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Wireless smart sensor series product manual

WIFI | 4G | LORA | NB-IOT | LoRaWAN

Wireless communication free cloud platform



Edge computing

Easy installation

Remote settings

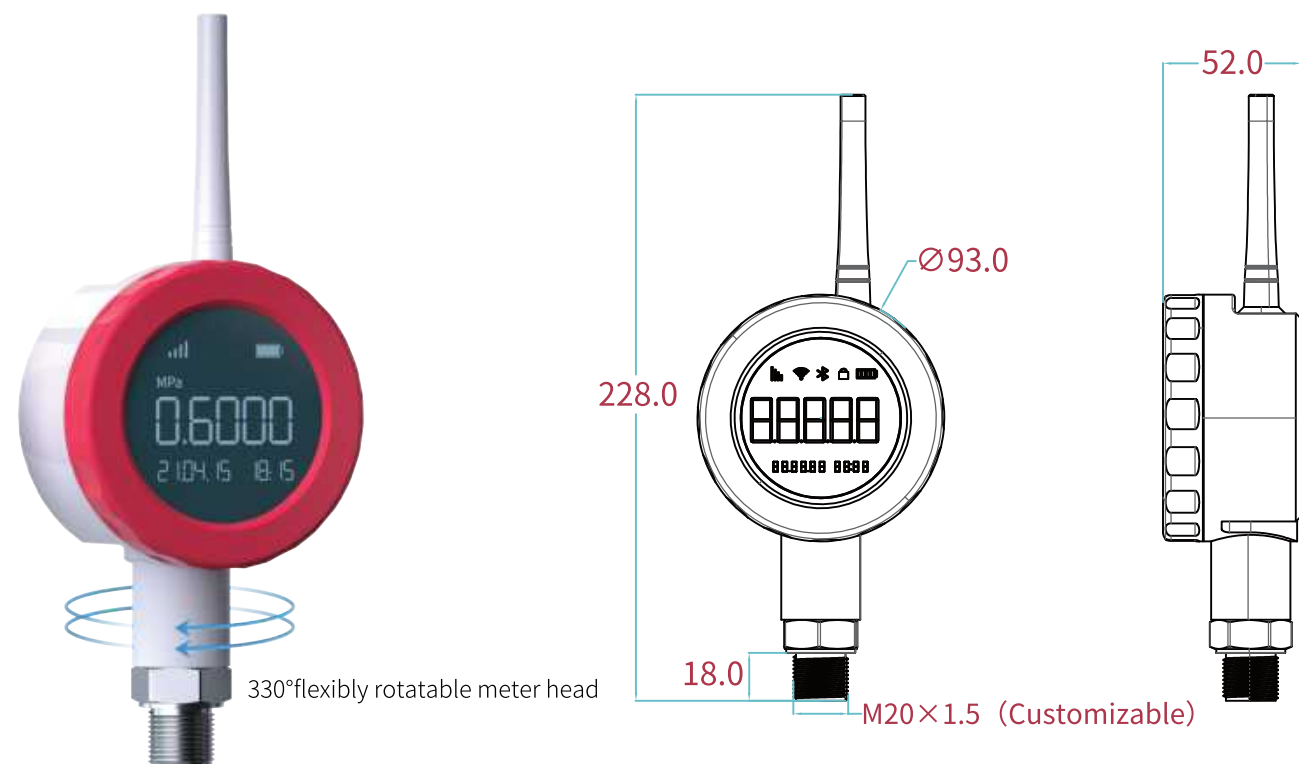
Abnormal alarm

Ultra-low power consumption

Test and Measurement instruments & Smart IoT
www.toprie.com

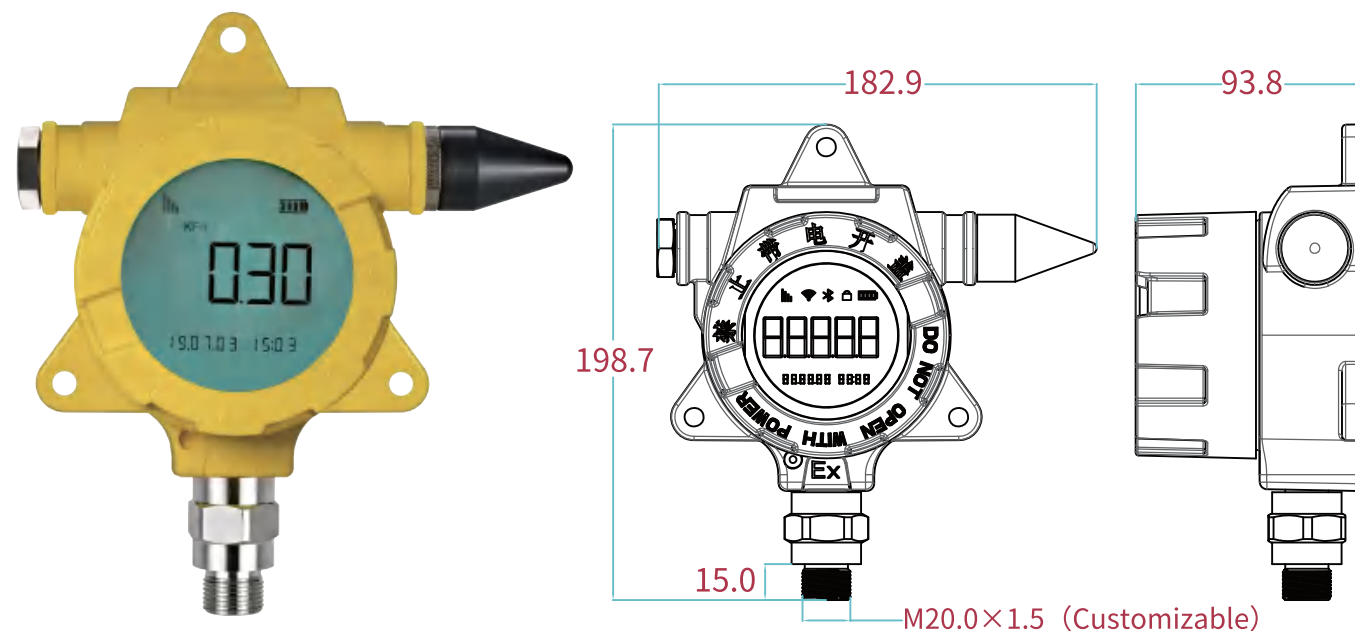
Waterproof wireless pressure gauge

TP2401 supports 4G, LORA and other connections to free paltform, USB settings, data export (PDF, CSV format) over-limit alarm(Immediately report if exceeding the limit) sensor value correction.



Explosion-proof wireless pressure gauge

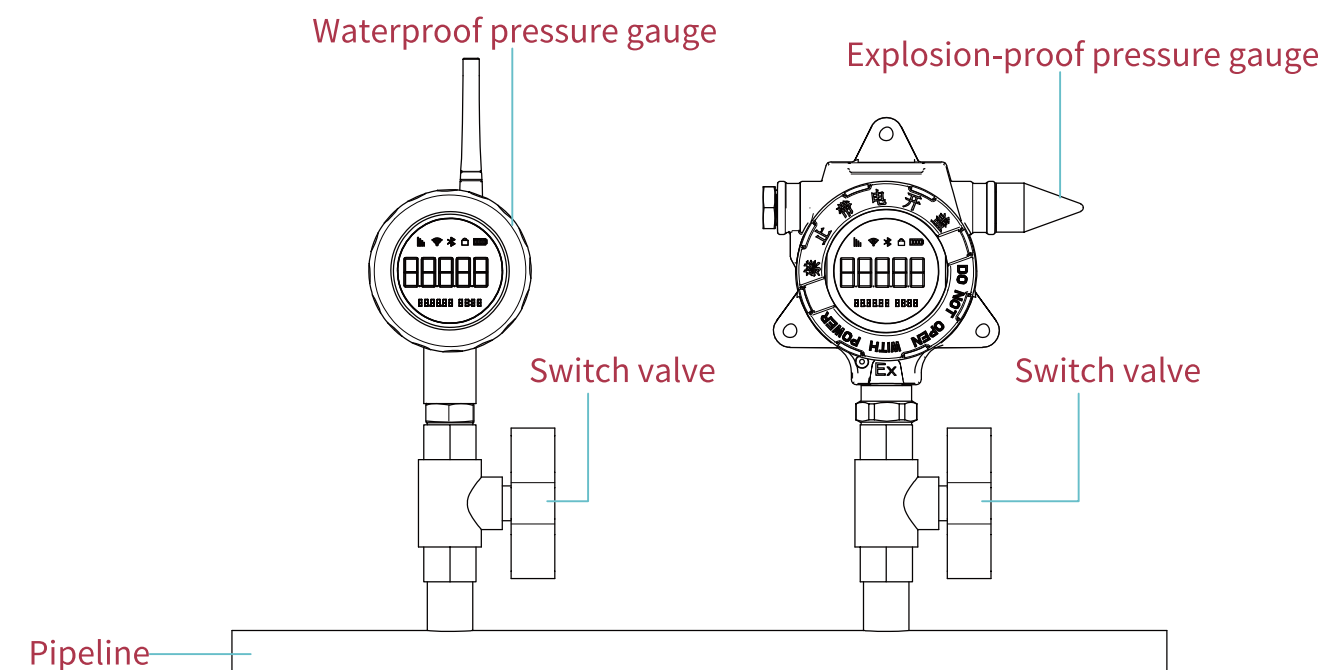
TP2401 adopts low-power explosion-proof design, mobile phone APP remote monitoring real-time data, 4G, LORA and other network connections.



Wireless Pressure Gauge Specifications

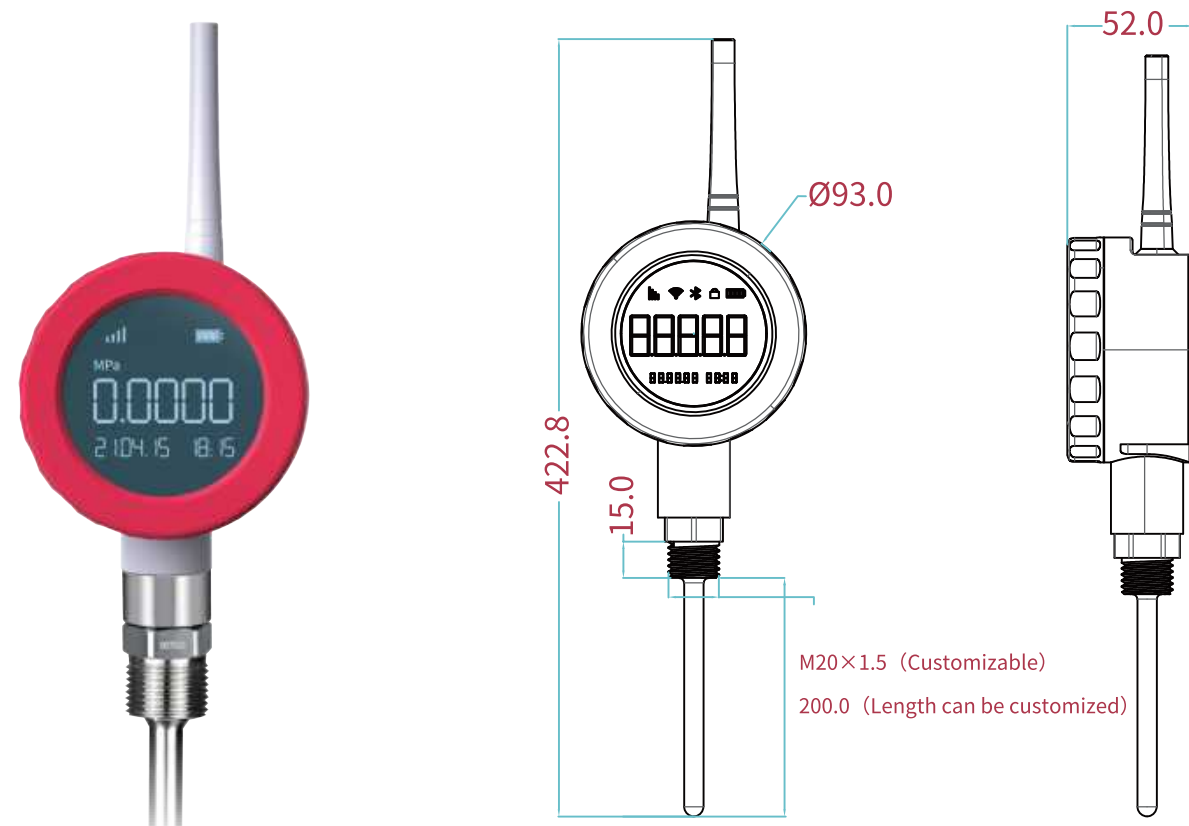
Power supply	Battery powered waterproof model 3.6V, 17Ah; explosion-proof model 3.6V, 19Ah (external power supply and charging version can be customized)
Battery life	NB communication: 4-5 years, 4G communication: 2-2.5 years (upload data once an hour, and with stable signal) battery model (non-rechargeable, replaceable)
Internal battery	With low battery alarm function
Power consumption	Standby current ≤80uA, average data transmission current ≤150mA
Disply	TFT LCD screen
Communication	NB-IOT, LORA, LoraWan, 4G, RS485, wifi optional
Antenna	External antenna
Sampling interval	Configurable time10S~2550S
Data transmit interval	1min~1440min. Note: The shorter of the time, the shorter life of the battery.
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Pressure, temperature, battery level, signal, card number
Operating TEMP	-30°C~70°C (medium does not crystallize)
Humidity	0-100%RH
Range	0~1.6MPa (default); (-0.1~60MPa optional)
Overload pressure	200%FS(less than10MPa);150%F.S(25MPa)
Material	The sensor housing is made of stainless steel and the pressure diaphragm is 316L
Accuracy	0.5% F.S (default), (0.2%F.S, 0.1%F.S optional)
TEMP effect	0.015%F.S/°C
Interface	Thread interface, M20*1.5 (thread can be customized)
Protecte level	Waterproof model IP66; explosion-proof model IP68

