ATMOS-51
VBR ACTUAL EVAPOTRANSPIRATION SENSOR

METER

Don’t estimate ET. Measure it.

Knowing exactly how much water a canopy loses during the day is vital to many applications. From irrigation planning to quantifying hydrological changes over time to modeling an ecosystem’s energy balance, direct measurements of evapotranspiration can give you the information you need to make the right decisions at the right time.

The ATMOS 51 VBR Actual ET Sensor takes your data beyond reference evapotranspiration values, using a variance Bowen ratio technique to simplify water and energy balance measurements in the field. Now, you can use actual ET data to accurately measure plant water use throughout the day, identify water limitations, and detect plant stress signals earlier.

Scale measurements to your application

Like conventional field-scale water flux measurements, such as eddy covariance towers, the ATMOS 51 abides by turbulent transport principles to measure energy and water exchange via dynamic eddies. This compact unit measures the same area at a fraction of the cost and with less infrastructure, so you can optimize ET measurements to your application without breaking your budget.

Use the ATMOS 51 to supplement or expand ET measurements throughout your eddy covariance tower footprint or validate crop ET (reference ET) by pairing it with the all-in-one weather stations in your field.

More precision for better decisions

Going beyond reference ET and crop ET means you know exactly how much water is leaving the system. Characterize plant hydraulic stress, optimize irrigation, steer crops, and monitor water conservation efforts with accurate measurements from your site.

Combine actual ET with precipitation and soil moisture measurements to get a clear, mechanistic understanding of water movement into and out of a system.

Simple setup and data management

The ATMOS 51 uses the same compact design as our other popular ATMOS devices. Setup is as simple as mounting the sensor to an instrument mast and plugging it into a ZL6 data logger. Go from setup to streaming data in as little as 20 minutes.

Features

- Actual ET measurements direct from your project site
- High frequency temperature, specific humidity, and solar radiation extend data
- Plug-and-play compatibility with ZL6 data loggers and ZENTRA Cloud
- Easy installation with the built-in levelling bracket
- Reduced maintenance needs due to the UV-resistant plastic housing

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Specifications

MEASUREMENT SPECIFICATIONS

Solar Radiation	**Range:** 0-1750 W/m^2 **Resolution:** 1 W/m^2 **Accuracy:** ±5% of measurement typical
Relative Humidity (RH)	**Range:** 0-100% RH (0.00-1.00) **Resolution:** ±0.01% RH **Accuracy:** ±1% RH, typical **Long-term drift:** ±0.25% RH/year, typical
Humidity Sensor Temperature	**Range:** -40 to 60°C **Resolution:** 0.01°C **Accuracy:** ±0.1°C
Barometric Pressure	**Range:** 26-126 kPa **Resolution:** 0.01 kPa **Accuracy:** ±0.003 kPa at 25°C **Equilibration:** <10 ms **Long-term drift:** <0.03 kPa/year, typical
Tilt	**Range:** 0°-180° **Resolution:** 0.1° **Accuracy:** ±1°

COMMUNICATION SPECIFICATIONS

Output	SDI-12 communication
Data logger compatibility	METER ZL6 and EM60 data loggers or any data acquisition systems capable of 3.6-15.0 VDC excitation and SDI-12 communication

PHYSICAL SPECIFICATIONS

Dimensions	**Diameter:** 14 cm **Height:** 19 cm
Cable length	5 m (standard) 75 m (maximum custom cable length)
Connector types	3.5-mm stereo plug connector or stripped and tinned wires
Operating temperature range	**Minimum:** -40°C **Maximum:** 60°C

ELECTRICAL AND TIMING CHARACTERISTICS

Supply voltage (VCC to GND)	**Minimum:** 3.6 VDC continuous **Maximum:** 15.0 VDC continuous **Note:** ATMOS 51 must be continuously powered to work properly **Note:** For the ATMOS 51 to meet digital logic levels specified by SDI-12, it must be excited at 3.9 VDC or greater.
Measurement duration	**Typical:** 75 ms **Maximum:** 100 ms
COMPLIANCE (CE Mark)	Manufactured under EM ISO/IEC 17050:2010