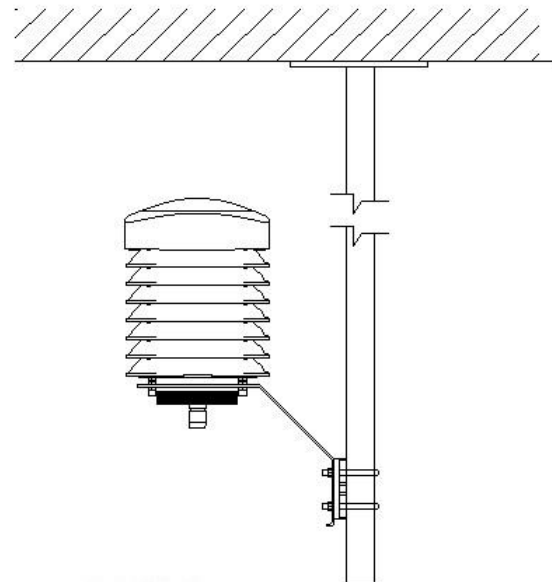
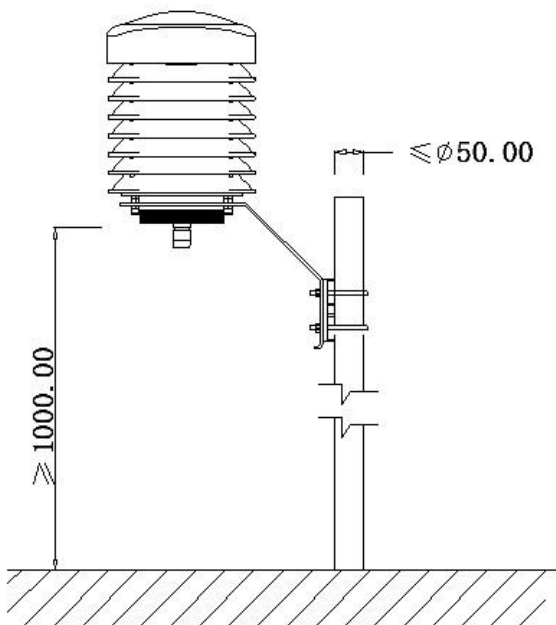
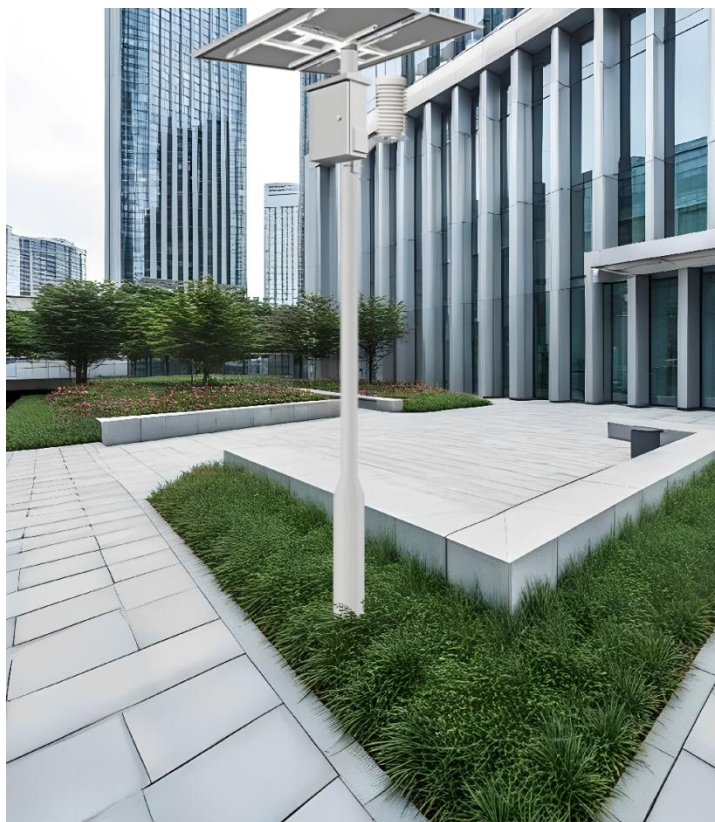


TF9 Outdoor Air Quality Monitor

- Design for real time monitoring outdoor air quality
- Rain & snow-proof, high temperature resistant design with IP53 protection class
- Up to eight parameters available for monitoring air quality in outdoor space, tunnel, underground and semi-underground
- Built-in high-precision sensing module in commercial-level for accurate measurement with high cost performance ratio.
- Optional communication interface: RS485, WiFi +extra RS485 , Ethernet + extra RS485, WiFi/Ethernet + extra RS485, or 4G+extra RS485.
- 12~24VDC powered with a 100~240VAC/ 1A power adaptor;
- Solar powered with Lithium-Polymer rechargeable battery, support the monitor working for at least 84 hours on rainy and cloudy days without sunlight.
- It's installed on the outside wall of buildings, roof of buildings, on the ground, on the telegraph pole etc.





