

**Specification of Research Grade Automatic Weather Station (AWS) & Infrared Canopy Temperature Radiometer**

<b>Measurements</b>	<b>Specifications</b>
<b>DATALOGGER</b>	Measurement and Control Datalogger to log and store the data locally with SD memory card (16 GB or higher)
<b>GSM / GPRS for remote monitoring and data acquisition</b>	The GSM /GPRS system should be compatible with the mobile network systems in India. Including network service plan for 5 years
<b>Wind speed</b>	Windspeed Range 0 to 100 m/s Windspeed Accuracy $\pm 0.3$ m/s or 1% of reading
<b>Wind direction</b>	Wind Direction $0^{\circ}$ to $359^{\circ}$ Wind Direction Accuracy $\pm 3^{\circ}$
<b>Air temperature</b>	Measurement Range $-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ Accuracy $\pm 0.2^{\circ}\text{C}$ (over the range $-40$ to $+70^{\circ}\text{C}$ )
<b>Relative humidity</b>	Measurement Range 0 to 100% RH Accuracy $\pm 2\%$ (at $25^{\circ}\text{C}$ , over the range 80 to 100% RH)
<b>Barometric pressure</b>	Pressure Range 600 to 1100 hPa Resolution $\pm 0.01$ hPa Accuracy $\pm 2.0$ hPa (@ $-40^{\circ}$ to $+60^{\circ}\text{C}$ )
<b>Precipitation</b>	Resolution 1 tip Accuracy 1.0% up to 50 mm/h (2 in./h)
<b>Solar radiation</b>	Spectral Range 385 to 2105 nm Measurement Range 0 to 2000 W/m <sup>2</sup> (net short-wave irradiance) Calibration Uncertainty $\pm 2.6\%$
<b>Multi Profile SOIL MOISTURE &amp; TEMPERATURE SENSOR</b>	Measurements Made: Volumetric water content (VWC), electrical conductivity (EC), and temperature  Operating Temperature Range: $-40^{\circ}$ to $+60^{\circ}\text{C}$  Measurement Depths: 5, 10, 20, 30, 40, 50, 60, 75, and 100 cm  Electrical Conductivity Range 0 to 10 dS/m Accuracy $\pm 2\%$ (0 to 2.5 dS/m) $\pm 5\%$ (full range)  Volumetric Water Content Range 0 to 100% Water Content Accuracy $\pm 1.5\%$

	<p>Soil Temperature Accuracy <math>\pm 0.15^{\circ}\text{C}</math> (between <math>-30^{\circ}</math> and <math>+40^{\circ}\text{C}</math>)</p> <p>(Necessary conductors, mounting brackets and Cables of Length: Minimum 10m or more)</p>
<b>Infrared Canopy Temperature Radiometer</b>	<p>Wavelength Range 8 to 14 <math>\mu\text{m}</math> (corresponds to atmospheric window) Field of View (FOV) At least <math>20^{\circ}</math> (half angle) Absolute Accuracy <math>\pm 0.2^{\circ}\text{C}</math> (<math>-10^{\circ}</math> to <math>+65^{\circ}\text{C}</math>)</p>
<b>Software, Data Acquisition system and Online monitoring and control</b>	All necessary software(s) to acquire, process and analyse the data including online monitoring and control should be provided
<b>MOUNTING HARDWARE</b>	Heavy Duty Adjustable Tripod (3 Meters)
<b>Necessary Enclosures for the data loggers, power supply, battery / batteries, solar panels</b>	As needed should be provided
<b>Comprehensive Warranty (5 years)</b>	Full Comprehensive AMC (including replacement of spare parts) for 5 years from the date of installation with field visits twice every year for 5 years
<b>Installation</b>	The vendor should do the complete installation on-site