Pipeline installation diagram



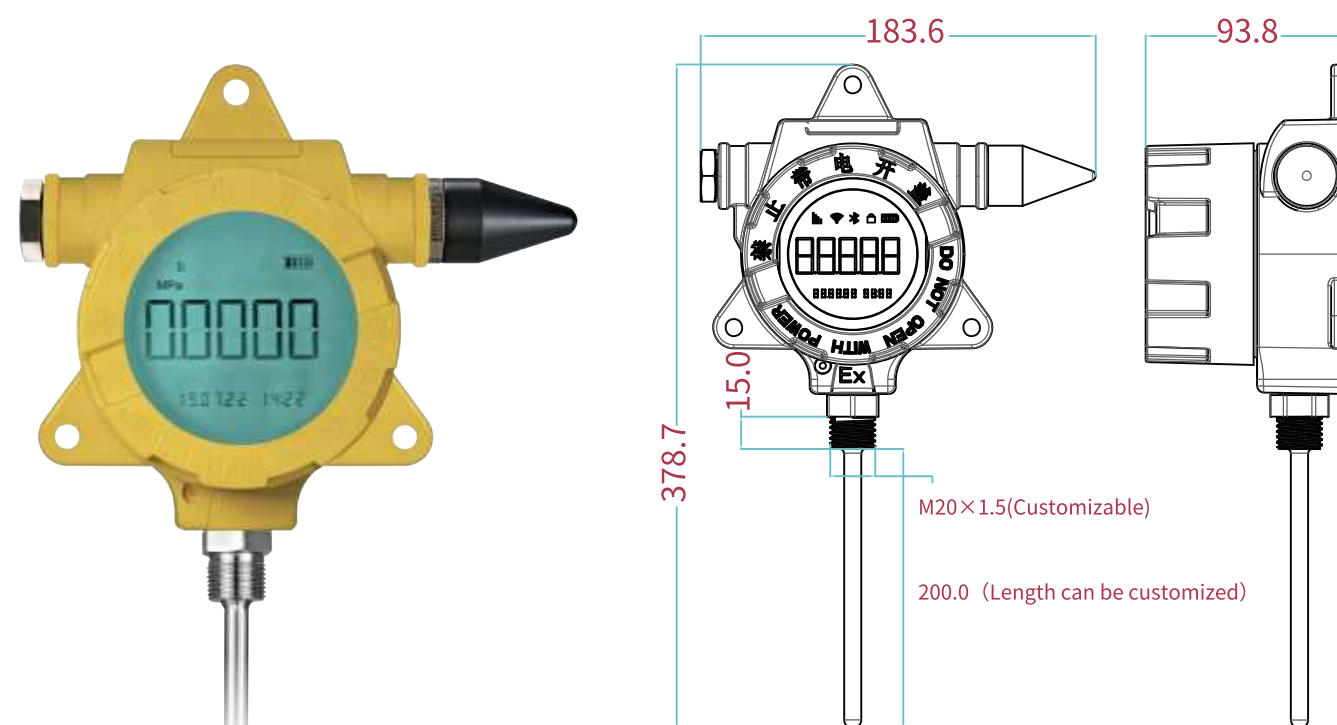
Waterproof wireless thermometer

TP2402 adopts NB-IOT, 4G, LORA network connection platform, USB settings, data export (PDF, CSV format) and Supports over-limit alarm (immediate reporting when over-limit occurs) and supports sensor value correction.



Explosion-proof wireless thermometer

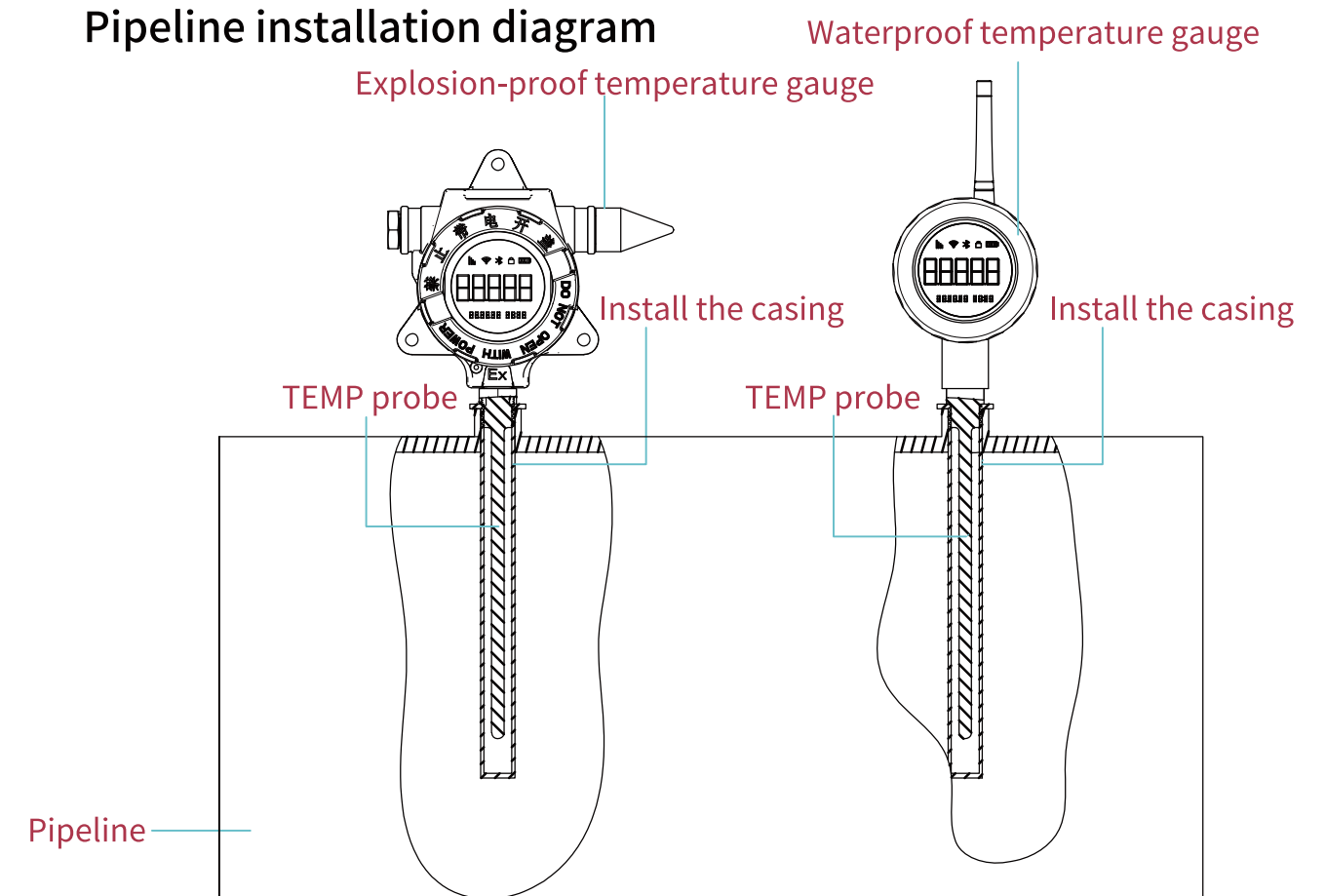
TP2402 adopts low-power explosion-proof design, mobile phone APP remote monitoring of real-time data, 4G, LORA and other network connection methods.



Wireless Temperature gauge Specifications

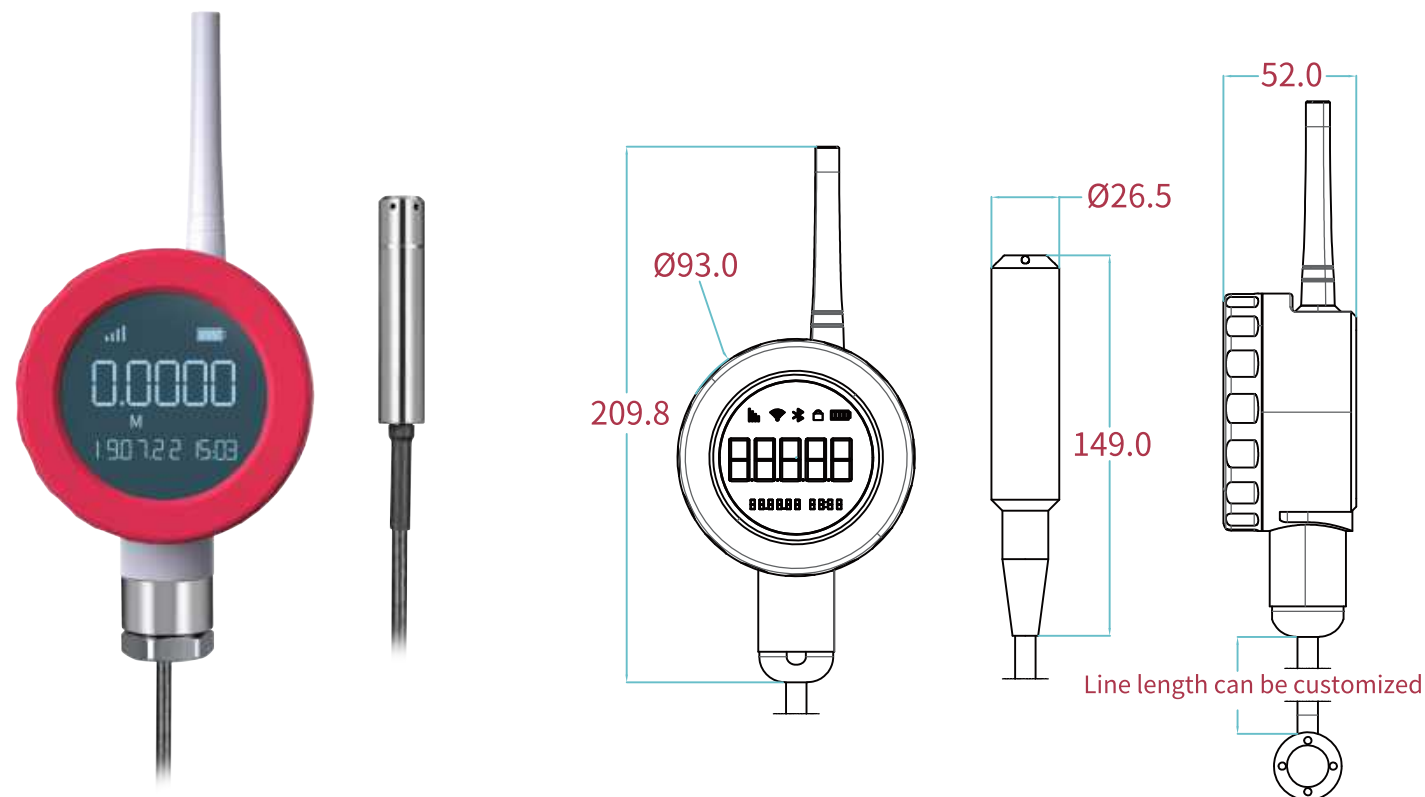
Power supply	Battery powered waterproof model 3.6V, 17Ah; explosion-proof model 3.6V, 19Ah (external power supply and charging version can be customized)
Battery life	NB communication: 4-5 years, 4G communication: 2-2.5 years (upload data once an hour, and with stable signal) battery model (non-rechargeable, replaceable)
Power consumption	Standby current ≤80uA, average data transmission current ≤150mA
Display	TFT LCD screen
Communication	NB-IOT, LORA, LoraWan, 4G, RS485, wifi optional
Antenna	External antenna
Sampling interval	Configurable time 10S~2550S
Data transmit interval	1min~1440min. Note: The shorter of the time, the shorter life of the battery.
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Temperature, battery level, signal, card number
Operating TEMP	Meter head -30~70°C
Range	-200-600°C, if it exceeds 200°C, it needs to be split
Material	The sensor housing is made of stainless steel
Accuracy	±0.5°C, ±0.2°C, ±0.1°C optional
Interface	Threaded M20*1.5 (threaded, temperature measuring length probe can be customized)
Protect level	Waterproof model IP66; explosion-proof model IP68

