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# TORO Weather Station

## T.Weather 106

Turf grass water management can be handled automatically with Campbell Scientific's T. Weather Stations and Toro's Central Irrigation and Control System. \*

The weather station automatically monitors meteorological conditions that affect turf grass water consumption. This information is used by the Central Irrigation System to analyze current irrigation requirements.

The weather station continuously monitors the following meteorological parameters:

- Solar radiation
- Air Temperature
- Relative humidity
- Wind speed
- Wind direction
- Rainfall

These parameters (excluding wind direction) are inputs for a modified Penman equation that calculates evapotranspiration ( $ET_0$ ).

Phone or "short haul" modems are used to transfer hourly weather data between the weather station and a central computer. The central computer calculates  $ET_0$  and programs each controlling "satellite" with the appropriate irrigation cycles.

The T. Weather Station incorporates the Campbell Scientific CR10X Measurement and Control Module to measure sensors, process and store data, and communicate with the central computer. Simple specifications for the CR10X and sensors are listed on the back of this page.

*\*Information on TORO Irrigation Systems is available from your local TORO distributor.*



**CAMPBELL SCIENTIFIC, INC.**

815 W. 1800 N. • Logan, Utah 84321-1784 • (435) 753-2342 • FAX (435) 750-9540 • [www.campbellsci.com](http://www.campbellsci.com)

## Sensor Specifications

### 034B-ET Wind Speed and Direction

Wind Speed Sensor: 3-cup anemometer

Operating temperature range: -30° to +70°C

Operating range: 0-110 mph

Starting Threshold: 0.9 mph

Accuracy:  $\pm 0.25$  when less than 22.7 mph

$\pm 1.1\%$  of true when more than 22.7 mph

Wind Direction Sensor

Range: 360° mechanical, 356° electrical

Starting Threshold: 0.9 mph

Accuracy:  $\pm 4^\circ$

### LI200X-ETM Solar Radiation

Sensor: Silicon photocell

Accuracy: Absolute error in natural daylight is  $\pm 5\%$  maximum,  $\pm 3\%$  typical

Sensitivity:  $0.2 \text{ kW m}^{-2} \text{ mV}^{-1}$

### HMP45C-ET Temperature and Relative Humidity

Temperature sensor: 1000  $\Omega$  PRT

Range: -40° to +60°C

Accuracy: Typically  $\pm 0.2^\circ\text{C}$

RH Sensor: HUMICAP H-sensor

RH range: 0-100% non-condensing

RH accuracy (at 20°C):

against factory reference:  $\pm 1\%$  RH

field calibration against references:  $\pm 2\%$  RH (0-90% RH)

field calibration against references:  $\pm 3\%$  RH (90-100% RH)

### TE525-ET Rain Gage

Sensor: Magnetic switch

Orifice: 6.04 inch diameter

Sensitivity: 1 tip per 0.01 inch

Accuracy:  $\pm 1.0\%$  up to 1 inch/hour

## CR10X Specifications

Temperature range: -25° to 50°C

Accuracy: of voltage measurement:

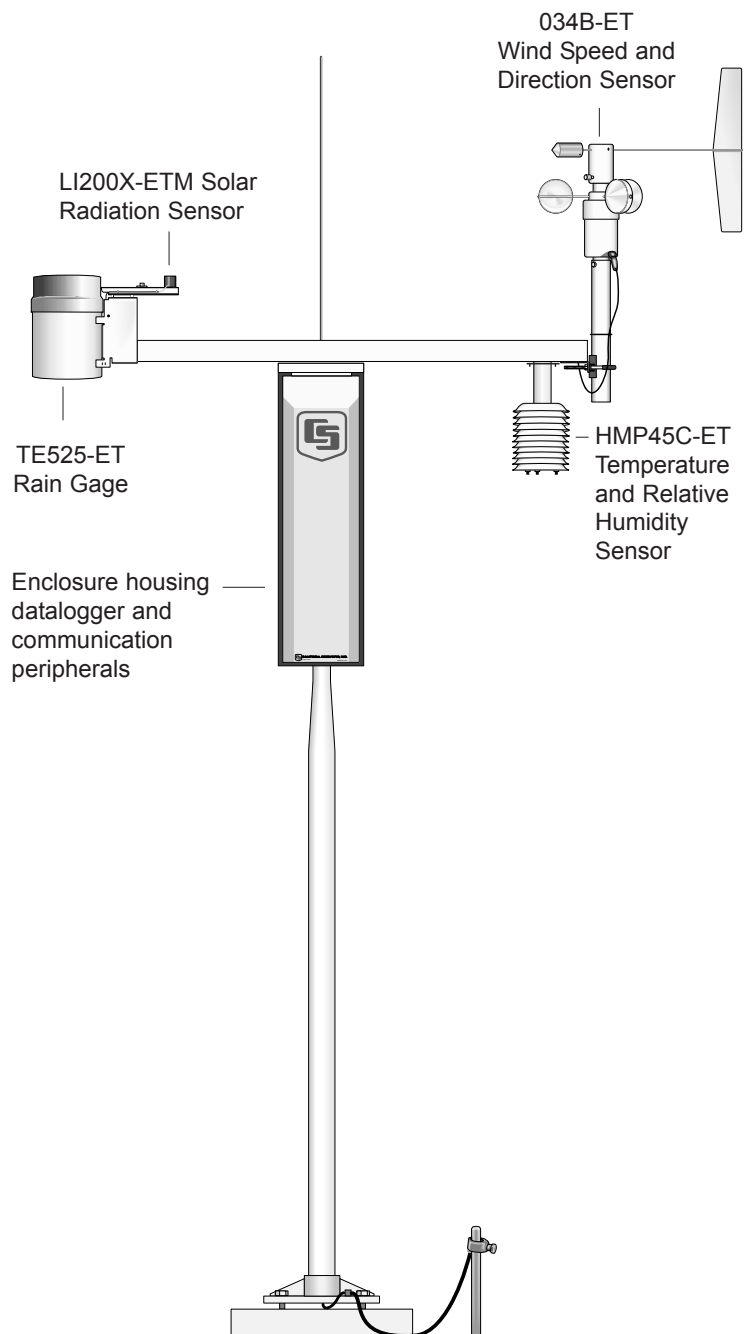
$\pm 0.1\%$  of FSR,  $\pm 0.05\%$  FSR (0° to 40°C)

Data storage: At least 2 months

System power requirements:

Voltage: 9.6 to 16 volts

Average system current drain: 1.5 mA



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