Specifications

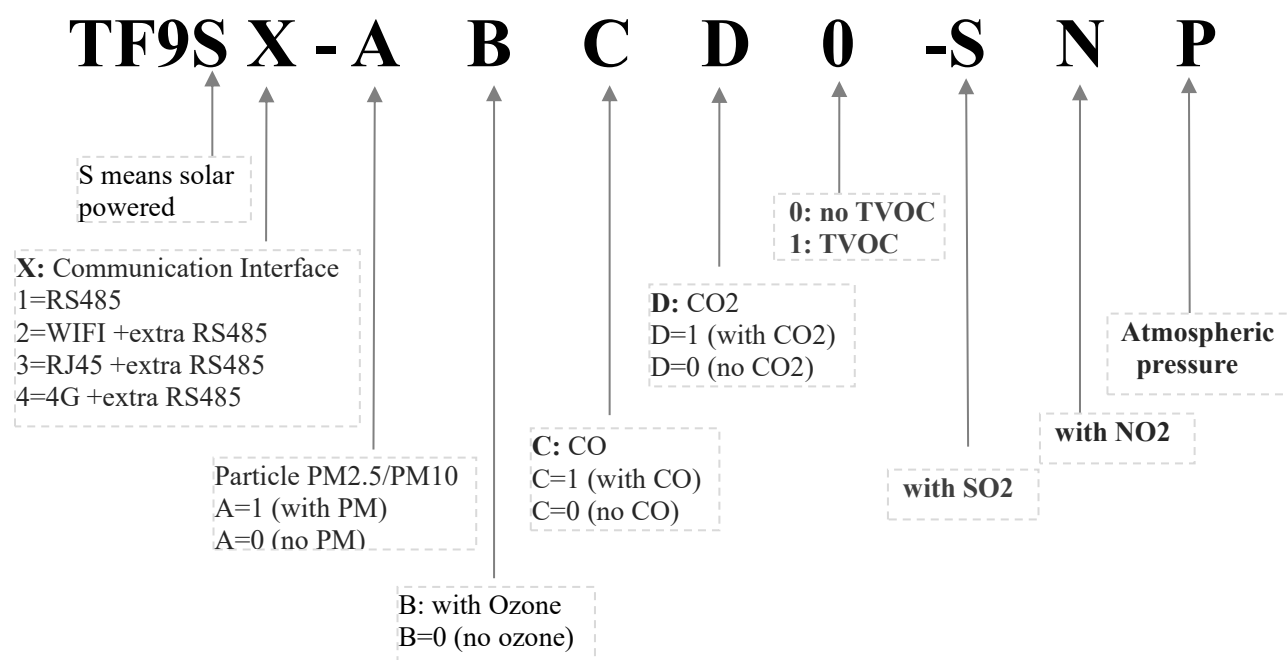
Power supply and communication		
Direct power supply		12-24VDC (with a 100~240VAC/ 1A power adaptor)
Solar power supply (support the monitor working >96 hours on rainy and cloudy days without sunlight)	Solor panel	Monocrystalline silicon energy solar panel (with 3.2mm fully tempered glass) 160W solar panel, 18V and 8.2A
	Lithium battery and power control box	A battery box is inside the power control box, 18~24pcs 18650 Lithium batteries will be put in. Each 18650 typical capacity is from 3400mAh to 2600mAh.
	Dimention / Net weight	Solor panel: 670*700*30mm/ 5.5Kg Power control box: 500*300*150mm/8.0 Kg