Pipeline installation diagram



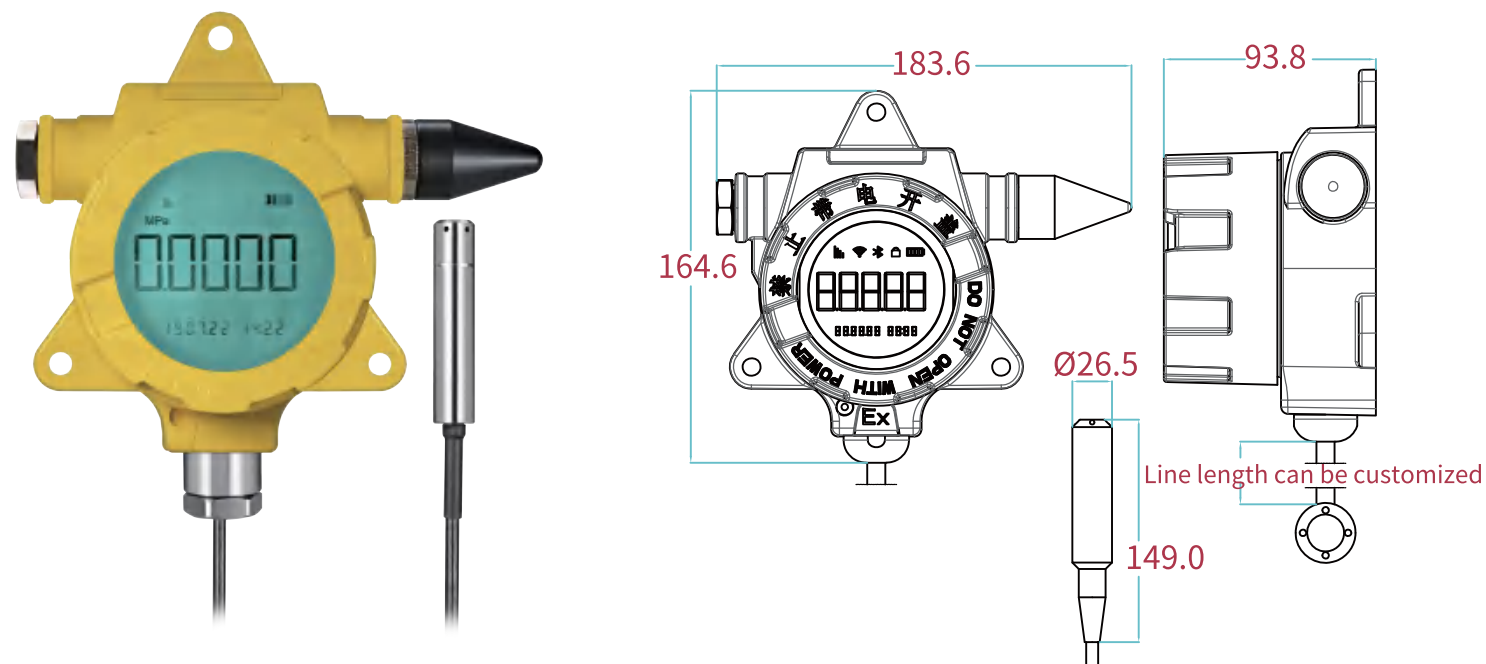
Waterproof wireless level gauge

TP2403 adopts 0.5-level high-precision liquid level sensor, IP66 waterproof grade high-precision design, 2.4-inch large -size LCD LED screen, supported 5-year ultra-long-life lithium battery.



Explosion-proof wireless liquid level gauge

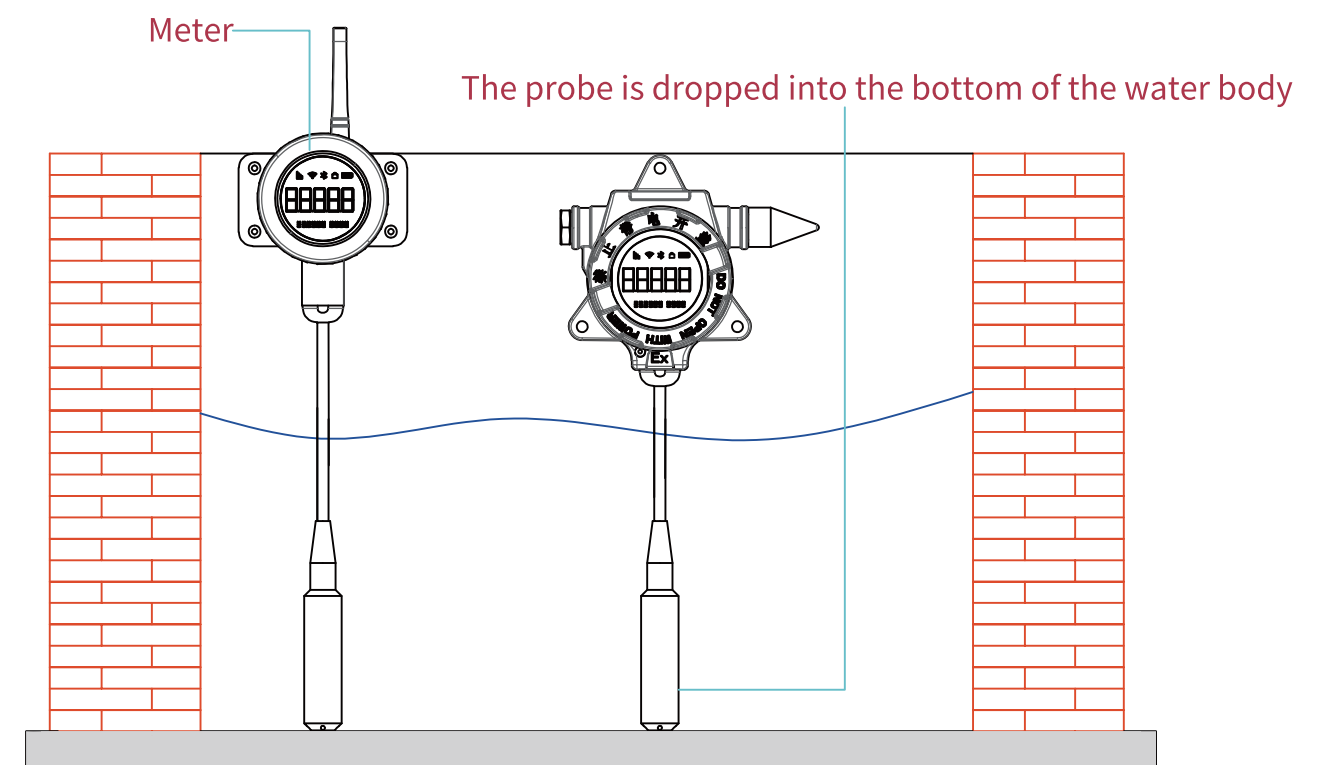
TP2403 adopts low-power explosion-proof design, waterproof grade IP68, and mobile phone APP remotely monitors real-time data. NB-IOT, 4G, LORA and other network connection methods.



Wireless level gauge specifications

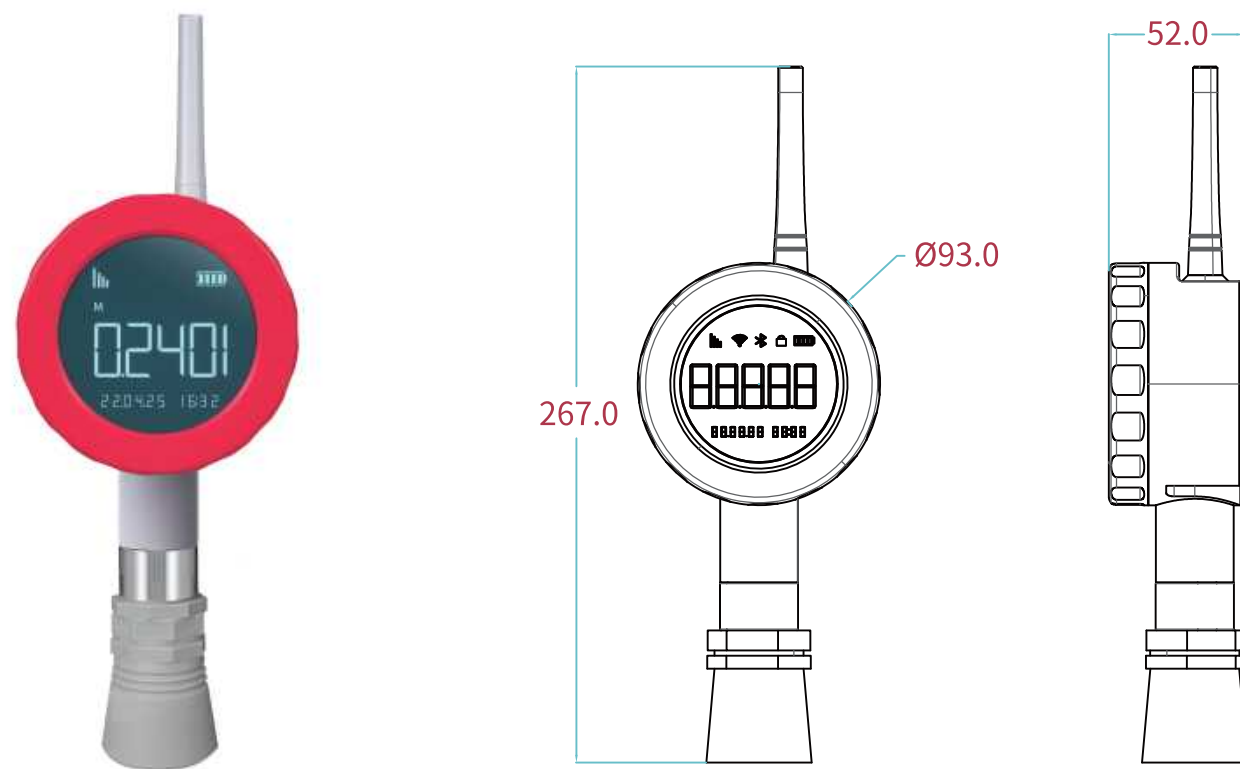
Power supply	Battery powered waterproof model 3.6V, 17Ah; explosion-proof model 3.6V, 19Ah (external power supply and charging version can be customized)
Battery life	NB communication: 4-5 years, 4G communication: 2-2.5 years (upload data once an hour, and with stable signal) battery model (non-rechargeable, replaceable)
Power consumption	Standby current $\leq 80\mu A$, average data transmission current $\leq 150mA$
Display	TFT LCD screen
Communication	NB-IOT, LORA, LoraWan, 4G, RS485, wifi optional
Antenna	External antenna
Sampling interval	Configurable time 10S~2550S
Data transmit interval	1min~1440min. Note: The shorter of the time, the shorter life of the battery
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Liquid level, Temperature, battery level, signal, card number
Operating TEMP	-30~70, humidity: <90%
Range	0~5M (default); (0~100M optional)
Accuracy	0.5%F.S
Material	0.015%F.S/°C
overload capacity	200%F.S
Interface	Submersible
Protect level	Waterproof model IP66; explosion-proof model IP68
Data storage	Support data storage function, with data storage and data re-issuance functions

Pipeline installation diagram



Waterproof wireless ultrasonic level gauge

TP2405 adopts ultrasonic level measurement, which is a non-contact measurement method with higher measurement accuracy.

