

ET107

Evapotranspiration Monitoring Station



Campbell Scientific's ET107 is an automated system designed for commercial agriculture and irrigation scheduling. The station calculates potential evapotranspiration (ET_o), 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.

Features

- CR1000-based system
- Commonly used suite of sensors that supports many applications
- Watertight enclosure that protects electronics and enhances long-term reliability
- Low power consumption
- Slim, vertical profile for a more attractive station
- Simple, integrated design for faster installation

System Components

The ET107 ETo Station consists of meteorological sensors, a 3-m aluminum 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, HMP60-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.

Configuration of the station requires selection of a charging source option, communication option, and wind sensor option (see Ordering Information at right).

Programming

The ET107 can be programmed in minutes using VisualWeather software (requires version 3.0 or higher). VisualWeather software supports programming, manual and scheduled data retrieval, and report generation. The software also includes on-board equations that calculate ET_o, crop water needs, growing degree days, wet bulb temperature, dew point, wind chill, and chill hours.



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

Ordering Information

ETo Station

ET107 Evapotranspiration Monitoring Station

Charging Source Options (one required)

- AC AC Power Kit
- SP 10 W Solar Panel

Communication Device Options (one required)

- SH Short Haul Modem Kit
- PH Phone Modem Kit

Wind Sensor Options (one required)

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

Additional Sensors

- 107-LC** Soil Temperature Probe (-35° to +50°C); enter the lead length, in feet, after the -LC.
- 108-LC** Soil Temperature Probe (-5° to +95°C); enter the lead length, in feet, after the -LC.
- CS616-LC** Soil Water Content Reflectometer; enter the lead length, in feet, after the -LC.

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.

Specifications

CR1000M Measurement & Control Module (without wiring panel)

Temperature Range:	-25° to +50°C
Accuracy of Voltage Measurement:	±(0.06% of reading + offset), 0° to +40°C; ±(0.12% of reading + offset), -25° to 50°C
Memory:	2 MB Flash for operating system (OS) 4 MB for CPU usage, program storage, and data storage
Power Supply Requirements:	9.6 to 16 Vdc
Typical Current Drain:	~0.6 mA (sleep mode); 1 to 16 mA (w/o RS-232 communication); 17 to 28 mA (w/RS-232 communication)

HMP60-ET Air Temperature & Relative Humidity (RH) Probe (includes radiation shield)

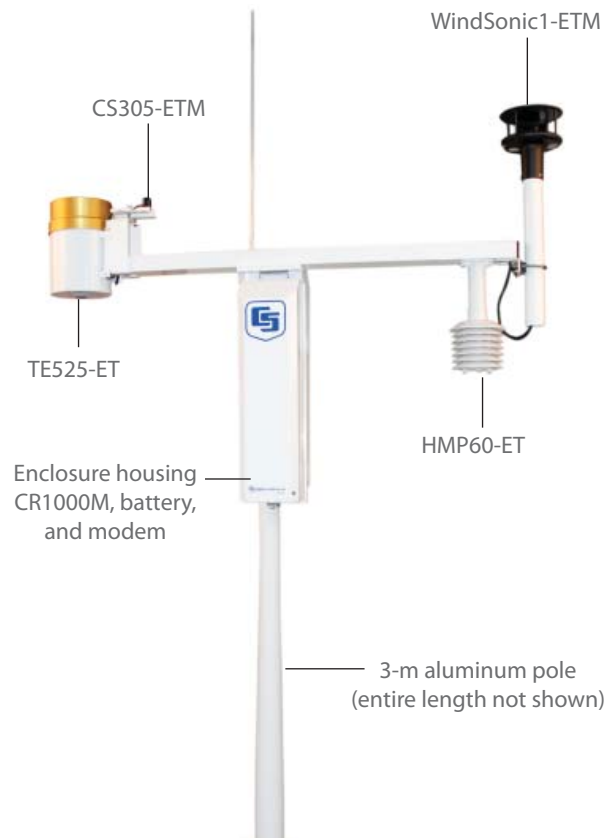
Measurement Range:	-25° to +60°C; 0 to 100% RH
Temperature Sensor:	1000 ohm Platinum Resistance Thermometer
Temperature Accuracy:	±0.6°C
RH Sensor:	Vaisala's INTERCAP capacitive chip
Accuracy	
0° to +40°C:	±3%, 0 to 90% range; ±5%, 90 to 100% range
-40° to 0°C:	±5%, 0 to 90% range; ±7%, 90 to 100% range
+40° to +60°C:	±5%, 0 to 90% range; ±7%, 90 to 100% 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:	±1% accuracy @ 2" per hr (50.8 mm per hr) or less

CS305-ETM Pyranometer with Mount

Sensor:	Silicon photocell
Accuracy:	±5% for daily total radiation
Output:	0.2 mV per W m ⁻²



034B-ETM Wind Set with Mount

Sensor:	Cup anemometer (wind speed), vane (wind direction)
Wind Speed Range:	0 to 75 m s ⁻¹ (167 mph) with a starting threshold of 0.4 m s ⁻¹ (0.9 mph)
Wind Direction Range:	0° to 360° mechanical; 0° to 356° electrical
Wind Speed Accuracy:	±0.11 m s ⁻¹ (±0.25 mph) when <10.1 m s ⁻¹ (<22.6 mph); ±1.1% (±2.5 mph) of true when >10.1 m s ⁻¹ (>22.6 mph)
Wind Direction Accuracy:	±4°

WindSonic1-ETM 2-D Sonic Wind Sensor with Mount

Sensor:	2-D ultrasonic anemometer
Wind Speed Range:	0 to 60 m s ⁻¹ (0 to 134.2 mph)
Wind Direction Range:	0° to 360°
Wind Speed Accuracy:	±2% of reading
Wind Direction Accuracy:	±3°

NOTES:

1. Additional specifications are provided on our CS300, HMP60, TE525, 034B, WindSonic, and CR1000 product brochure. The CS300 and CS305 are essentially the same sensor except the CS305 has a different fixed multiplier.
2. Sensor manufacturers are Apogee, Inc., (CS305), Vaisala, Inc., (HMP60), Texas Electronics, Inc., (TE525), Met One (034B), and Gill (WindSonic1).

