RAWS-F

Quick Deployment Station for Fire Weather

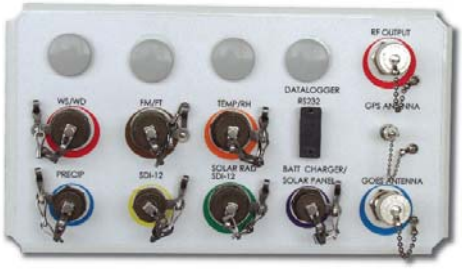
CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

Meteorological sensors included with the RAWS-F are the CS300-QD Solar Radiation Sensor, HC2S3-QD Air Tempeature and Relative Humidity Probe, TE525-QD Tipping Bucket Rain Gage, and either the WindSonic4-QD 2-D Sonic Wind Sensor (not shown), or 034B-QD Wind Set.

Campbell Scientific's RAWS-F (Remote Automated Weather Station for Fire Weather) is ideal for prescribed burns or other temporary installations. This quick deployment station can be setup in as little as 10 minutes—without tools. It consists of a 6 ft tripod, meteorological sensors, and an aluminum environmental enclosure that houses and protects a CR1000M module and a 12 V battery. The battery is recharged via a solar panel or an AC transformer. Each RAWS-F station is pre-programmed to comply with the National Fire Danger Rating System (NFDRS) weather station standards.

The outside of the enclosure has color-coded, keyed connectors for attaching wind speed and direction, air temperature and relative humidity, precipitation, solar radiation, and the optional fuel moisture/temperature sensors. Besides the connectors, a wiring panel is provided that allows the attachment of additional sensors that measure barometric pressure, stream flow, snow depth, or water depth.

The RAWS-F includes a CR1000KD for on-site communications. Telecommunications options are our GOES satellite transmitter or the VSP3 Vosponder Voice Radio Interface. The Vosponder allows customers to call a RAWS-F station via a hand-held radio and receive verbal reports of real-time conditions. Our RAWS-F station is also compatible with other communication equipment such as telephones, digital cellular transceivers, and RF.



Metal connector caps are chained to a connector panel. Four additional connectors can be incorporated into the panel.

Ordering Information

Remote Automated Weather Stations for Fire Weather

RAWS-F Quick Deployment Station for Fire Weather Applications. Must choose a power supply option, wind sensor option, and transport case option (see below).

Calibration Certificate Options

-NC No Calibration Certificate

-CC Calibration Certificate for CR1000M Module

Communication Options

-GT HDR GOES Transmitter Kit (includes TX320 transmitter, Yagi antenna, GPS antenna, & cables)

-VB Vosponder Voice Radio Interface and cable for use with a user-supplied Bendix Radio

-VM Vosponder Voice Radio Interface and cable for use with a Midland Radio

Power Supply Options

-7 7 Ahr Sealed Rechargeable Battery with SP10-QD 10 W Solar Panel

-24 24 Ahr Sealed Rechargeable Battery with SP20-QD 20 W Solar Panel

Wind Sensor Options (one required for RAWS-F)