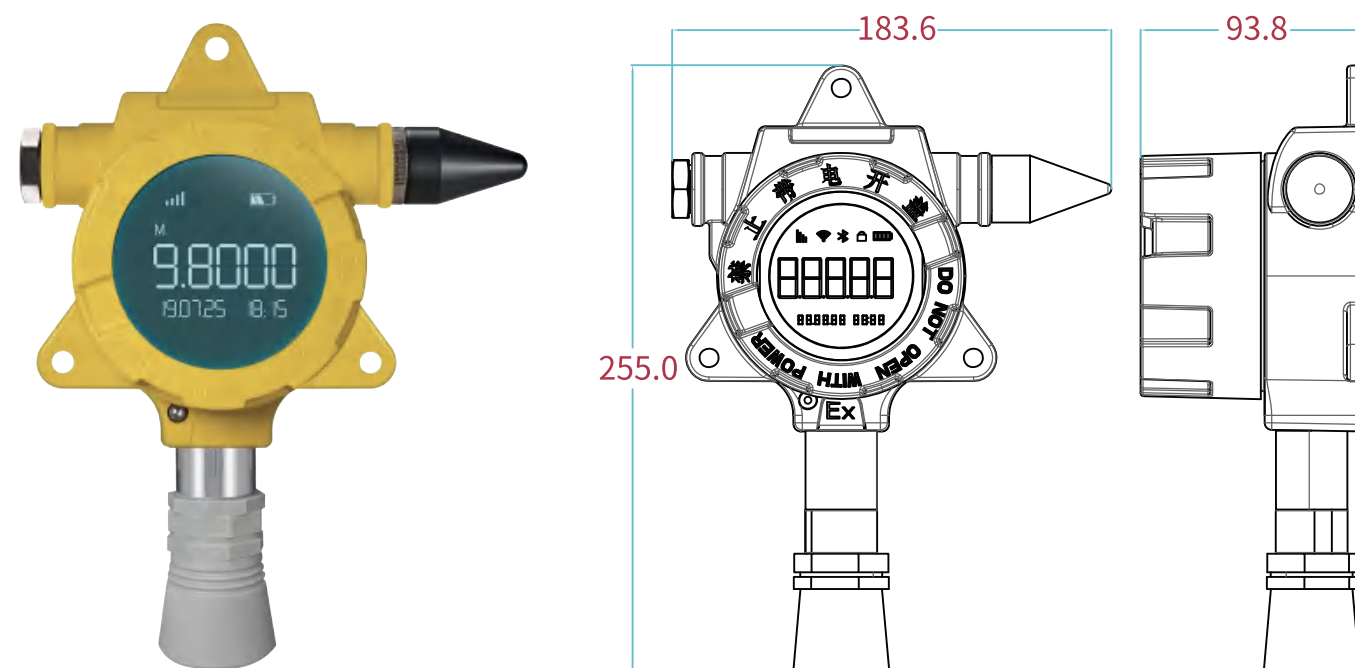


Wireless ultrasonic level gauge specifications

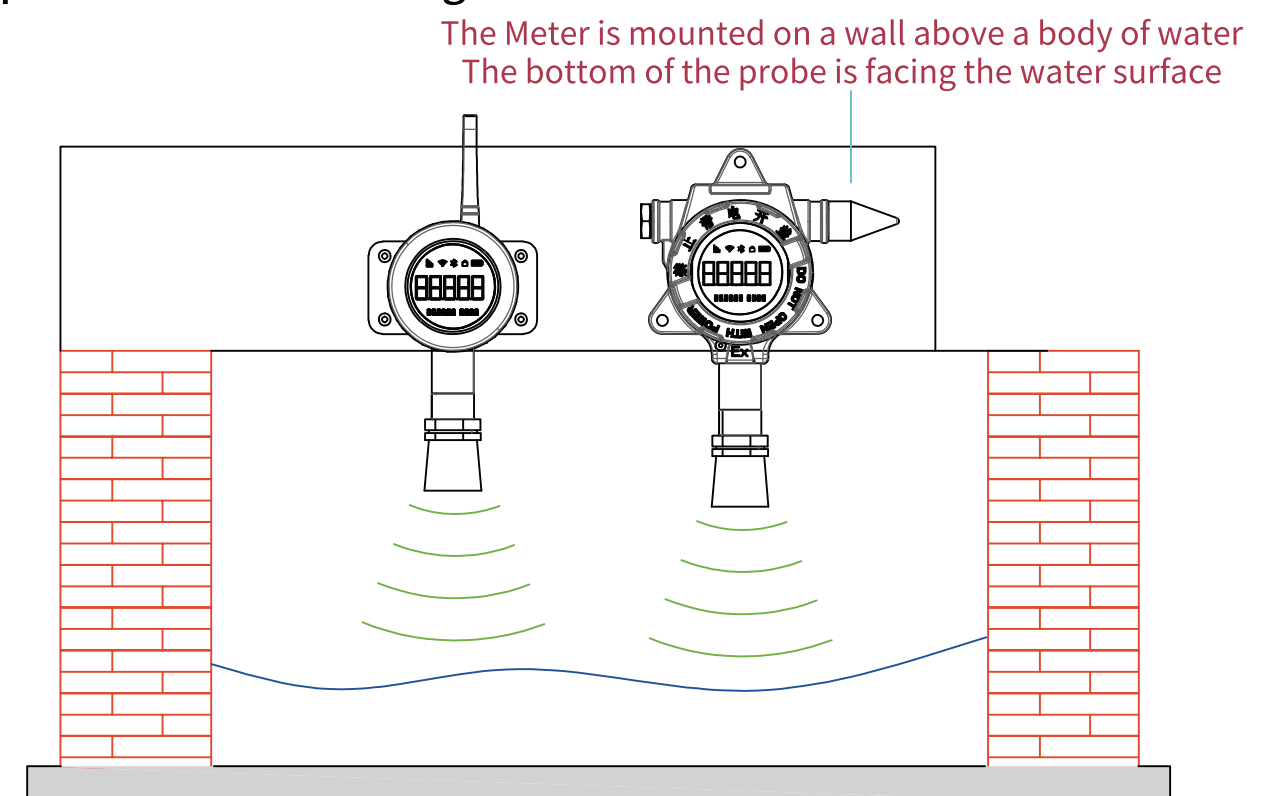
Power supply	Battery powered waterproof model 3.6V, 17Ah; explosion-proof model 3.6V, 19Ah (external power supply and charging version can be customized)
Battery life	NB communication: 4-5 years, 4G communication: 2-2.5 years (upload data once an hour, and with stable signal) battery model (non-rechargeable, replaceable)
Power consumption	Standby current $\leq 80\mu A$, average data transmission current $\leq 150mA$
Display	TFT LCD screen
Communication	NB-IOT, LORA, LoraWan, 4G, RS485, wifi optional
Antenna	External antenna
Sampling interval	Configurable time 10S~2550S
Data transmit interval	1min~1440min. Note: The shorter of the time, the shorter the battery
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Liquid level, liquid distance, battery charge, signal, card number
Operating TEMP	-30°C~70°C (medium does not crystallize)
Range	8 meters (measurement angle 15°-20° optional)
Accuracy	$\pm (1+S \times 0.3\%)CM$
measuring blind zone	25CM
TEMP compensation	With temperature compensation
Interface	Ultrasonic measurement
Protecte level	Waterproof model IP66; explosion-proof model IP68

Explosion-proof wireless ultrasonic liquid level gauge

TP2405 adopts low-power explosion-proof design, waterproof grade IP68, mobile phone APP remote monitoring real-time data, NB-IOT, 4G, LORA and other network connection methods.

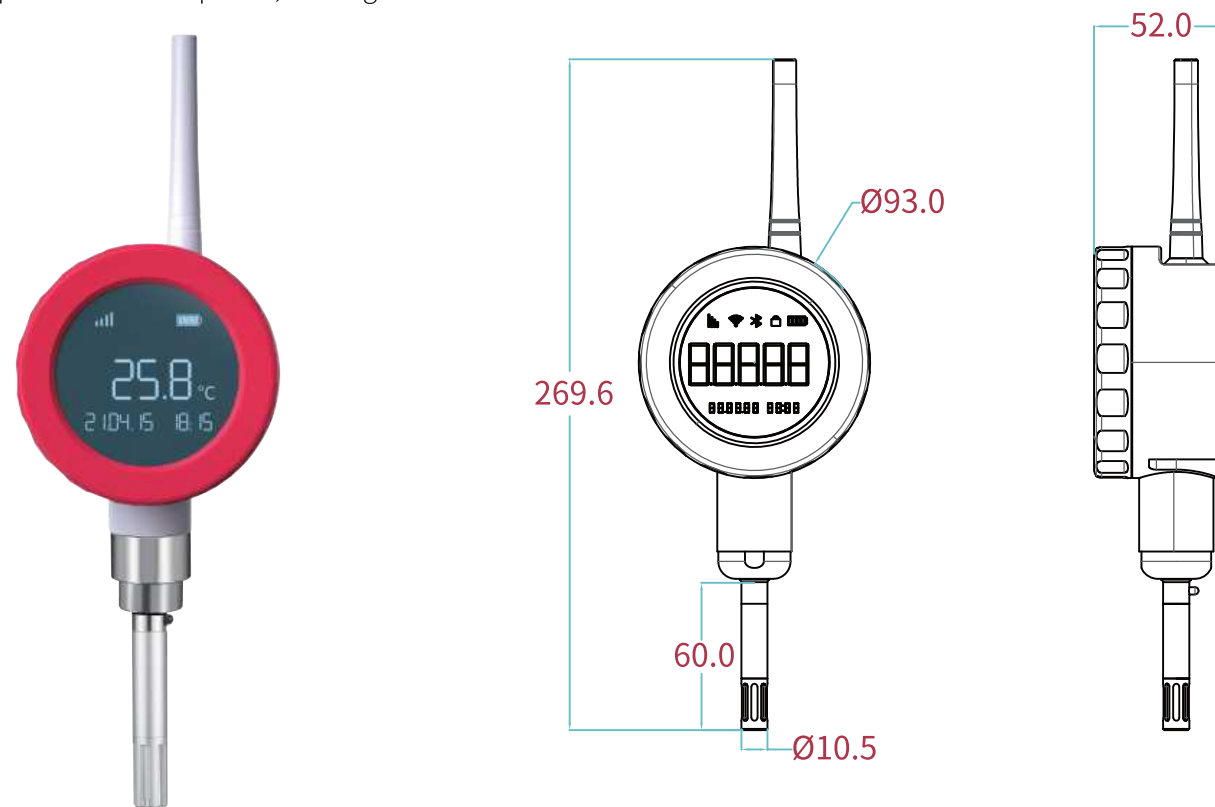


Pipeline installation diagram



Waterproof wireless temperature and humidity meter

TP2406 uses a high-precision temperature and humidity chip, Low-power and dust-proof filter design for the sensor, which greatly improves the service life of the TEMP and RH sensor. It is powered by a large-capacity battery and does not require external AC power, making installation more convenient.

