

# SMART FARM SENSING



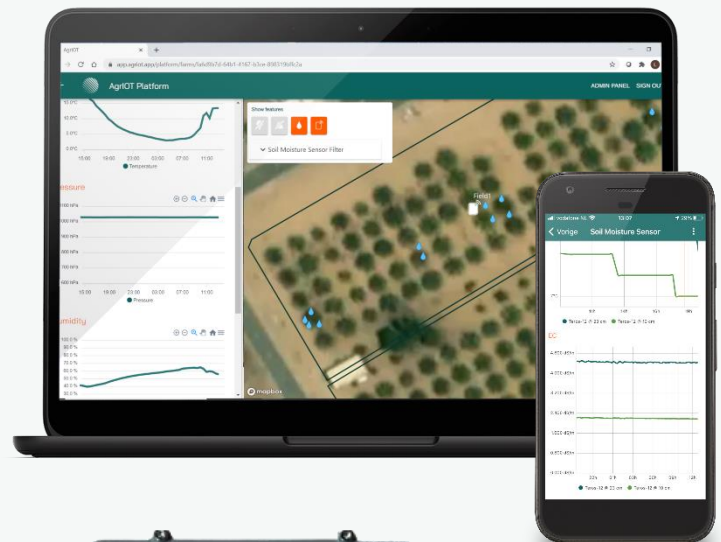
## ADVANCED SOIL MOISTURE SENSING

### Real-time soil monitoring

Maintaining ideal soil moisture conditions lowers the risk of failed crops and increases crop productivity. Continuous monitoring of soil moisture, electric conductivity and temperature at root depth using ultra-reliable TEROS-11/12 sensors (up to 8 connected to one device) is the ideal way to optimise soil conditions specific to each crop. The wireless datalogger has built-in barometer providing on-the-spot temperature, air pressure and humidity data to complete your solution.

### AgriOT ready

Seamless integration with AgriOT <https://agriot.app/>, our geospatial agriculture data management platform, through wireless communication to AgriOT wireless base station, allowing full field monitoring from iPhone, Android phone or desktop.



# TECHNICAL SPECIFICATIONS

## Sensor Specifications

### Volumetric water content (VWC)

<b>Range</b>	Mineral soil calibration: 0.00 – 0.70 m <sup>3</sup> /m <sup>3</sup> Soilless media calibration: 0.0 – 1.0 m <sup>3</sup> /m <sup>3</sup> Apparent dielectric permittivity ( $\epsilon_a$ ): 1 (air) to 80 (water) <i>NOTE: The VWC range is dependent on the media the sensor is calibrated to. A custom calibration will accommodate the necessary ranges for most substrates.</i>
<b>Resolution</b>	0.001 m <sup>3</sup> /m <sup>3</sup>
<b>Accuracy</b>	Generic calibration: $\pm 0.03$ m <sup>3</sup> /m <sup>3</sup> ( $\pm 3.00\%$ VWC) typical in mineral soils that have solution EC <8 dS/m Medium specific calibration: $\pm 0.01$ – 0.02 m <sup>3</sup> /m <sup>3</sup> ( $\pm 1$ –2% VWC) in any porous medium Apparent dielectric permittivity ( $\epsilon_a$ ): 1 – 40 (soil range), $\pm 1$ $\epsilon_a$ (unitless) 40 – 80, 15% of measurement

### Temperature

<b>Range</b>	-40 to +60 °C
<b>Resolution</b>	0.1 °C
<b>Accuracy</b>	$\pm 0.5$ °C from -40 to 0 °C $\pm 0.3$ °C from 0 to +60 °C

### Bulk electrical conductivity (EC) - TEROS-12 only

<b>Range</b>	0 to 20 dS/m (bulk)
<b>Resolution</b>	0.001 dS/m
<b>Accuracy</b>	+/- (5% +0.01 dS/m) from 0 to 10 dS/m +/- 8% from 10 to 20 dS/m

### Physical dimensions

<b>Dimensions</b>	9.4 x 2.4 x 7.5 cm (L x W x H)
<b>Needle length</b>	5.5 cm
<b>Cable length</b>	5 m (standard) 50 m (maximum custom cable length) <i>NOTE: Contact support if a nonstandard cable length is needed.</i>

## Datalogger Specifications

<b>No. of sensors</b>	Max. 8 TEROS-11/12 sensors <i>NOTE: Contact support if other / more sensors are required.</i>
<b>Barometer</b>	Temperature: -40 to 85 °C Humidity: 0 – 100% Pressure: 300 to 1100 hPa
<b>Input voltage</b>	5 – 9 VDC (solar panel or DC charger)
<b>Power consumption</b>	<2 W
<b>Dimensions</b>	13.3/14.5 x 4.4 x 14.8/15.9 cm (L x W x H)
<b>Wireless protocol</b>	LoRaWAN
<b>Frequency</b>	863-870 MHz (EU), 902-928 MHz (USA) or 920-925 MHz (AU)
<b>Transmit power</b>	14 dBm (EU) or 20 dBm (USA and AU)
<b>Transmission rate</b>	Maximum every 5 min

## SMART FARM SENSING

Smart Farm Sensing provides products, services and solutions to the agriculture sector based on intelligent sensor data, remote sensing and geospatial information.

Our vision is to increase global agriculture productivity and sustain our future food chain with fully operational satellite, aerial and ground remote sensing data supply chains.