-MW Met One 034B-QD Wind Set

-GW Gill WindSonic4-QD 2-D Sonic Wind Sensor

Barometer Option

-QB CS100-QD Barometric Pressure Sensor and mounting bracket

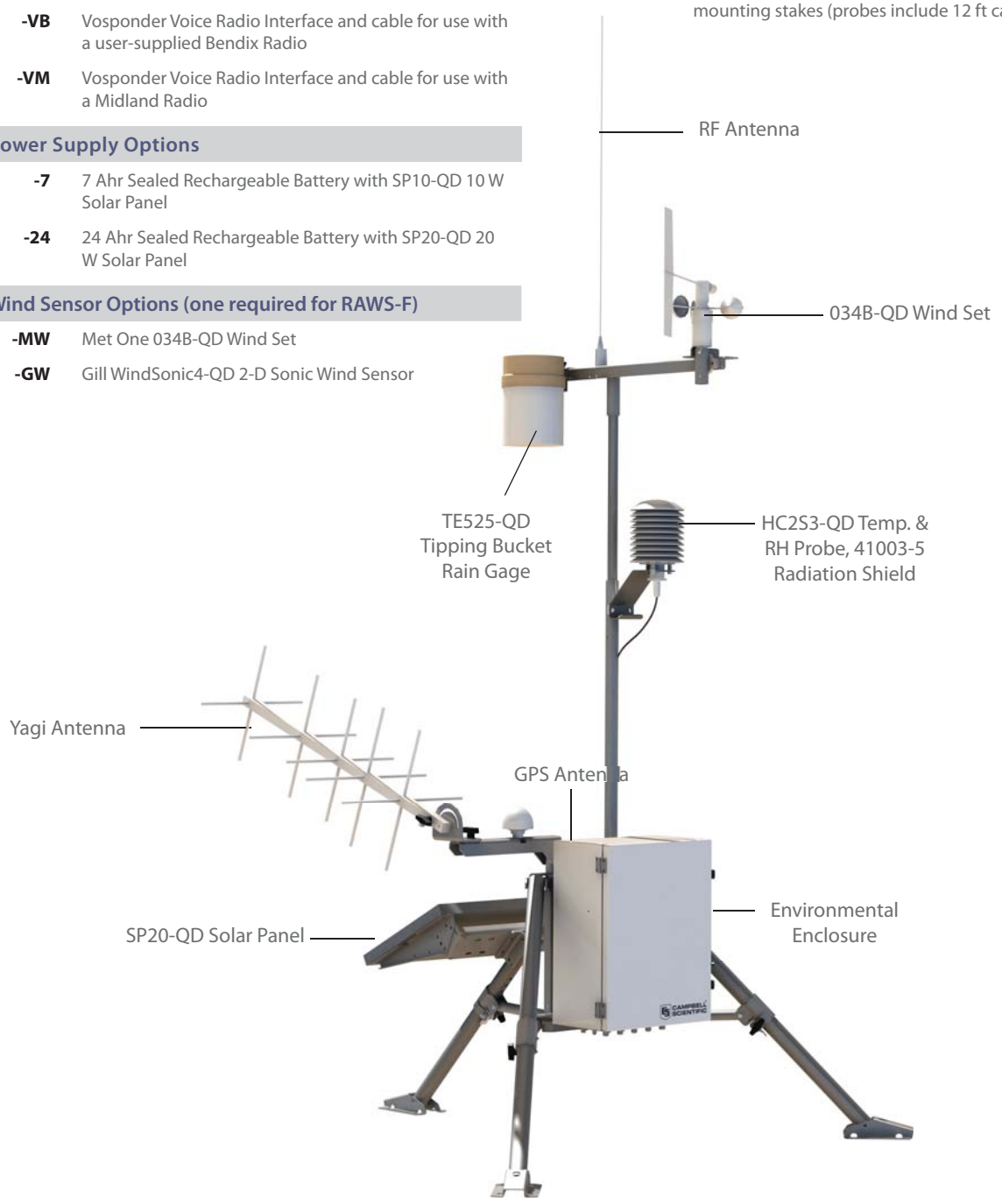
Transport Case Options

-MC Cases with foam for the 034B

-WC Cases with foam for the WindSonic

Additional Sensor

CS516-QD CS506 Fuel Moisture Probe, 26601 Fuel Moisture Stick, 107 Temperature Probe, CS205 Fuel Sticks, and 26817 mounting stakes (probes include 12 ft cable)



Above is a RAWS-F station with the -GT Communication Option, -24 Power Supply Option, and -MW Wind Sensor Option. The CS300-QD is behind the TE525-QD. Some wiring is not shown.