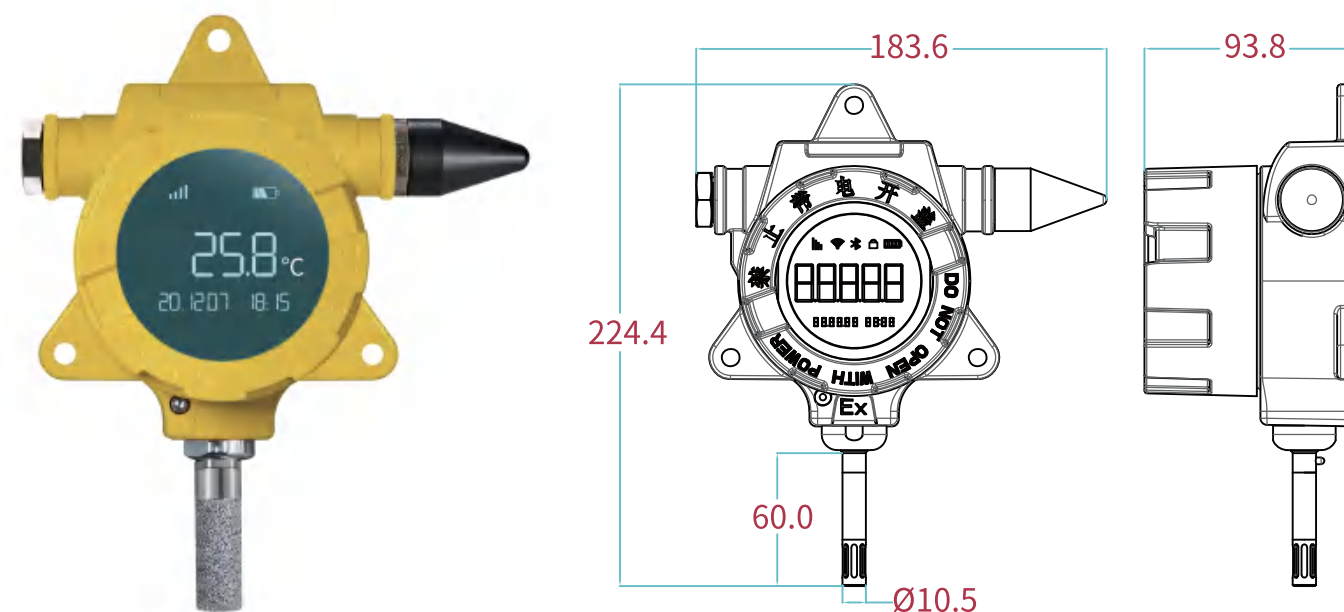


Wireless temperature and humidity meter specifications

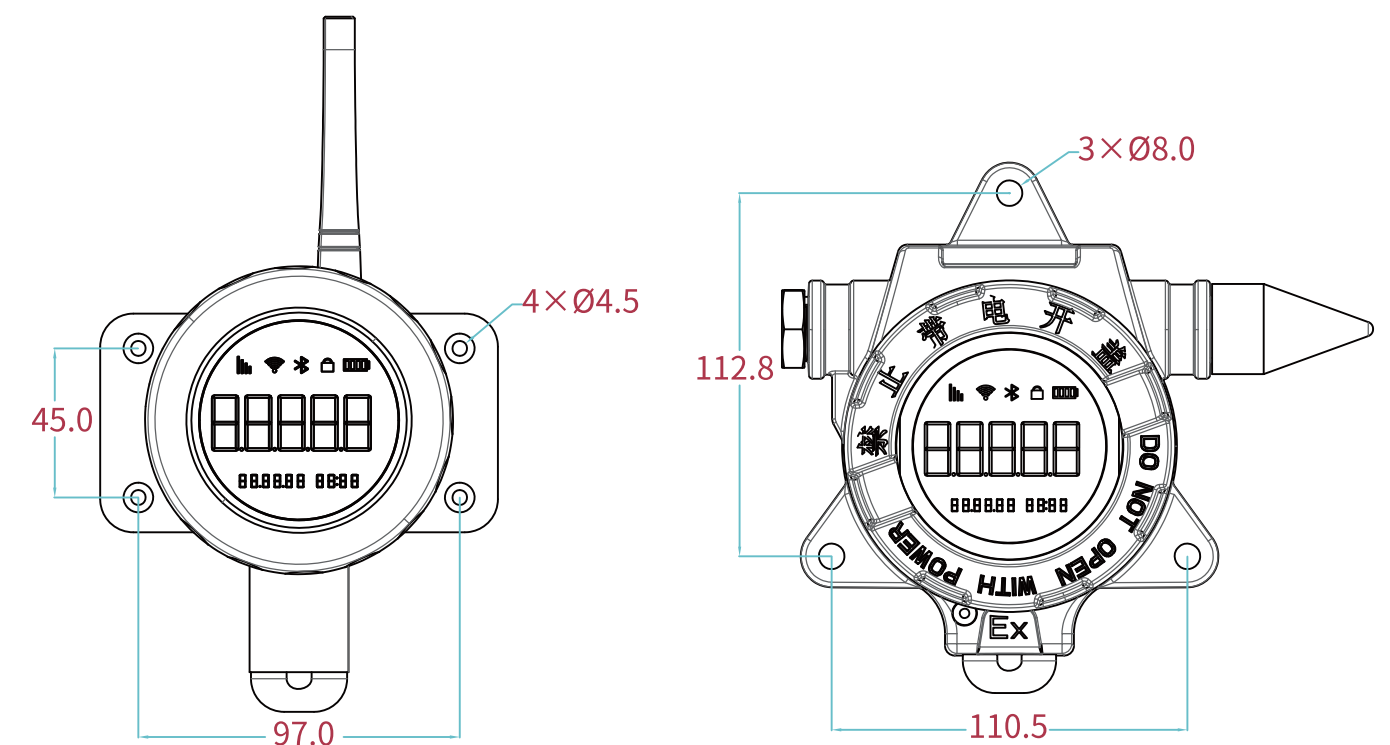
Power supply	Battery powered waterproof model 3.6V, 17Ah; explosion-proof model 3.6V, 19Ah (external power supply and charging version can be customized)
Battery life	NB communication: 4-5 years, 4G communication: 2-2.5 years (upload data once an hour, and with stable signal) battery model (non-rechargeable, replaceable)
Power consumption	Standby current $\leq 80\mu A$, average data transmission current $\leq 150mA$
Display	TFT LCD screen
Communication	NB-IOT, LORA, LoraWan, 4G, RS485, wifi optional
Antenna	External antenna
Sampling interval	Configurable time 10S~2550S
Data transmit interval	1min~1440min. Note: The shorter of the time, the shorter life of the battery
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Temperature, humidity, battery level, signal, card number
Operating TEMP	Meter -30°C~70°C
Range	Temperature -40~80°C; Humidity 0~100%
Material	The sensor housing is made of aluminum alloy
Accuracy	Temperature: ± 0.3 ; Humidity: $\pm 3\%$
Interface	Wall Mount

Explosion-proof wireless temperature and humidity meter

TP2406 adopts low-power explosion-proof design, and the mobile phone APP remotely monitors real-time data, NB-IOT, 4G, LORA and other network connection methods.

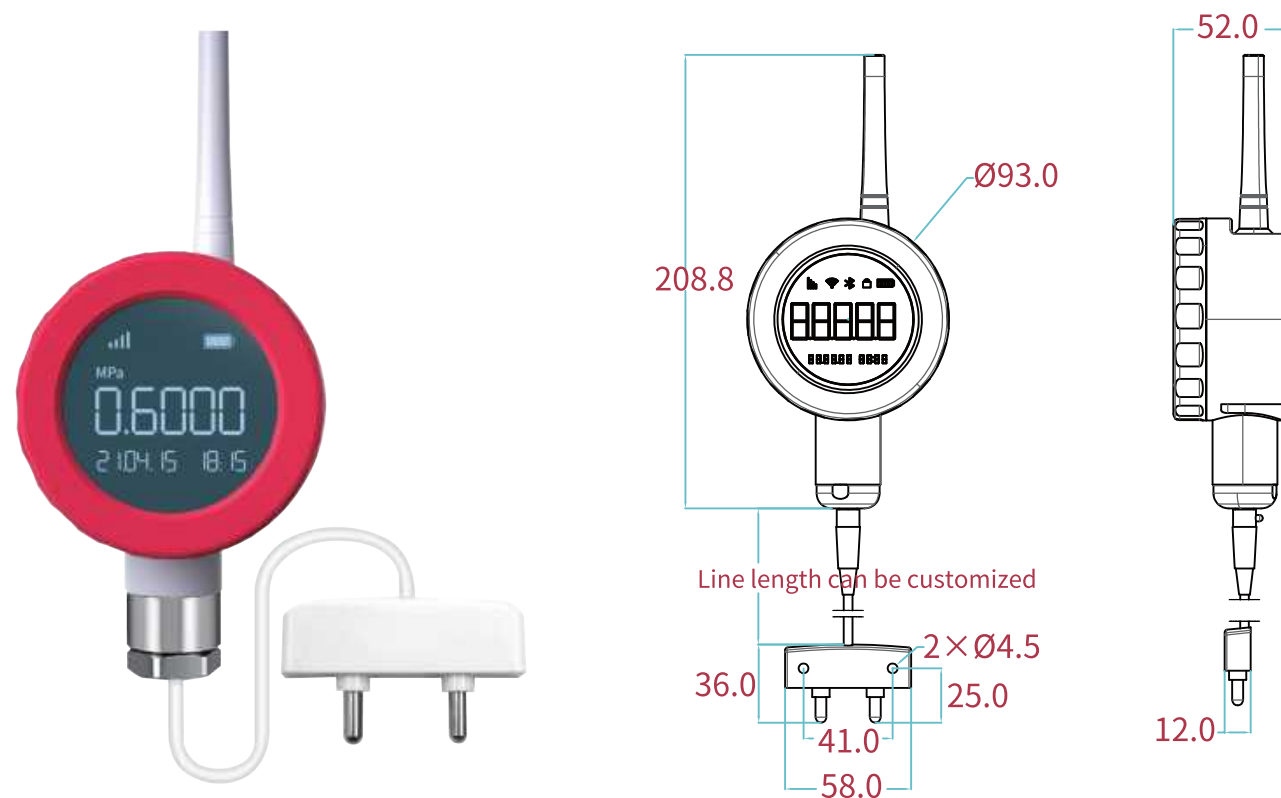


Back panel installation diagram



Waterproof wireless water leakage meter

TP2408 adopts dual-electrode detection liquid level switch with high accuracy, no missed alarms, high-precision design, 2.4-inch large-size LED screen, and 5-year ultra-long life lithium battery.

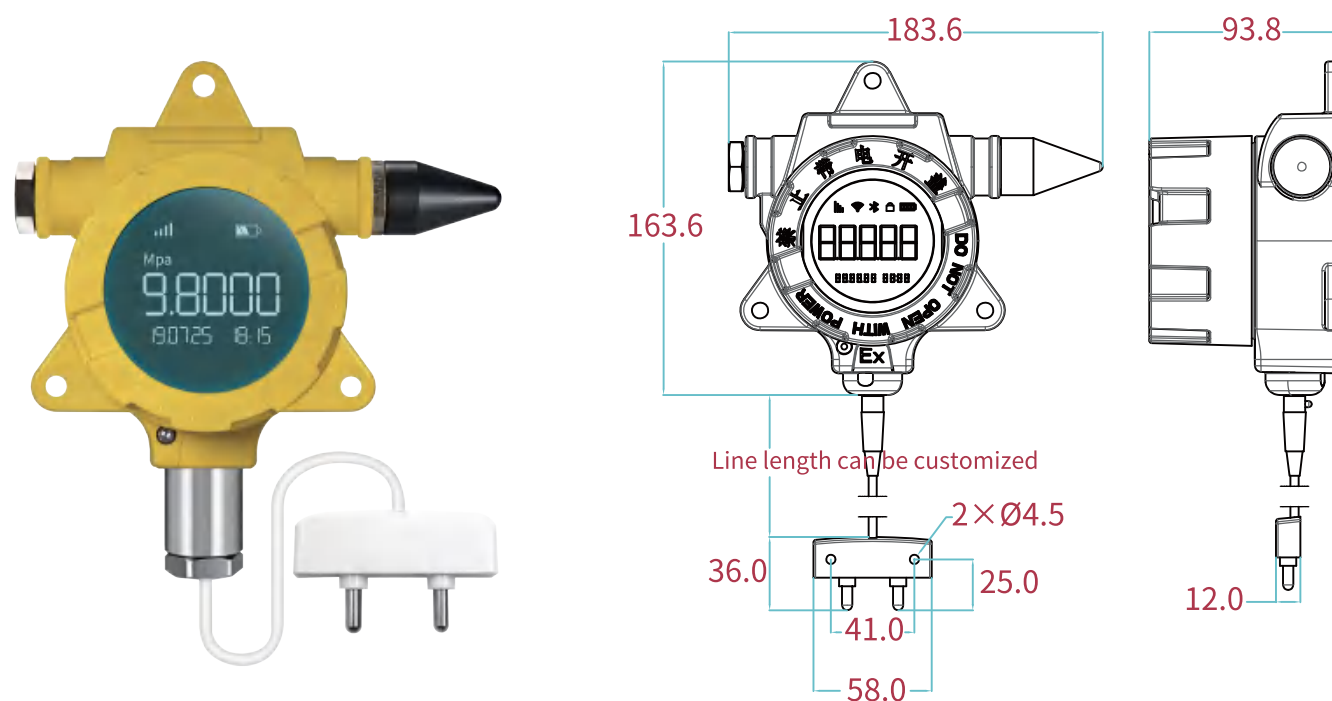


Wireless water leakage meter specifications

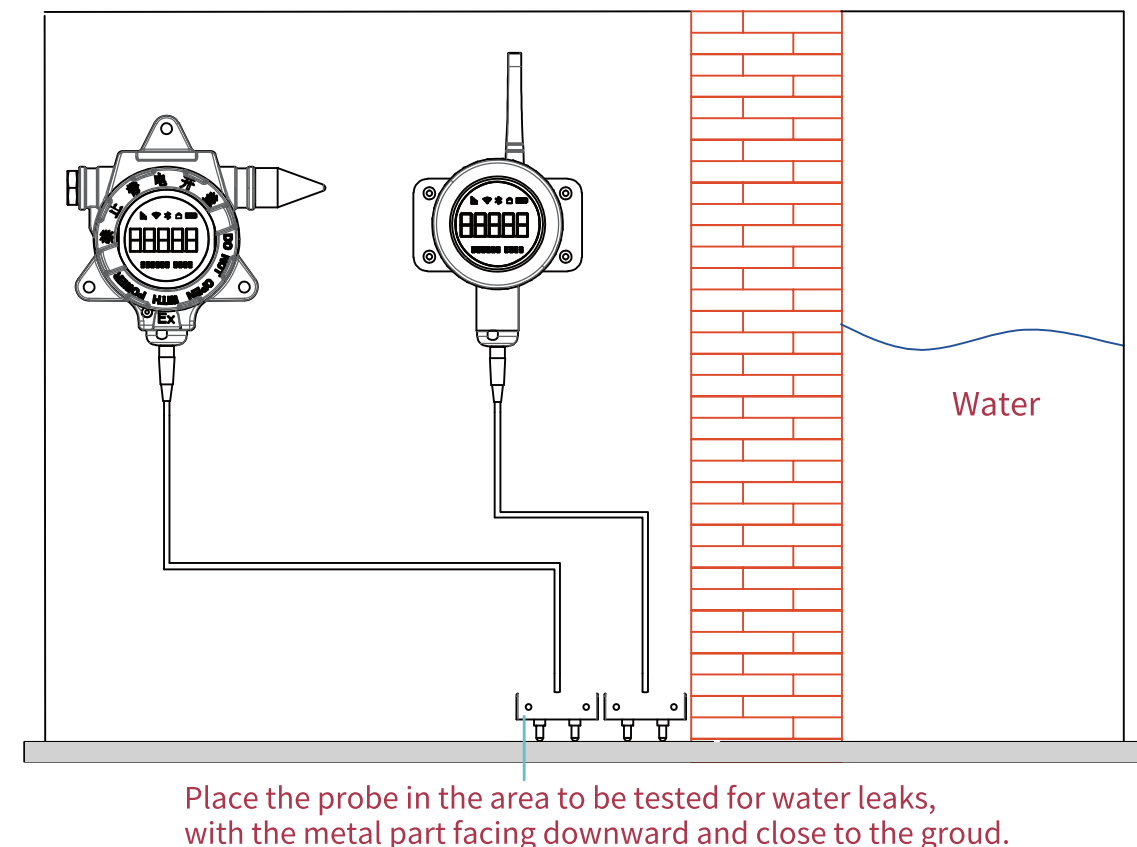
Power supply	Battery powered waterproof model 3.6V, 17Ah; explosion-proof model 3.6V, 19Ah (external power supply and charging version can be customized)
Battery life	NB communication: 4-5 years, 4G communication: 2-2.5 years (upload data once an hour, and with stable signal) battery model (non-rechargeable, replaceable)
Power consumption	Standby current ≤80uA, average data transmission current ≤150mA
Display	TFT LCD screen
Communication	NB-IOT, LORA, LoraWan, 4G, RS485, wifi optional
Antenna	External antenna
Sampling interval	Configurable time 10S~2550S
Data transmit interval	1min~1440min. Note: The shorter of the time, the shorter life of the battery
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Water leakage status, battery level, signal, card number
Operating TEMP	Meter -30°C~70°C
Range	Normal is 0, leakage is 1
Material	The water sensor is made of stainless steel
Accuracy	Normally open circuit, short circuit output resistance when leaking
Installation	Wall Mount

Explosion-proof wireless water leakage meter

TP2408 uses a dual-electrode detection liquid level switch with high accuracy, no missed alarms, high-precision design, 2.4-inch large-size LED screen, and 5-year ultra-long life lithium battery.

