



AVC-ES101 Series Datasheet

Aiming to create better and safer working environments and life experiences through the products we deliver.



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Outdoor Soil Moisture Temperature Sensor

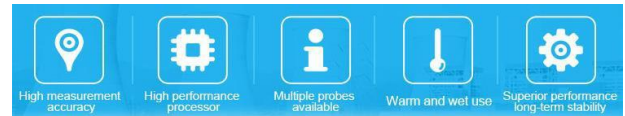
AVC-ES101SM

Soil temperature affects plant growth indirectly by affecting water and nutrient uptake as well as root growth. At a constant moisture content, a decrease in temperature results a decrease in water and nutrient uptake. At low temperatures, transport from the root to the shoot and vice versa is reduced. Therefore, a real-time data of soil temperature and moisture is vital for soil management. AVC-ES101SM sends measured data through Modbus RS485 output to IoT gateway, and IoT gateway collects all sensor data to the cloud platform for real-time information.



Optional IoT Router and Cloud Platform - ATMS

- Support Modbus to connect optional gateway AP222 for one or many sensors
- Real-time online monitoring, analysis, reporting
- Remote cloud security and visual management



Features & Benefits

Moisture measurement range	0~100% RH
Temperature measurement range	-40°C~80°C
Signal output:	RS485 (Modbus protocol)
Working voltage	4.5~30VDC
Maximum power consumption	0.5w (24VDC power supply)
Accuracy	Moisture accuracy: 0-50% internal: ±2%, 50-100% internal: ±3% (brown soil, 60%, 25°C); Temperature accuracy: ±0.5°C (25°C)
Resolution	Moisture resolution: 0.1%; Temperature resolution: 0.1
Work environment	-40°C~60°C; 0~80%RH
Core chip temperature resistance	85°C
Physical parameters	45*15*123mm; Probe length: 70 mm; Probe material: Anti-corrosion special electrode; Sealing material: Epoxy resin (black flame retardant); Cable length: standard 2 meters (Can be customized); Protection class: IP68

Register Address	PLC or Configuration Address	Content	Operation	Description
0000 H	40001 (decimal)	Moisture content	Read only	Real-time value of moisture content (extend 10 times)
0001 H	40002 (decimal)	Temperature value	Read only	Real-time value of temperature (extend 10 times)
0050 H	40081 (decimal)	Temperature calibration value	Read and write	Integer (extend 10 times)
0051 H	40082 (decimal)	Moisture content calibration value	Read and write	Integer (extend 10 times)
07D0 H	42001 (decimal)	Slave ID	Read and write	1 ~ 254 (Factory Default 1)
07D1 H	42002 (decimal)	Baud Rate	Read and write	0=2400 1=4800 2=9600

Ordering Information

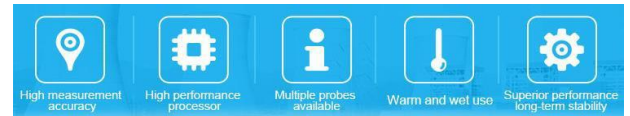
Model Name	Description
AVC-ES101SM	Outdoor Soil Moisture and Soil Temperature, -40~60°C, 0~100%RH, 70mm Probe, RS485 Modbus, 4.5~30V Power

Outdoor Soil PH Sensor AVC-ES101PH

Soil PH is considered a master variable in soils as it affects many chemical processes. It specifically affects plant nutrient availability by controlling the chemical forms of the different nutrients and influencing the chemical reactions they undergo. The optimum pH range for most plants is between 5.5 and 5. However, many plants have adapted to thrive at pH values outside this range. The SPH sensor gives you real-time data by the connectivity of gateway and cloud platform.

Optional IoT Router and Cloud Platform - ATMS

- Support Modbus to connect optional gateway AP222 for one or many sensors
- Real-time online monitoring, analysis, reporting
- Remote cloud security and visual management



Features & Benefits

Measurement Range	3~9 PH
Digital Signal output	RS485 (Modbus protocol)
Working Voltage	5~30VDC
Max power consumption	0.5W (24VDC power supply)
Resolution	0.1
Accuracy	±0.3PH
Long-term stability	≤5%/year
Response time	≤10s
Setting time	≤5min
Working Environment	-20~+60° C
Physical parameters	45*15*123mm; Probe length: 70 mm; Probe material: Anti-corrosion special electrode; Sealing material: Epoxy resin (black flame retardant); Cable length: standard 2 meters (Can be customized); Protection class: IP68

