°C ~ +180°C	-50°C ~ +150°C	-20°C ~ +80°C
Working Pressure	10 BAR (1MPa)	10 BAR (1MPa)	10 BAR (1MPa)
Fluid Viscosity Range	0 – 10000 CP	0 – 5000 CP	0 – 5000 CP
Temperature Coefficient	Less Than 0.1KG/M3/°C (after correction)	Less Than 0.1KG/M3/°C (after correction)	Less Than 0.1KG/M3/°C (after correction)
Pressure Influence	Can be ignored	Can be ignored	Can be ignored
Built-in Temperature Sensor	Digital Sensor	Digital Sensor	Digital Sensor
Contact Material	316L Stainless Steel, Hastelloy Alloy	316L Stainless Steel, Hastelloy Alloy	316L Stainless Steel, Hastelloy Alloy
Fork Coating	Standard Type,PTFE or Electropolishing	Standard Type,PTFE or Electropolishing	Standard Type,PTFE or Electropolishing
Power Supply	24VDC, ≥50 MA	24VDC, ≥50 MA	24VDC, ≥50 MA
Analog Signal Output	4 -20 MA 0-1000HZ RS485 MODBUS RTU	4 -20 MA 0-1000HZ RS485 MODBUS RTU	4 -20 MA 0-1000HZ RS485 MODBUS RTU
Output Accuracy	Reading of ±0.1% or ±0.05% FS	Reading of ±0.1% or ±0.05% FS	Reading of ±0.1% or ±0.05% FS
Output Repeatability (-40~+85°C)	± 0.05% FS	± 0.05% FS	± 0.05% FS
Process Connection	ANSI 150 ~ 1500 RF DIN 50 PN16 DIN 50 PN40 IDF and RJT Sanitary Types	ANSI 150 ~ 1500 RF DIN 50 PN16 DIN 50 PN40 IDF and RJT Sanitary Types	ANSI 150 ~ 1500 RF DIN 50 PN16 DIN 50 PN40 IDF and RJT Sanitary Types
Protection Level	IP65	IP65	IP65
Housing	Aluminum Alloy	Aluminum Alloy	Aluminum Alloy

Product Dimensional Diagram

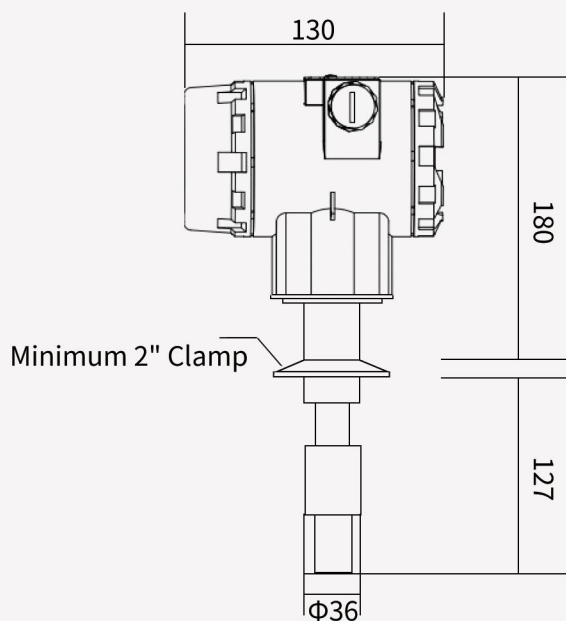
Frontal Dimension



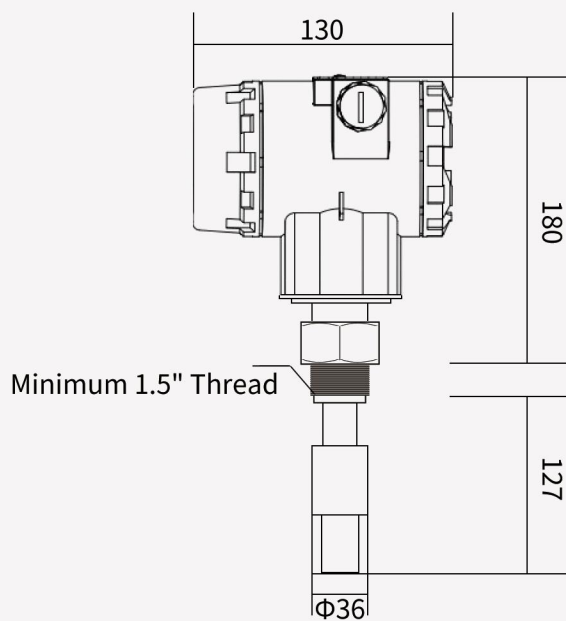
Flange Connection Dimension



Clamp Connection Dimension



Thread Connection Dimension



Remark: The maximum insertion length is 4m