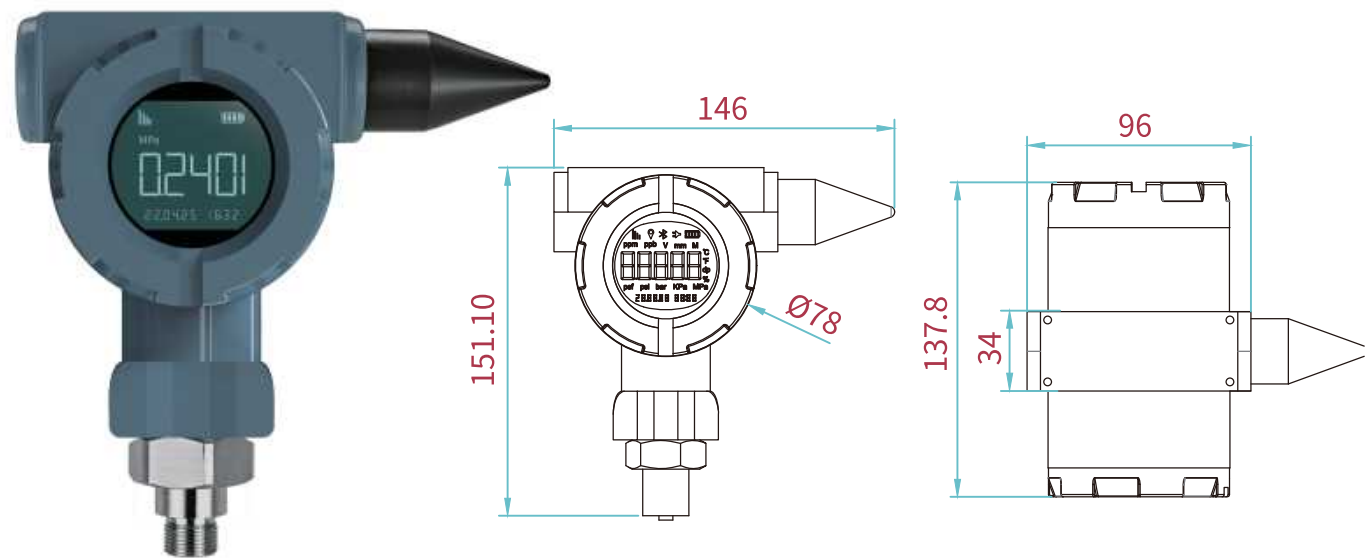


Product installation diagram



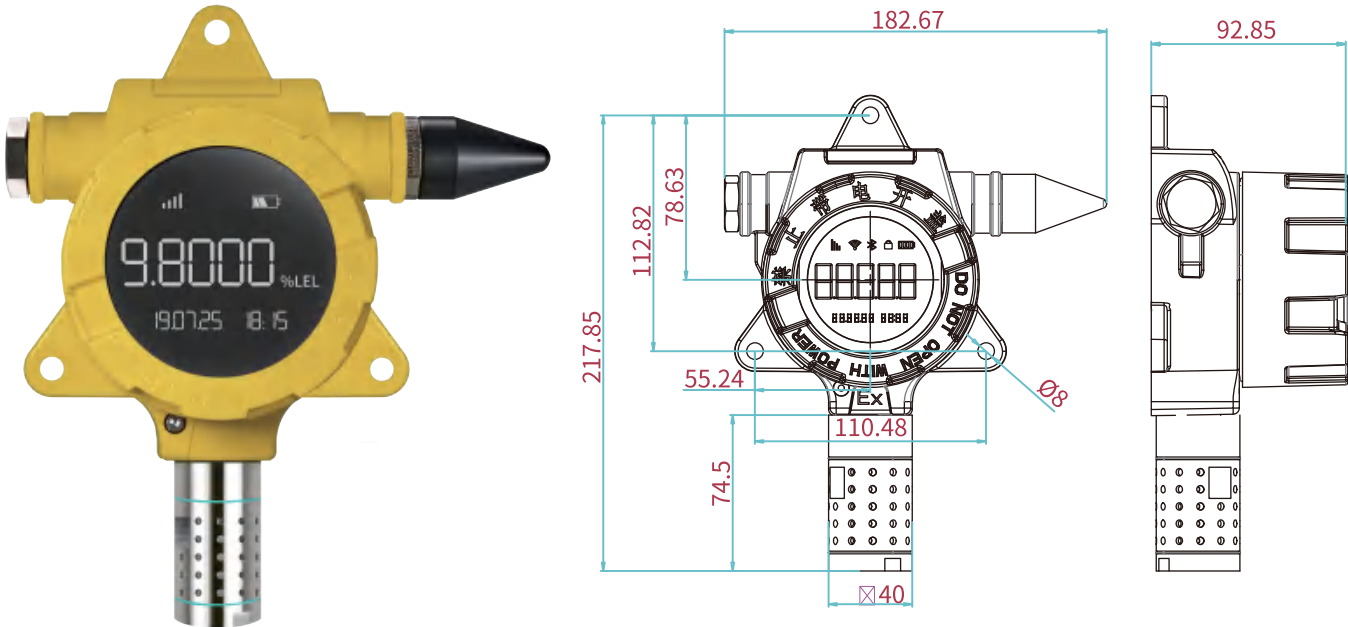
Wireless pressure gauge (Long life version)

TP2401 adopts independent battery compartment design, support maximum 38000mAh battery capacity, ultra-long service life, LORA and other network connections.



Combustible gas detector

TP2409 adopts low-power explosion-proof design, and the mobile phone APP remotely monitors real-time data, NB-IOT, 4G, LORA and other network connection methods.



Wireless pressure gauge (Long life version) specifications

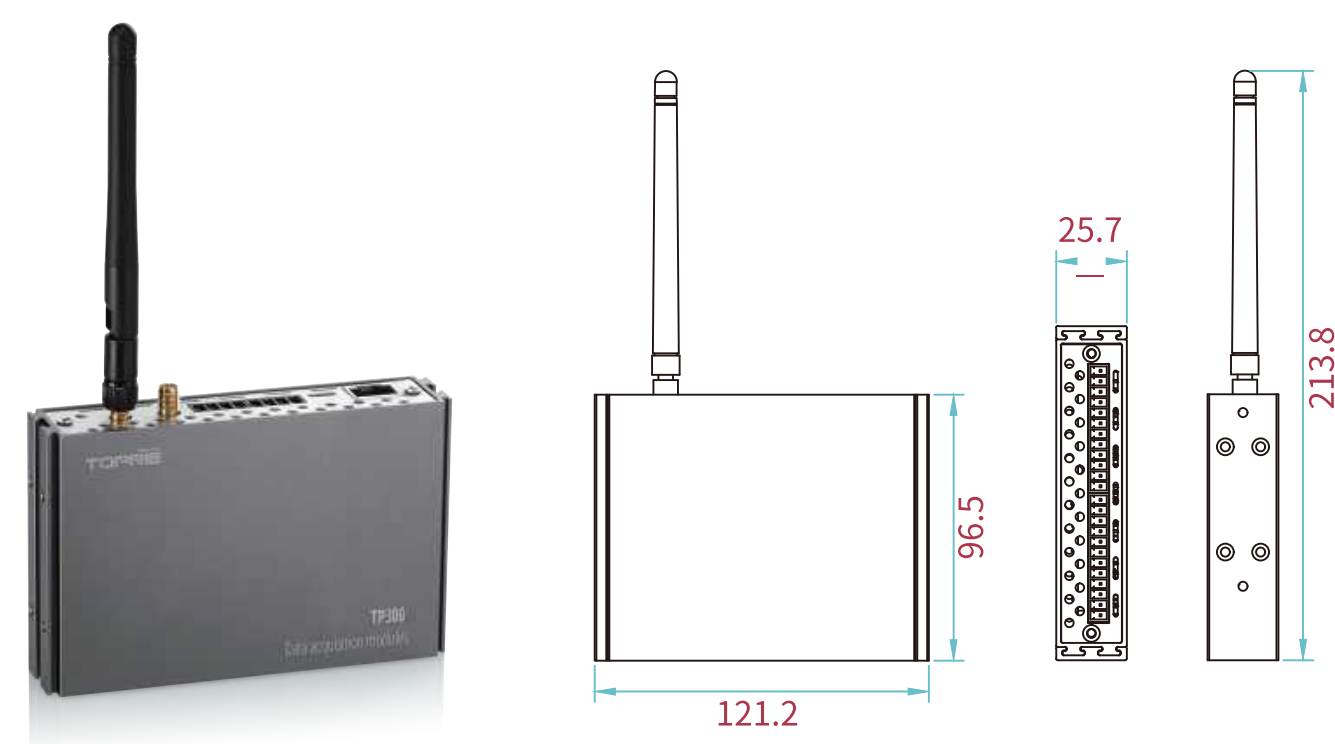
Pressure Sensors	-0.1MPa~100MPa optional
Accuracy	0.1, 0.2, 0.5 optional
Configuration	Local USB/remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Power supply	Battery type 3.6V@38Ah
Battery Life	Battery model 8 years (non-rechargeable battery, replaceable battery)
Communication	NB-IOT (all networks), LoraWan
Wake-up mode	Timing, button, alarm wake-up
Upload info	Pressure, TEMP, battery level, network status, SIM card number, GPS location (optional)
Display	LCD screen
Protect level	Waterproof IP68
Installation	M20*1.5 thread installation, thread location can be customized
Certification	CE, ROHS, IP68
Weight	Waterproof model weighs about 1.5KG (head)
Platform Features	Support key wake-up, USB wake-up, and scheduled automatic wake-up
	More than 110,000 historical data are stored, and the storage is automatically cycled
	Support USB settings, data export (PDF, CSV format) Support over-limit alarm
	Support sensor value correction
	Support platform remote settings
Features	Support one-click connection to the platform via scan the QR code
	Support breakpoint resume

Specifications ofcombustible Gas Detector

Power supply	Explosion-proof version 3.6V, 19Ah (external power supply and charging version customized)
Battery Life	12 months (sampling once an hour) (non-rechargeable battery, replaceable)
Power consumption	Standby current ≤80uA, collection current <60mA
Disply	TFT LCD screen
Communication	NB-IOT, LoraWan
Antenna	Explosion-proof antenna
Upload interval	2min-1440min Note: The shorter of the time, the shorter life of the battery
Configuration	USB configuration operation, server remote configuration, Bluetooth configuration
Upgrade	TYPE-C upgrade, 4G OTA remote upgrade
Wake-up mode	Button, timing
Upload info	Methane concentration, temperature, battery level, signal, card number
Operating TEMP	-25~55℃
Range	0~100%LEL/0~5%VOL
Detection principle	TDLAS
Accuracy	±3%LEL Resolution 0.1%LEL
Response time	T90<20S
Protecte level	IP68

Wireless multi-function gateway

TP300-L wireless multi-function gateway can support multiple communication methods,such as LORA, 4G, WiFi, zigbee, Thread, Ethernet, RS485, etc., which can be used in different scenarios.

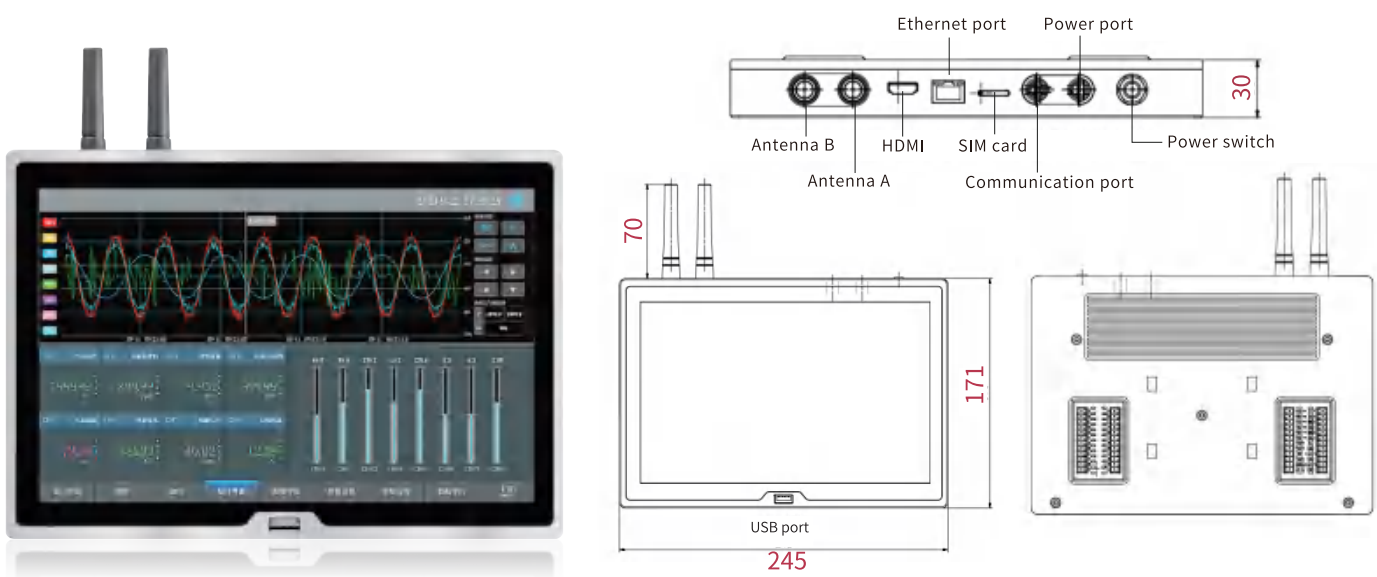


Wireless Multi-function Gateway Specifications

Power supply	DC8-28V
Working current	150MA(24V)
Configuration	TYPE-C Configuration
Upgrade	TYPE-C Upgrade
Display	Without display
Communication	Standard supports 2-way RS485, 10/100M adaptive network port; lora/lorawan reception; optional 4G GSM, WIFI, 5G transmission.
Support protocol	modbus-rtu protocol, modbus-TCP client, modbus-tcp server
Communication	Simultaneously RS485, Ethernet, 4G to communicate with the PC or cloud platform
Antenna	External antenna
Terminal nodes	64 wireless terminal nodes, configurable
Indicator Lights	Different colors of status lights represent different working states
Operating TEMP	-20°C~70°C
Material	Aluminum Alloy
Installation	DIN-rail or wall-mounted installation

Wireless multi-function gateway

TP1100 wireless multi-function gateway adopts simple wireless design, effectively solving the tedious problem of multi-channel wiring operations, and supports simultaneous testing of temperature, humidity, current, voltage, pressure, liquid level, flow, vibration, speed, frequency, etc.



