

Outdoor Environment Air Quality Inspection System

ES100 Series

Outdoor Environment Air Quality Inspection System

ES100 is an intergraded device and designed for all types of environmental monitoring. It can be used to detect multiple parameters of temperature, humidity, PM2.5, PM10, wind speed and wind direction in the environment. Each parameter is independent and high sensitivity, users can freely integrate monitoring parameters. ES100 has the characteristics of high precision and good stability, which is suitable for various environmental monitoring.

The ES100 is equipped with a standard RS485 interface and supports the Modbus RTU protocol, which can be integrated into the Internet of Things and cloud interfaces, such as smart city boxes and wireless routers, for real-time monitoring and analysis via remote smartphones or computers.

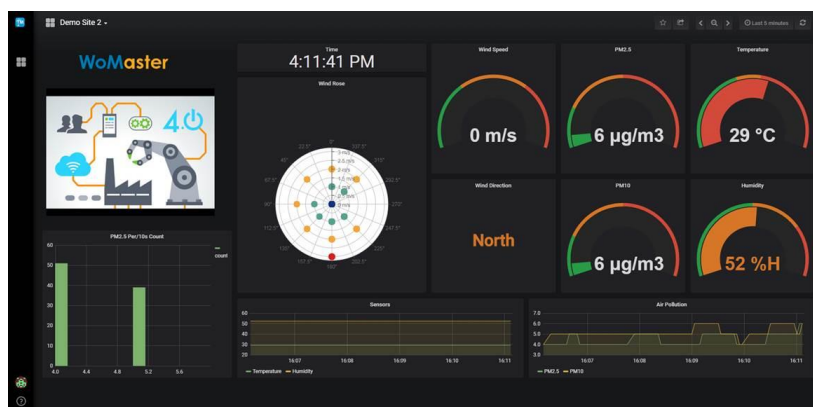


*Reference



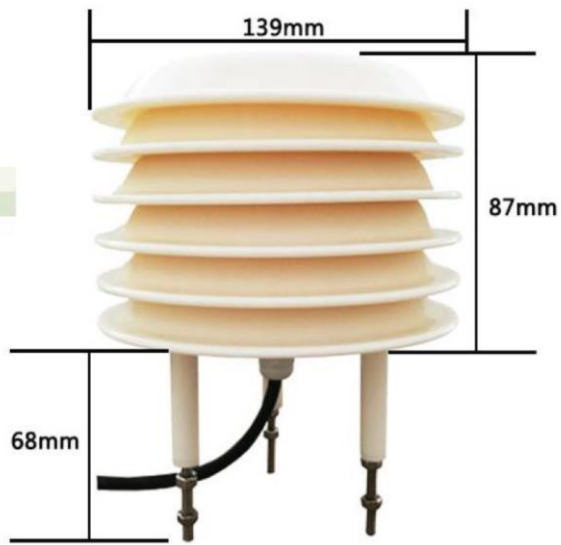
Features & Benefits

- **Intergraded Device**
 - Intergraded multiple sensors
 - Central management by sharing a signal output
 - Support Industrial Modbus RTU protocol, RS485
- **Outdoor Protective Enclosure**
 - Prevent direct ultraviolet radiation to the sensors
 - Avoid rapid aging of sensors under harsh environmental conditions such as strong winds, rain, and snow
 - The sensor parts are ventilated for truly sensing the changes in external detection parameters
- **Flexible Design**
 - Customized Shutter Height
 - Single or multiple parameters both can use small shutter, small size, light weight and easy to install
 - Customized Monitoring parameters
 - Each parameter is independent and high sensitivity, users can freely integrate monitoring parameters
- **Work with IoT Cloud Platform - ThingsMaster**
 - Real-time online monitoring, analysis, reporting
 - Remote cloud security and visual management