Register Address	PLC or Configuration Address	Content	Operation	Description
0000 H	40001	PH	Read only	Real-time value of PH (extend 10 times)
07D0 H	42001	Slave ID	Read and write	1 ~ 254 (Factory Default 1)
07D1 H	42002	Baud Rate	Read and write	0=2400 1=4800 2=9600

Ordering Information

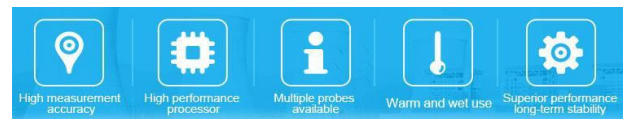
Model Name	Description
AVC-ES101PH	Outdoor Soil PH Sensor, 3~9PH, RS485 Modbus, 5~30VDC

Outdoor Soil EC and Moisture Sensor AVC-ES101SEC

Soil electrical conductivity (EC) sensor measures of the amount of salts in soil (salinity of soil). It is an important indicator of soil health. Soils containing excess salts occur naturally in arid and semiarid climates. The salinity of the soil, irrigation water or fertilizer solution is an important parameter affecting the root zone. Any of these factors can have a significant effect on plant growth and quality. The presence of high salt levels indicate adjustments are required. Low-salt levels could also lead to nutrient deficiencies. The SEC sensors gives you real time data by the connectivity of gateway and cloud platform.

Optional IoT Router and Cloud Platform - ATMS

- Support Modbus to connect optional gateway AP222 for one or many sensors
- Real-time online monitoring, analysis, reporting
- Remote cloud security and visual management



Features & Benefits

Measurement Range	EC:0-20000us/cm; Moisture: 0~100%RH; Temperature: -40~80°C
Digital Signal output	RS485 2-Wire output (Modbus protocol)
Working Voltage	4.5-30VDC
Max power consumption	0.7W (24VDC power supply)
EC Accuracy	0-10000us/cm range: ±3% FS; 10000-20000us/cm range: ±5% FS
Moisture Accuracy	0-50% internal: ±2%, @ (brown soil, 30%, 25 °C); 50-100% internal: ±3%, @ (brown soil, 60%, 25 °C)
Temperature Accuracy	±0.5°C (25°C)
EC Resolution	10us/cm
Moisture Resolution	0.1%
Temperature Resolution	0.1°C
Physical parameters	45*15*123mm; Probe length: 70 mm; Probe material: Anti-corrosion special electrode; Sealing material: Epoxy resin (black flame retardant); Cable length: standard 2 meters; Protection class: IP68

Register Address	PLC or Configuration Address	Content	Operation	Description
0000 H	40001 (decimal)	Moisture content	Read only	Real-time value of moisture content (extend 10 times)
0001 H	40002 (decimal)	Temperature value	Read only	Real-time value of temperature (extend 10 times)
0002 H	40003 (decimal)	EC	Read only	Real-time value of EC
0003 H	40004 (decimal)	Salinity	Read only	Real-time value of salinity
0004 H	40005 (decimal)	TDS	Read only	Real-time value of TDS
0022 H	40035 (decimal)	EC temperature coefficient	Read and write	0-100 corresponds to 0.0%-10.0%, default 0.0%
0023 H	40036 (decimal)	Salinity coefficient	Read and write	0-100 corresponds to 0.00-1.00, default 55 (0.55)
0024 H	40037 (decimal)	TDS coefficient	Read and write	0-100 corresponds to 0.00-1.00, default 50 (0.5)
0050 H	40081 (decimal)	Temperature calibration value	Read and write	Integer (extend 10 times)
0051 H	40082 (decimal)	Moisture content calibration value	Read and write	Integer (extend 10 times)

0052 H	40083 (decimal)	EC calibration value	Read and write	Integer
07D0 H	42001 (decimal)	Slave ID	Read and write	1 ~ 254 (Factory Default 1)
07D1 H	42002 (decimal)	Baud Rate	Read and write	0=2400 1=4800 2=9600

Ordering Information

Model Name	Description
AVC-ES101SEC	Outdoor Soil EC and Moisture Sensor, EC:0-20000us/cm, Moisture: 0~100%RH, RS485 Modbus, 4.5-30V Power