Communication interface options	A. RS485,Modbus RTU/BACnet MS/TP; B. WiFi@2.4 GHz 802.11b/g/n C. RJ45 Ethernet D. 4G: LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B18/B19/B20/B25/B26/B28/B66 LTE-TDD: B34/B38/B39/B40/B41 B38/B40/B41
RS485 Interface	9600bps(default), 15KV Antistatic protection
Data upload interval cycle	1 minute~24 hours presetting Default: 1 minute
Output data	Moving average / 1 minutes Moving average / 1 hour Moving average / 24 hours
General Parameters of the Monitor	
Working condition	-20℃~70℃/ 0~99%RH
Storage condition	0℃~50℃/ 10~60%RH
Maximum dimensions of the monitor (including fixed bracket)	Width: 190mm, Total width with bracket: 272mm Height:252~441mm, Total height with bracket: 362~574 mm Depending on the monitored sensing parameters and communication interfaces
Net weight	2.35kg~3.05Kg Depending on the monitored sensing parameters and communication interfaces
Packing size/Weight	Depends on different models in around 53cm X 34cm X 25cm and 3.9Kg
Shell Material	PC material
Protection grade of the monitor	It is equipped with sensor inlet air filter, rain and snow-proof, temperature resistance, UV resistance aging, anti-solar radiation cover shell. IP53 protection class for the bare device. Installing a protective box on can increase the protection level.
Sensor Data	
Particles (PM2.5/ PM10)	
Sensor	Laser particle sensor, light scattering method
Measurement range	0-1000ug/m3
Output resolution	0.1ug/m3
PM2.5 Accuracy	±5ug/m3+10% of reading (0-500ug/m3, 0%-70%RH, @ 0-40℃)
PM10 Accuracy	±10ug/m3+15% of reading (0-500ug/m3, 0%-70%RH, @ 0-40℃)
Temperature and Humidity	
Inductive component	Band gap material temperature sensor, Capacitive humidity sensor
Temperature measuring range	-20℃-80℃

Relative humidity measuring range	0-99%RH
Accuracy	±0.3°C(-20~70°C), ±3%RH (0%-70%RH)
Output resolution	Temperature: 0.01 °C Humidity: 0.01%RH
Carbon Monoxide(CO)	
Sensor	Electrochemical CO Sensor
Measurement range	0-200mg/m3
Output resolution	0.001mg/m3
Accuracy	±1mg/m3+5% of reading (0%-70%RH, @ 0-40°C)
Ozone(O₃)	
Sensor	Electrochemical Ozone sensor
Measuring Range	0-2000ug/m3
Output Resolution	1ug/m3
Accuracy	±15ug/m3+15% of reading (0-70%RH, @ 0-40°C)
Nitrogen Dioxide(NO₂)	
Sensor	Electrochemical Ozone sensor
Measuring Range	0-4000ug/m3
Output Resolution	1ug/m3
Accuracy	±15ug/m3+15% of reading (0-70%RH, @ 0-40°C)
Sulfur Dioxide (SO₂)	
Sensor	Electrochemical Ozone sensor
Measuring Range	0-4000ug/m3
Output Resolution	1ug/m3
Accuracy	±15ug/m3+15% of reading (0-70%RH, @ 0-40°C)
Carbon Dioxide (CO₂) (unnecessary for general outdoor air quality monitoring)	
Sensor	Non-Dispersive Infrared Detector (NDIR)
Measuring Range	350-2000ppm
Output resolution	1ppm
Accuracy	±30ppm + 5% reading
TVOC (applicable to green buildings)	
Sensor	Metal oxide sensor
Measuring Range	0.01-4.00mg/m3
Output resolution	0.001mg/m3
Accuracy	±0.05mg/m3+10% of reading (0-2mg/m3, 10%-80%RH,@0-40°C)

Atmospheric Pressure	
Sensor	MEMS Semi-conductor sensor
Measuring range	0~103425Pa
Output resolution	8 Pa
accuracy	<±48Pa

Models Guide



Models examples

Model	PM2.5 PM10	Ozone	CO	CO2	NO2	SO2	Communication
TF91-10110-MB TF91-10110-BN	•		•	•			RS485, Modbus RTU or RS485, BACnet MS/TP
TF93-11000	•	•					RJ45, MQTT Protocol
TF94-11100-NS	•	•	•		•	•	4G, MQTT Protocol

Note: If sulfur dioxide (SO₂) is selected, ozone must be selected together. Because measuring SO, needs ozone measurement as being compensation. Otherwise, the measured value of SO, is unreliable and have a very large deviation.