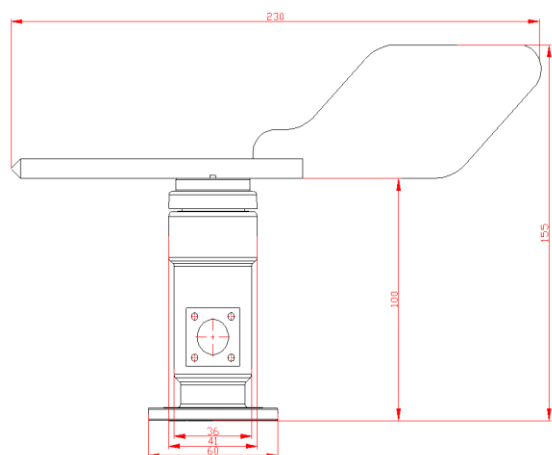
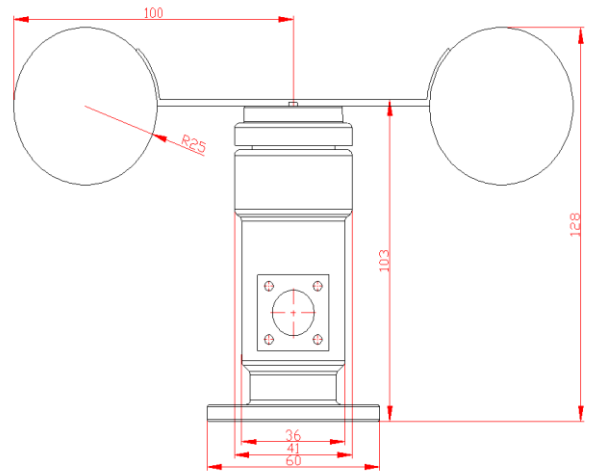
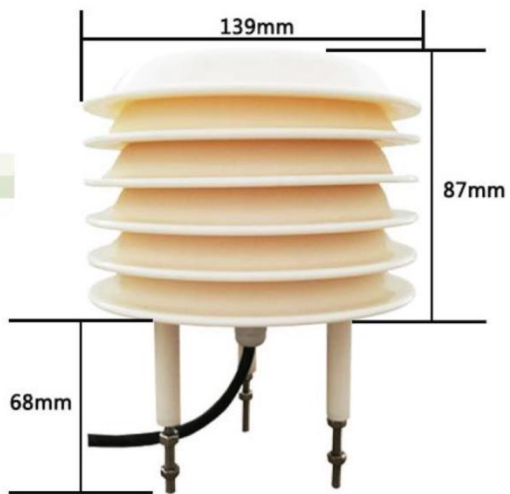




Interfaces



Dimensions



ES106 System Parameter	
Power Input	12/24VDC (12~24VDC)
Communication	RS485 Modbus RTU
Oper. Temp. & Hum.	-40°C~80°C , 15~95% RH
Warranty	1 year
ES106 Interface	
Communication	2 wires Pin Define: Yellow (Gray): RS485+; Blue: RS485-
Power Input	2 wires Pin Define: Brown : V+; Black: V-
ES106 Inspection Parameter	
Wind Speed	Detection Range: 0-60m/s Accuracy Level: ± 1 m/s Operation Temperature: -40~80°C Operation Humidity: 15-95% RH
Wind Direction	Detection Range: 0~360° (16 Direction) Accuracy Level: 22.5° (1 Direction) Operation Temperature: -40~80°C Operation Humidity: 15-95% RH
Temperature	Detection Range: -40~80°C Accuracy Level: ± 0.5 °C
Humidity	Detection Range: 0~100% RH Accuracy Level: ± 3 % RH
PM2.5	Detection Range: 0-1000ug/m ³ Measurement: Laser Detection Accuracy Level: $< \pm 10$ % (25°C) Resolution: 0.1ug/m ³ Operation Temperature: -40~80°C Operation Humidity: 0~95% RH
PM10	Detection Range: 0-1000ug/m ³ Measurement: Laser Detection Accuracy Level: $< \pm 10$ % (25°C) Resolution: 0.3ug/m ³ Operation Temperature: -40~80°C Operation Humidity: 0~95% RH
ES104 System Parameter	
Power Input	12/24VDC (12~24VDC)
Communication	RS485 Modbus RTU
Oper. Temp. & Hum.	-40°C~80°C , 15~95% RH
Warranty	1 year
ES104 Interface	
Communication	2 wires Pin Define: Yellow (Gray): RS485+; Blue: RS485-
Power Input	2 wires Pin Define: Brown : V+; Black: V-

