

Evapotranspiration Monitoring Station

Model ET107

Campbell Scientific's ET107 is an automated system designed for commercial agriculture and irrigation scheduling. The station calculates potential evapotranspiration (ET_0), which is the amount of water lost from the soil due to evaporation and plant transpiration. Calculating a crop's evapotranspiration rate can aid in the development of an irrigation schedule that provides sufficient water for the crops without overwatering.

Our ET107 ET_0 Station consists of meteorological sensors, an aluminum mounting pole, and an environmental enclosure that houses a CR1000M module and a 7 Ahr sealed rechargeable battery. The battery is recharged via an ac transformer or a 10 W solar panel. Sealed circular connectors are provided on the outside of the enclosure to simplify sensor hook-up. Meteorological sensors included with the ET107 are the CS305-ET Solar Radiation Sensor, HMP50-ET Air Temperature and Relative Humidity Probe, TE525-ET Tipping Bucket Rain Gage, and either the 034B-ETM Wind Set or WindSonic1-ETM 2-D Sonic Wind Sensor. Data is typically telemetered via a short-haul or phone modem.

Ordering Information

ET107 Evapotranspiration Monitoring Station

Power Supply Options

- AC AC Power Kit
- SP 10 W Solar Panel

Communication Device Options

- SH Short Haul Modem Kit
- PH Phone Modem Kit

Wind Sensor Options

- MW Met One 034B-ETM Wind Set w/Mount
- GW Gill WindSonic1-ETM 2-D Sonic Wind Sensor w/Mount

Pole Options

- 3M 3 m Aluminum Pole
- 2M 2 m Aluminum Pole

Additional Sensors

For the following sensors, enter the lead length, in feet, after the -LC.

- 107-LC Soil Temperature Probe
- CS616-LC Soil Water Content Reflectometer
- SR50-LC Snow Depth Sensor

Alternative Data Retrieval Methods

Digital cellular phones, spread spectrum radios, and voice synthesized modems may be used for some applications; contact Campbell Scientific for more information.



The ET107 provides real-time weather measurements and calculates ET_0 on an hourly and daily basis.

Specifications

CR1000M Measurement and Control Module (without wiring panel)

Temperature Range: -25° to +50°C

Accuracy of Voltage Measurement: $\pm(0.06\%$ of reading + offset), 0° to +40°C; $\pm(0.12\%$ of reading + offset), -25° to 50°C

Memory: 2 Mbytes Flash for operating system; 2 Mbytes for CPU usage, program storage, and data storage

Power Supply Requirements: 9.6 to 16 Vdc

Typical Current Drain: ~0.6mA (sleep mode);
1 to 16 mA (w/o RS-232 communication);
17 to 28 mA (w/RS-232 communication)

HMP50-ET Air Temperature and Relative Humidity Probe (includes radiation shield)

Measurement Range: -25° to +60°C; 0 to 98% RH

Temperature Sensor: 1000 ohm Platinum Resistance Thermometer

Temperature Accuracy: $\pm 0.8^\circ\text{C}$

Relative Humidity Sensor: Vaisala's INTERCAP capacitive chip

RH Accuracy: $\pm 3\%$, 0 to 90% range; $\pm 5\%$, 90 to 98% range

TE525-ET Tipping Bucket Rain Gage

Sensor: Magnetic reed switch

Orifice: 6.0" diameter

Sensitivity: 1 tip per 0.01" (0.25 mm)

Accuracy: $\pm 1\%$ accuracy @ 2" per hr (50.8 mm per hr) or less

CS305-ETM Pyranometer with Mount

Sensor: Silicon photocell

Accuracy: $\pm 5\%$ for daily total radiation

Output: 0.2 mV per W m^{-2}

034B-ETM Wind Set w/Mount

Sensor: Cup anemometer (wind speed), vane (wind direction)

Wind Speed Range: 0 to 49.5 m s^{-1} with a starting threshold of 0.4 m s^{-1}

Wind Direction Range: 0° to 360° mechanical; 0° to 356° electrical

Wind Speed Accuracy: $\pm 0.11 \text{ m s}^{-1}$ when less than 10.1 m s^{-1} ;

$\pm 1.1\%$ of true when greater than 10.1 m s^{-1}

Wind Direction Accuracy: $\pm 4^\circ$

WindSonic1-ETM 2-D Sonic Wind Sensor w/Mount

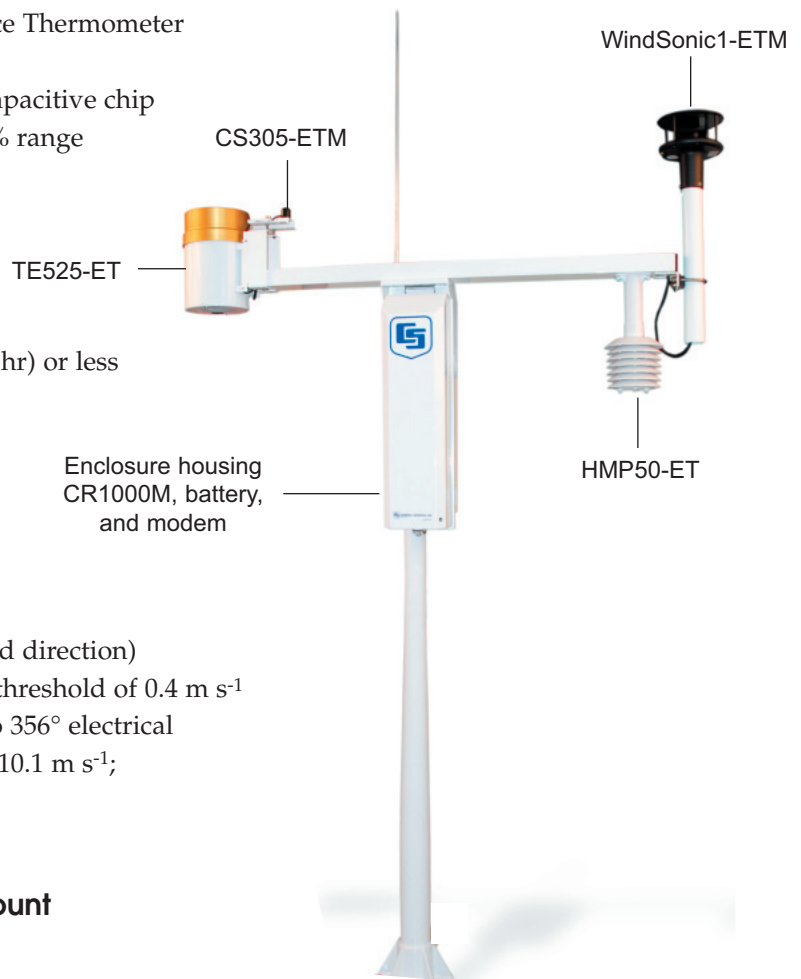
Sensor: 2-D ultrasonic anemometer

Wind Speed Range: 0 to 60 m s^{-1}

Wind Direction Range: 0° to 360°

Wind Speed Accuracy: $\pm 2\%$ of reading

Wind Direction Accuracy: $\pm 3^\circ$



NOTES:

1. Additional specifications are provided on our CS300, HMP50, TE525, 034B, WindSonic, and CR1000 product literature. The CS300 and CS305 are essentially the same sensor except the CS305 has a different fixed multiplier.
2. Sensor manufactures are Apogee, Inc., (CS305), Vaisala, Inc., (HMP50), Texas Electronics, Inc., (TE525), Met One (034B), and Gill (WindSonic1).