Wireless Gateway Specifications

Power input	DC15~24V
Maximum Power	8W (not charging)
Interface protection	Reverse connection, wrong connection
Display	10.1-inch BOE display, resolution 1280X800
Multifunctional mode	Built-in ZIGBEE/LORA/433M/Thread (optional, choose one from four)
RJ45	100M WAN port
Communicate interface	Dust-proof aviation connector
Power input port	Dust-proof aviation connectors and pluggable terminals
SIM card slot	Ejector self-elastic type
Antenna	Two embedded antenna interfaces
USB interface	USB2.0/U disk upgrade and data export
Capture Card	Built-in 8-channel universal input acquisition card (terminal type)
Power management module	Built-in 8-channel universal input acquisition card (terminal type)
Wireless communicate	4G、WIFI、ZIGBEE、LORA、433M、Thread、LoraWan
Wired communicate	Ethernet port, RS485 (three channels), TTL, RS232
Extension	HDMI (Currently only available with the 10.1-inch host screen)
DAQ interface	8 channels, support thermocouple, PT100, PT1000, universal acquisition.
Switch quantity daq	2 channels, 3.3V~5.5V, support acquisition, high-speed counting and frequency (30KHz)
Relay output	2-way, dry contact normally open, load capacity DC30V/0.5A
Feed output 1	1 channel, 0.5A
Feed output 2	1 DC5V/0.2A fixed power supply
Firmware Upgrade	TYPE-C upgrade, 4G OTA remote upgrade

LoRaWAN Gateway

ME20 LORaWAN gateway is a high-performance, low-power IoT communication device with wide coverage, strong penetration, and low power consumption, providing reliable connections for your IoT solutions.

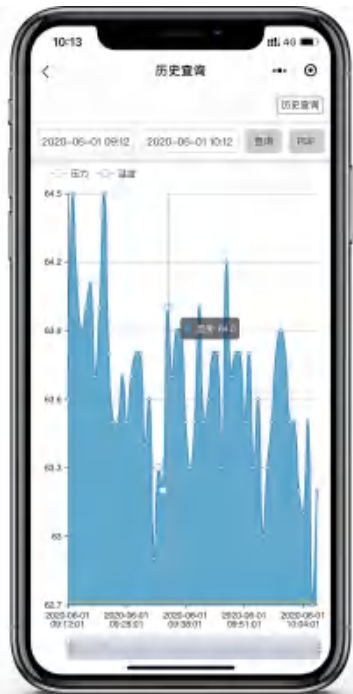


Wireless Gateway Specifications

Processor	ARM Cortex-A55 quad-core 2.0GHz (indoor version ARM Cortex-A7 single core 1.2GHz)
Memory	1GB DDR4 (128MB for indoor version)
Storage	8GB eMMC, support SD card expansion (4GB eMMC for indoor version)
System	Customized system based on Linux 5.1 kernel
Frequency	CN470-510MHZ/EU863-870MHZ/US902-928MHZ(customizable)
Channels	8 channels (standard version)/16 channels (advanced version)
Transmit	27dBm +1dB
Receiving	-141dBm @SF12,BW125kHz
Antenna	6.5dBi (outdoor version)/3dBi (indoor version)
LoRa spread spectrum	SF7-SF12
Broadband	125kHz,250kHz,500kHz
Maximum link	166dB
Wired network	10/100/1000Mbps Ethernet (RJ45 interface)
Wireless network	Wi-Fi802.11b/g/n, 4G/LTE (optional)
USB port	1xUSB 2.0
Serial Port	1xuart (output debugging information)
SIM card slot	(Mini-SIM/2FF, 4G version only) 1x standard SIM card slot
Shell material	Aluminum alloy (outdoor version)/ABS (indoor version)
Protecte level	IP67 (outdoor version)/IP21 (indoor version)
Operating TEMP	-35°C to +70°C (outdoor version) / -10°C to +55°C (indoor version)
Storage TEMP	-40°C to +85°C
Relative RH	5% to 95% (non-condensing)
Dimension(L x W x H)	Outdoor version: 230mmx230mmx51mm/Indoor version: 133mmx120mmx51mm