ES104 Inspection Parameter

Temperature	Detection Range: -40~80°C Accuracy Level: $\pm 0.5^{\circ}\text{C}$
Humidity	Detection Range: 0~100% RH Accuracy Level: $\pm 3\%$ RH
PM2.5	Detection Range: 0-1000ug/m ³ Measurement: Laser Detection Accuracy Level: $< \pm 10\%$ (25°C) Resolution: 0.1ug/m ³ Operation Temperature: -40~80°C Operation Humidity: 0~95% RH
PM10	Detection Range: 0-1000ug/m ³ Measurement: Laser Detection Accuracy Level: $< \pm 10\%$ (25°C) Resolution: 0.3ug/m ³ Operation Temperature: -40~80°C Operation Humidity: 0~95% RH

ES102 System Parameter

Power Input	12/24VDC (12~24VDC)
Communication	RS485 Modbus RTU
Oper. Temp. & Hum.	-40°C~80°C , 15~95% RH
Warranty	1 year

ES102 Interface

Communication	2 wires Pin Define: Yellow : RS485+; Blue: RS485-
Power Input	2 wires Pin Define: Brown : V+; Black: V-

ES102 Inspection Parameter

Wind Speed	Detection Range: 0-60m/s Accuracy Level: $\pm 1\text{m/s}$ Operation Temperature: -40~80°C Operation Humidity: 15-95% RH
Wind Direction	Detection Range: 0~360° (16 Direction) Accuracy Level: 22.5° (1 Direction) Operation Temperature: -40~80°C Operation Humidity: 15-95% RH

Communication Protocol Basic Parameter

Protocol	Modbus RTU
Data bits	8 bit
Parity bit	No
Stop bit	1
Error Detecting Code	CRC
Baud Rate	2400bps/4800bps/9600bps, default setting is 9600bps

Device Stack List				
Modbus ID	Parameter	Decimal	Address	Description
40001	Humidity	1	3	Range : 0-100.0%RH
40002	Temperature	1	3	Range : -40-80°C
40005	PM2.5	0	3	Range : 0-1000ug/m3
40010	PM10	0	3	Range : 0-1000ug/m3
40257	Device Address	0		Device Address
40258	Bard Rate	0		0=2400, 1=4800, 2=9600
40023	Wind Speed	1	1	Range : 0-60m/s
40024	Wind Direction	0	2	North-northeast: 0x0000 ; Northeast: 0x0001 Northeast East: 0x0002 ; North: 0x0003 East-East: 0x0004 ; Southeast: 0x0005 South-southeast: 0x0006 ; South: 0x0007 South-southwest: 0x0008 ; Southwest: 0x0009 West-West: 0x000A ; West: 0x000B West-northwest: 0x000C ; Northwest: 0x000D North-northwest: 0x000E ; North: 0x000F



Ordering Information

Model	Description
ES106	Outdoor Environment Air Quality Inspection System. Integrated embedded Hum., Temp., PM2.5, PM10 sensors, and external Wind Direction, Wind Speed sensors, Output: RS485
	Package List
	1 x Shutter
	1 x Wind Direction Sensor (including cable)
	1 x Wind Speed Sensor (including cable)
	1 x QIG
Model	Description
ES104	Outdoor Environment Air Quality Inspection System. Integrated embedded Hum., Temp., PM2.5, PM10 sensors, Output: RS485
	Package List
	1 x Shutter
	1 x QIG
Model	Description
ES102	Outdoor Environment Air Quality Inspection System. Integrated external Wind Direction, Wind Speed sensors, Output: RS485
	Package List
	1 x Wind Direction Sensor (including cable)
	1 x Wind Speed Sensor (including cable)
	1 x QIG



Optional Accessory

Accessories

	Shutter bracket
	Wind Speed sensor bracket
	Wind Direction sensor bracket