

truebner

true excellence in instrumentation



- » Accurate volumetric soil moisture measurement
- » Integrated temperature measurement
- » Suitable for any soil type
- » Digital RS-485 interface with TBUS, Modbus and ASCII
- » Optional SDI-12 interface
- » Optional analog interface
- » Optional 4 - 20 mA interface
- » Easy installation and low cost

» **SMT100** Soil Moisture Sensor

english



www.truebner.de

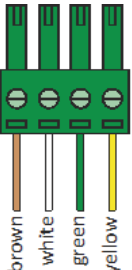
SMT100 Soil Moisture Sensor

SPECIFICATION

Accuracy:	Soil volumetric water content (VWC) <ul style="list-style-type: none">» Using factory calibration up to $\pm 3\%$ (VWC) in mineral soils with moderate salinity from 0 to 50% VWC» Using medium specific calibration up to $\pm 1\%$ (VWC) Temperature <ul style="list-style-type: none">» Typical $\pm 0.2^{\circ}\text{C}$, max. $\pm 0.4^{\circ}\text{C}$ over full range» Analog version $\pm 0.8^{\circ}\text{C}$ Additional output <ul style="list-style-type: none">» Raw measurement data» Dielectric permittivity
Resolution:	0.1% volumetric water content or better 0.01 $^{\circ}\text{C}$ or better (analog version 0.2 $^{\circ}\text{C}$)
Range:	0 to 60% volumetric water content (up to 100% volumetric water content with limited accuracy) Temperature: -40 to +80 $^{\circ}\text{C}$ (analog version -40 to +60 $^{\circ}\text{C}$)
Interface options:	RS485 with TBUS RS485 with Modbus RS485 with ASCII SDI-12 Analog: 0 - 10 V (other voltage ranges on request) 4 - 20 mA (only volumetric water content)
Power:	4-24 V DC, up to 40 mA during measurement (analog version 12 - 24 V DC for 0 - 10 V output) (4 - 20 mA version 12 - 32 V DC) Measurement time digital versions: less than 50 ms Measurement time analog versions: less than 500 ms
Cable length:	10 m
Sensor dimensions:	ca. 18.2 cm x 3 cm x 1.2 cm
Environmental protection:	IP68
Data logger compatibility:	Any logger capable of appropriate power excitation and RS-485 (TBUS, Modbus, ASCII), SDI-12, analog input or 4 - 20 mA input Free PC logger software available on request

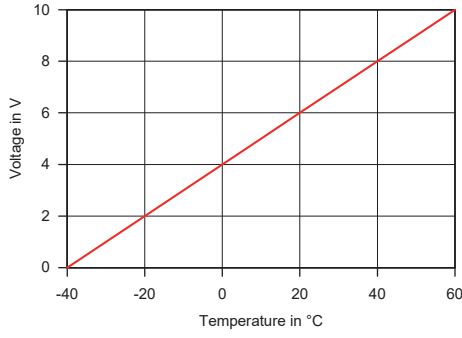
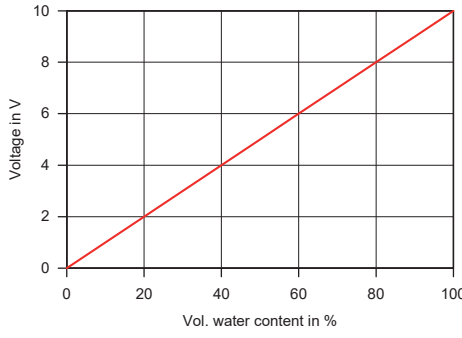
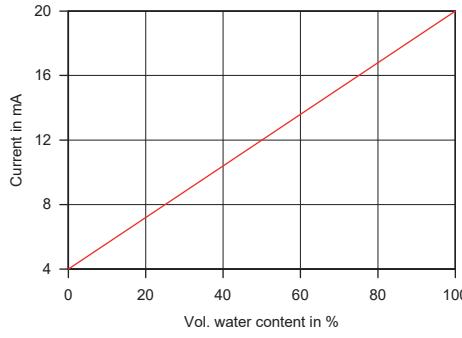
SMT100 Soil Moisture Sensor

Instructions

Wiring color code	<p>RS-485 version Brown: +Vbat (power supply) White: GND (ground) Green: RS-485 A Yellow: RS-485 B</p> <p>SDI-12 version Brown: +Vbat (power supply) White: GND (ground) Green: SDI-12 data</p> <p>Analog version Brown: +Vbat (power supply) White: GND (ground) Green: Voltage output temperature Yellow: Voltage output soil moisture</p> <p>4 - 20 mA version Brown: +Vbat (power supply) White: GND (ground)</p>
Connector pin assignment	<p>RS-485 version</p>  <p>brown = +Vbat white = GND green = RS-485 A yellow = RS-485 B</p>

SMT100 Soil Moisture Sensor

Instructions

<p>Characteristic curves</p>	<p>Analog version (0-10 V)</p> <p>Temperature</p>  <table border="1"><thead><tr><th>Temperature in °C</th><th>Voltage in V</th></tr></thead><tbody><tr><td>0</td><td>0</td></tr><tr><td>20</td><td>4</td></tr><tr><td>40</td><td>8</td></tr><tr><td>60</td><td>10</td></tr></tbody></table> <p>Soil moisture</p>  <table border="1"><thead><tr><th>Vol. water content in %</th><th>Voltage in V</th></tr></thead><tbody><tr><td>0</td><td>0</td></tr><tr><td>20</td><td>2</td></tr><tr><td>40</td><td>4</td></tr><tr><td>60</td><td>6</td></tr><tr><td>80</td><td>8</td></tr><tr><td>100</td><td>10</td></tr></tbody></table>	Temperature in °C	Voltage in V	0	0	20	4	40	8	60	10	Vol. water content in %	Voltage in V	0	0	20	2	40	4	60	6	80	8	100	10
Temperature in °C	Voltage in V																								
0	0																								
20	4																								
40	8																								
60	10																								
Vol. water content in %	Voltage in V																								
0	0																								
20	2																								
40	4																								
60	6																								
80	8																								
100	10																								
<p>Characteristic curve</p>	<p>4 - 20 mA version</p> <p>Soil moisture</p>  <table border="1"><thead><tr><th>Vol. water content in %</th><th>Current in mA</th></tr></thead><tbody><tr><td>0</td><td>4</td></tr><tr><td>20</td><td>8</td></tr><tr><td>40</td><td>12</td></tr><tr><td>60</td><td>16</td></tr><tr><td>80</td><td>20</td></tr><tr><td>100</td><td>20</td></tr></tbody></table>	Vol. water content in %	Current in mA	0	4	20	8	40	12	60	16	80	20	100	20										
Vol. water content in %	Current in mA																								
0	4																								
20	8																								
40	12																								
60	16																								
80	20																								
100	20																								