Mobile application

Real-time/monitoring data on mobile phone



Historical record query curve



History query



Map query



Pressure query

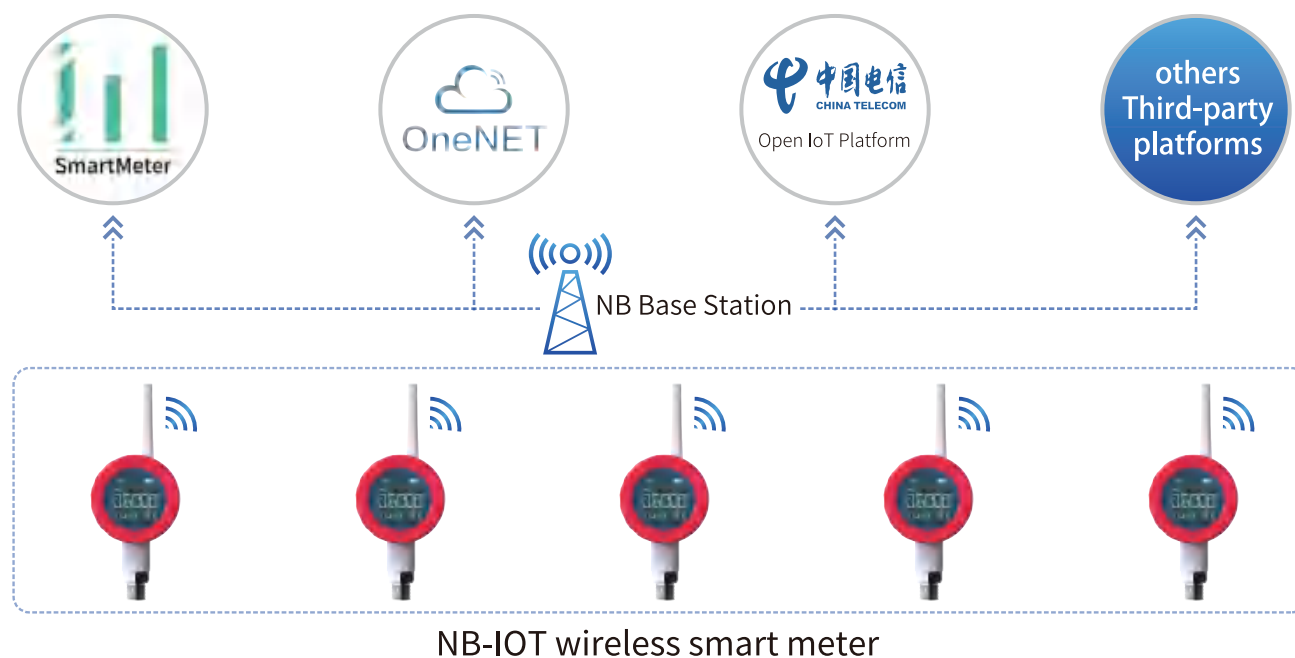


Temperature query

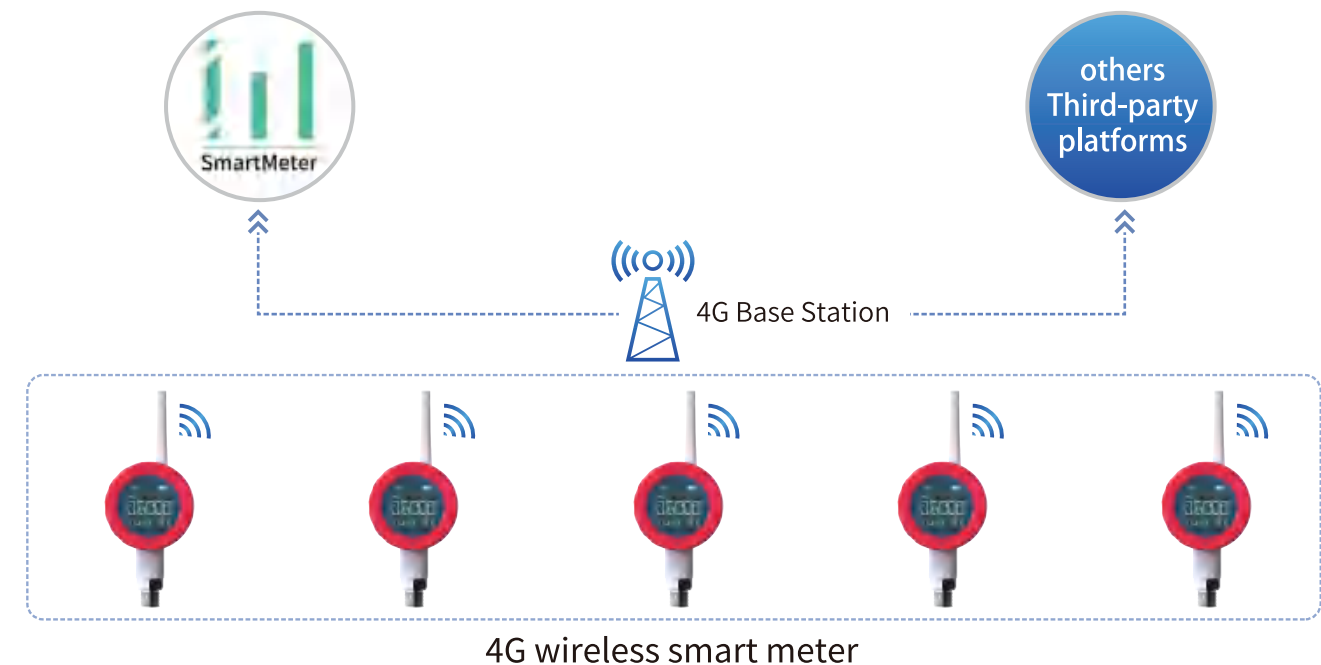


Monitoring center

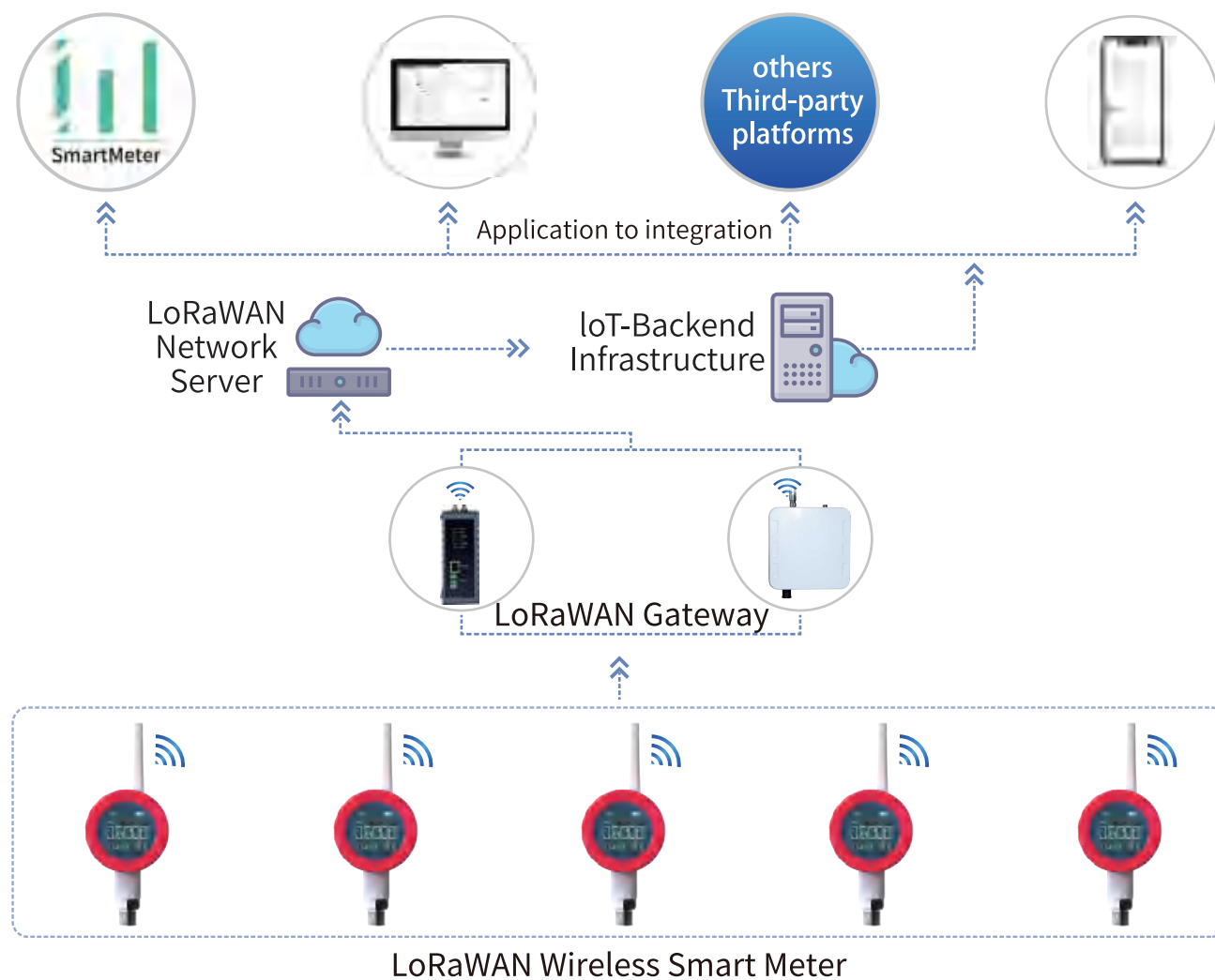
NB-IOT Communication topology diagram



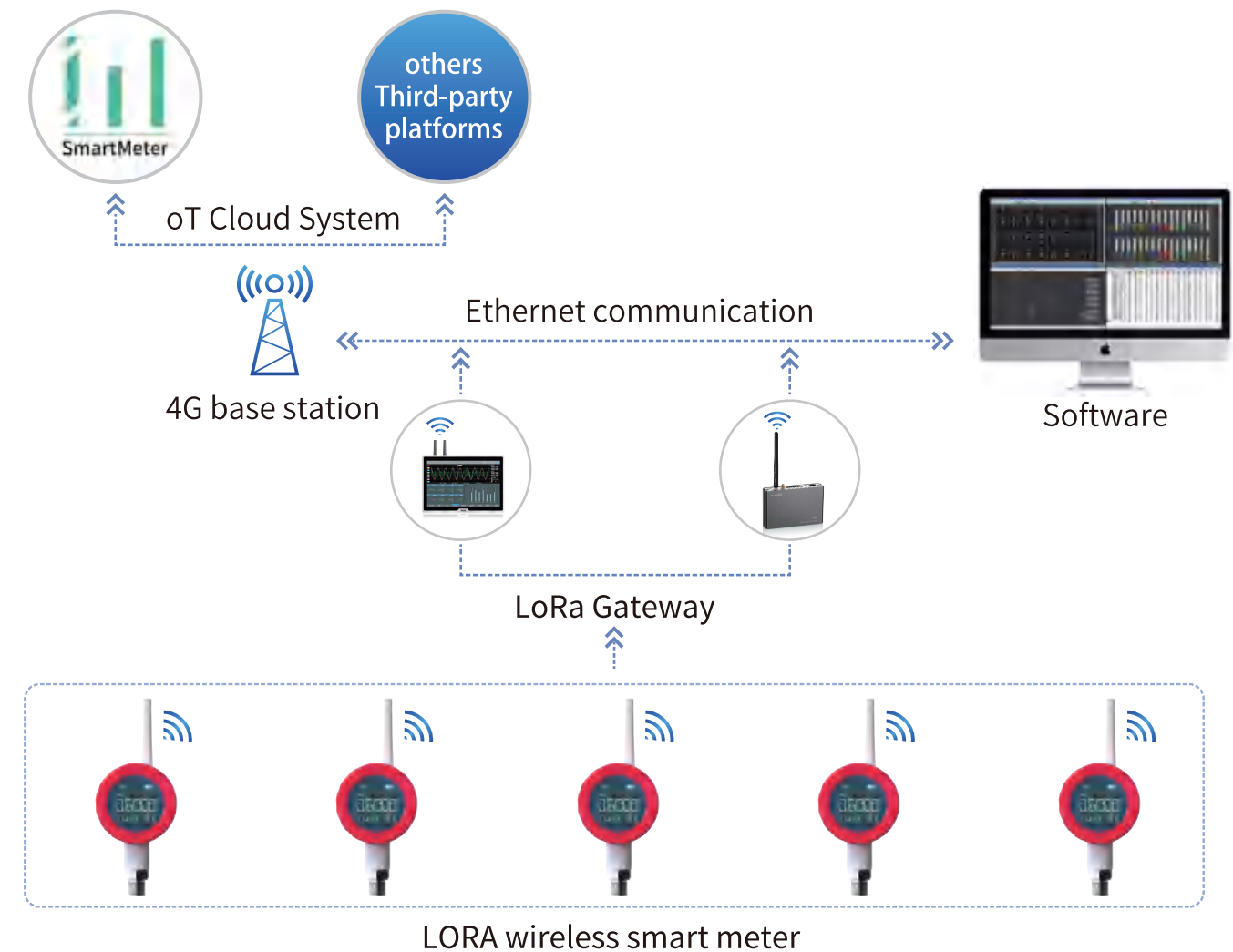
4G communication topology diagram



LoRaWAN communication topology diagram



LORA communication topology diagram



IOT Wireless Smart Meter Selection instructions

IOT Wireless Smart Model Selection Table Description (Table 1)

Product Name	Wireless pressure gauge	Wireless Temperature Meter	Wireless level gauge	Model
NB-IOT Version	TP2401V1.5	TP2402V1.5	TP2403V1.5	Waterproof model
	TP2401V1.5-Ex	TP2402V1.5-Ex	TP2403V1.5-Ex	Explosion-proof model
4G version	TP2401V4.5	TP2402V4.5	TP2403V4.5	Waterproof model
	TP2401V4.5-Ex	TP2402V4.5-Ex	TP2403V4.5-Ex	Explosion-proof model
LORA Version	TP2401VL	TP2402VL	TP2403VL	Waterproof model
	TP2401VL-Ex	TP2402VL-Ex	TP2403VL-Ex	Explosion-proof model
LoraWan version	TP2401VLN.5	TP2402VLN.5	TP2403VLN.5	Waterproof model
	TP2401VLN.5-Ex	TP2402VLN.5-Ex	TP2403VLN.5-Ex	Explosion-proof model
Suffix description	The suffix "-P" is the normal power supply version			

IOT Wireless Smart Model Selection Table Description (Table 2)

Product Name	Ultrasonic Level Meter	TEMP and RH meter	Water leakage meter	Combustible gas detector	Model
NB-IOT Version	TP2405V1.5	TP2406V1.5	TP2408V1.5		Waterproof model
	TP2405V1.5-Ex	TP2406V1.5-Ex		TP2409V1.5-Ex	Explosion-proof model
4G version	TP2405V4.5	TP2406V4.5	TP2408V4.5		Waterproof model
	TP2405V4.5-Ex	TP2406V4.5-Ex		TP2409V4.5-Ex	Explosion-proof model
LORA Version	TP2405VL	TP2406VL	TP2408VL.5		Waterproof model
	TP2405VL-Ex	TP2406VL-Ex		TP2409VL-Ex	Explosion-proof model
LoraWan Version	TP2405VLN.5	TP2406VLN.5			Waterproof model
	TP2405VLN.5-Ex	TP2406VLN.5-Ex	TP2408VLN.5-EX	TP2406VLN.5-Ex	Explosion-proof model
Suffix Description	The suffix "-P" is the normal power supply version				

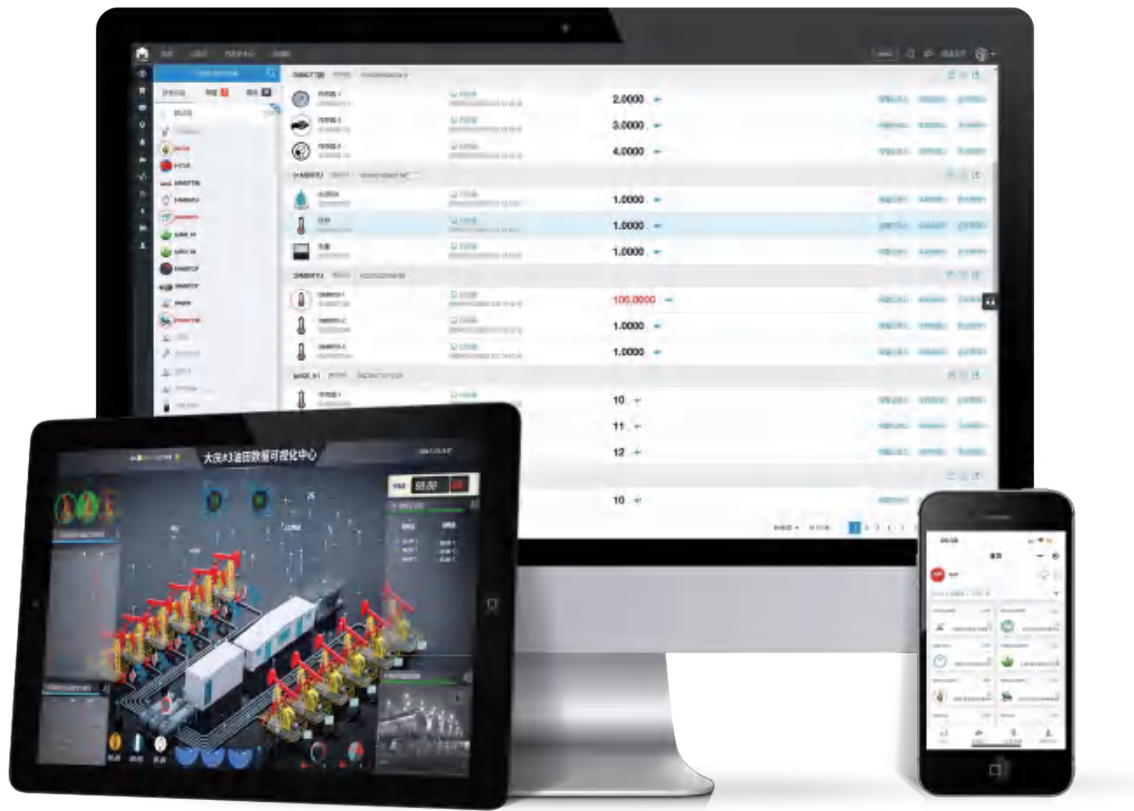
Pressure gauge parameter comparison (liquid level, temperature, etc. can be used for reference)

Product Model	TP2401V1.5	TP2401V1.5 -Ex	TP2401VL.5	TP2401VL.5-Ex	TP2401V4.5	TP2401V4.5 -Ex
Communication method	NB-IOT	NB-IOT	LORA	LORA	4G(all-network)	4G(all-network)
Protocol	COAP	COAP	Private Protocol	Private Protocol	mqtt	mqtt
Waterproof level	IP66	IP68	IP66	IP68	IP66	IP68
Explosion-proof level	/	Ex ib IIB T4 Gb	/	Ex ib 1IB T4 Gb	/	Ex ib IIB T4 Gb
Battery capacity	2pcs 8500mAh	1pcs 19Ah	2pcs 8500mAh	1pcs 19Ah	2pcs 8500mAh	1pcs 19Ah
Working hours 1 hour to upload data	5Years	6Years	5Years	6Years	2Years	2.5Years
Traffic costs	5Years	5Years	LAN	LAN	1 Year	1 Year
gateway required	/	/	Need	Need	/	/
Breakpoint resuming	Support	Support	/	/	Support	Support
Triggering	Support	Support	Support	Support	Support	Support
	Support	Support	Support	Support	Support	Support

Platform application

In order to better serve our customers, we provide a free cloud platform.

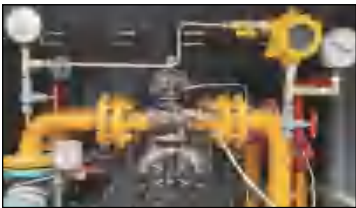
Can use the cloud system directly, or use the cloud configuration function to build a more perfect application scenario!



www.tlink.io Free cloud platform

Product application areas

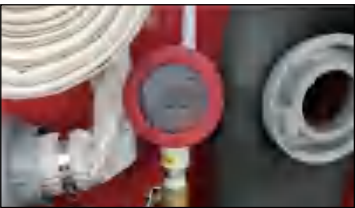
Gas Pipeline Network



Factory water and gas supply network



Fire water system



Valve well



Water supply network



Air conditioning water cooling system

