



TDS520-02 Soil Moisture, Temperature & EC Sensor

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RK520-02 Soil Moisture, Temperature & EC Sensor is integrated the moisture, temperature & EC measurement. The stainless steel probe is inserted into soil surface or soil profile to test quickly. The product with temperature compensation to ensure the accuracy of measurement. The probe can be permanently embedded underground and be connected to a data logger for unlimited testing.

FEATURES

High accuracy

Connect directly to data collector or instrument

Fully sealed structure

Placed in any depth underground (5000mm, max.)

Low power design

Easy Installation

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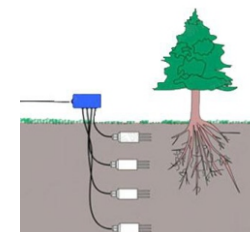
SPECIFICATIONS

Item	Technical Specification		
	Moisture	Temperature	EC
Range	0-100% (m^3/m^3)	-30°C ~ +70°C	0-10mS/cm
Accuracy	$\pm 2\%$ (0-50%) $\pm 3\%$ (51-100%)	$\pm 0.5^\circ\text{C}$	$\pm 3\%$ FS
Output Signal	RS485, 0-2V		
Response Time	<1s		
Supply	Mark on the label		
Effective measurement	With the center of the probe diameter is 70mm, high 70mm cylinder		
Housing	ABS		
Dimensions	45*15*145mm (probe: 3* \varnothing 3*70mm)		
Operating Temperature	-40°C ~ +80°C		
Ingress Protection	IP68		
Storage	10-60°C @ 20%-90% RH		
Probe material	316L stainless steel		

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MOUNTING

1. Testing medium should be with uniform intensity.
2. If surface soil water content measurement, the sensor should be insert into soil vertically. Do not shake the sensor when inserted, otherwise the probe will be blended;
3. If multi-layer soil water content measurement, the sensor should be buried in the soil and parallel to the ground. Make sure the probe not be blended;
4. When removing sensors from the soil, please hold the sensor housing shell and do not forcibly pull on the cable. Soil on probes should be brushed tightly.
5. Please keep the sensor in dry & clean conditions.



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ELECTRICAL CONNECTIONS

Connector (cable)	RS485
Red	V+
Black	V-
Yellow	RS485A
Green	RS485B

Note: This product has been tested and complies with European CE requirements for EMC directive.

WARRANTY

This product is warranted to be free of defects in materials and construction for a period of 12 months from date of lead time.

Liability is limited to repair or replacement of defective item.

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Communication Protocol (MODBUS)

Transmission mode: MODBUS-RTU, **Baud rate:** 9600bps, **Data bits:** 8, **Stop bit:** 1, **Check bit:** no

Slave address: the factory default is 01H (set according to the need, 00H to FFH)

The 03H Function Code Example: Read The Moisture, Temperature & EC Value

Host Scan Order (slave address: 0x01)

01 03 00 00 00 03 05CB

Slave Response

01 03 06 01 16 03 E8 01 1E 688F

Temperature: (0116)H=(278)D, $278/10=27.8^{\circ}\text{C}$

Moisture: (03E8)H=(1000)D, $1000/10=100\%$

EC: (011E)H=(286)D= $286/1000=0.28\text{mS/cm}$

The 06H Function Code Example: Modify the slave address (After the restart sensor changes to take effect)

Host Scan Order (Changed to 02H):

01 06 02 00 00 02 09B3

Slave Response

01 06 02 00 00 02 09B3

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If you forget the original address, you should use the broadcast address (FEH) (ensure that no other devices on the bus at this time).

Note:

1. All underlined is fixed bit;
2. The last two bytes is CRC check command.

WARRANTY

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 Complies with applicable CE directives.

Manual subject to change without notice. Version 2.0

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PARAMETER SELECTION TABLE

Remark	Series	Type	Supply	Output	Cable Length	
TDS						
	520					
		02				
			A			5V
			B			12-24V
			X			Other
				A		0-2V
				B		RS485
				X		Other
					2000	Units:mm (typ)
					...	Units:mm

Example: TDS520-02BA2000 Supply: 12-24V, Output: 0-2V, Cable Length: 2m.

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