Protocol Support

Communication protocol support

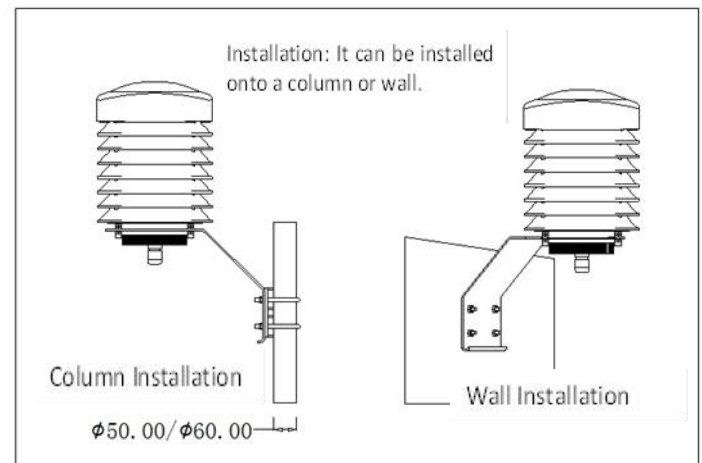
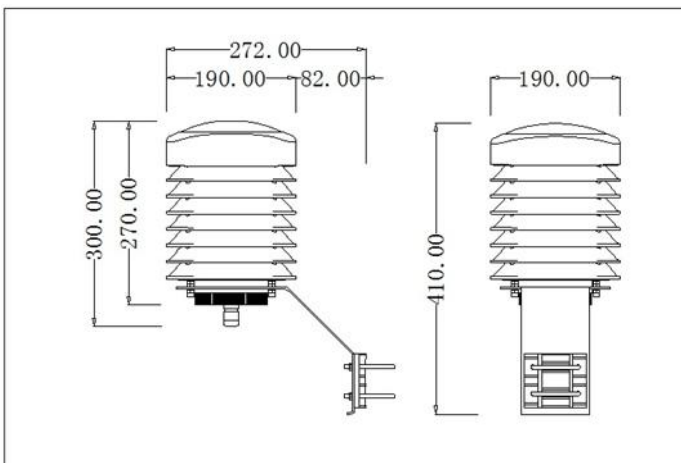
1. Modbus RTU protocol for RS485
2. BACnet MS/TP for RS485
3. MQTT protocol for WiFi, Ethernet and 4G
4. API for clients servers

Examples of Dimension of the Monitor

- WIFI interface, RS485 interface for monitoring PM2.5/PM10, CO2, CO, T&RH

Overall size: width 190.00mm, height 434.00mm

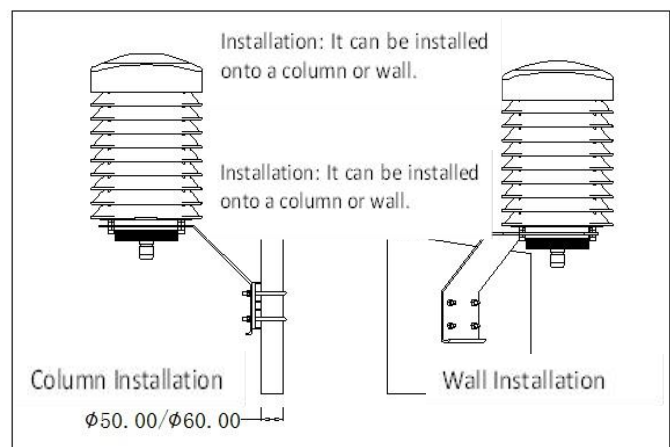
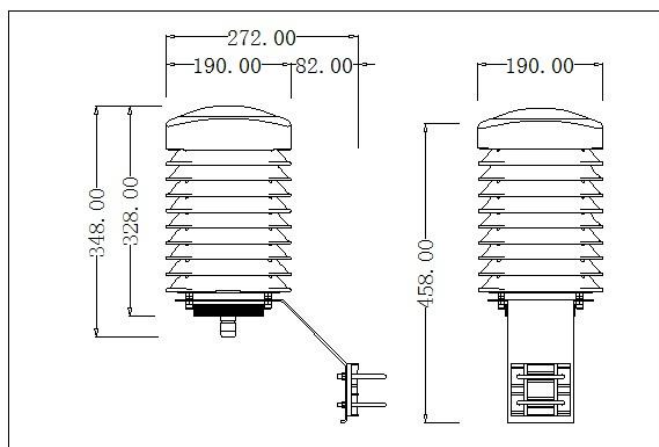
Net weight: 2.65Kg



- RJ45 interface PM2.5/PM10, CO2, CO, T&RH

Overall Size: width 190.00mm, height: 458.00mm

Net weight: 2.8Kg



- 4G interface for monitoring CO, NO2, Ozone, T&RH

Overall size: width 190.00mm, height 574.00mm Net weight: 3.05Kg