Specifications

RAWS Enclosure

Material: Aluminum

Dimensions: 35.6 x 45.7 x 22.9 cm (14.0" x 18.0" x 9.0")

Weight: 12.6 kg (27.75 lb) fully loaded (i.e., includes CR1000M, connector panel, 7 Ahr battery)

RAWS-F Tripod

Material: Aluminum

Height: 1.8 m (6 ft)

Weight: 13.6 kg (30.0 lb)

RAWS-F Transport Cases

Hard Case: Holds sensors, enclosure, solar panel, crossarm, antennas

Soft Case: Holds tripod, mast, grounding kit

Dimension

Hard Case: 96.5 x 63.5 x 43.2 cm (38" x 25" x 17")

Soft Case: 94.0 x 45.7 x 15.2 cm (37" x 18" x 6")

Weight

Hard Case: 16.3 kg (36.0 lb)

Soft Case: 4.1 kg (9.1 lb)

CR1000M Measurement and Control Module

Temperature Range: -25° to +50°C standard; -55° to +85°C extended

Accuracy of VoltageMeasurement

0° to +40°C: ±(0.06% of reading + offset)

-25° to 50°C: ±(0.12% of reading + offset)

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

Power Requirements: 9.6 to 16 Vdc

Current Drain

Sleep Mode: 0.7 mA typical (0.9 mA max.)

Without RS-232 Communications: 1 to 16 mA typical

With RS-232 Communications: 17 to 28 mA typical

Pyranometer (CS300-QD)

Sensor: Silicon photocell

Accuracy: ±5% for daily total radiation

Operating Temperature: -40° to +55°C

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

The components of a RAWS-F fit inside of two carrying cases for easily transporting the station to the site.

This view shows the TE525-QD tipping bucket rain gage and the CS300-QD pyranometer (right).

Tipping Bucket Rain Gage (TE525-QD)

Sensor: Magnetic reed switch

Orifice: 6.0-in. diameter

Operating Temperature: 0° to +50°C

Sensitivity: 1 tip per 0.01-in. (0.25 mm)

Accuracy: ±1% for up to 1-in. per hour

Specifications (continued)

Air Temperature and Relative Humidity Probe (HC2S3-QD)

Measurement Range: -40° to +60°C; 0 to 100% RH, non-condensing

Temperature Sensor: 1000 ohm Platinum Resistance Thermometer (PRT)

Relative Humidity Sensor: ROTRONIC® Hygromer IN-1

Accuracy at 23°C (with standard configuration settings)
- **Temperature:** ±0.1°C
- **Relative Humidity:** ±0.8% RH

Anemometer/Vane Wind Set (034B-QD)

Sensor: 3-cup anemometer (wind speed), vane (wind direction)

Operating Temperature: -30° to +70°C

Range
- **Wind Speed:** 0 to 49.5 m s^{-1} with a starting threshold of 0.4 m s^{-1}
- **Wind Direction:** 0° to 360° mechanical; 0° to 356° electrical

Accuracy
- **Wind Speed:** ±0.11 m s^{-1} when <10.1 m s^{-1}; ±1.1% of true when >10.1 m s^{-1}
- **Wind Direction:** ±4°

2-D Sonic Wind Sensor (WindSonic4-QD)

Sensor: 2-D ultrasonic anemometer

Range
- **Wind Speed:** 0 to 60 m s^{-1}
- **Wind Direction:** 0° to 360°

Accuracy
- **Wind Speed:** ±2% of reading
- **Wind Direction:** ±3°

Barometer (CS100-QD)

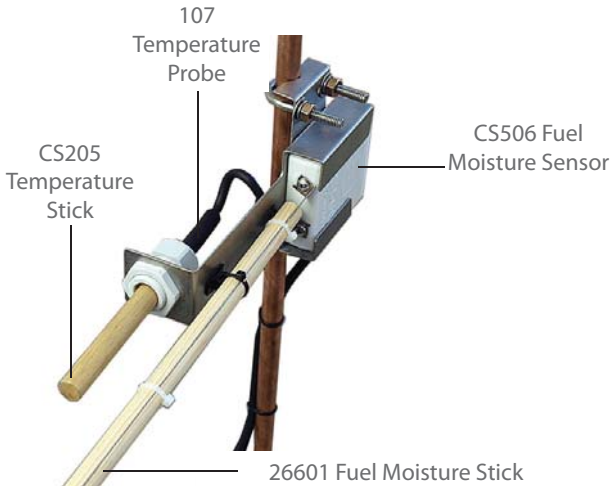
Sensor: SetraceramTM capacitive sensor and IC analog circuit

Operating Temperature: -40° to 60°C

Range: 600 to 1100 millibar

Accuracy: ±0.5 mb (+20°C); ±1 mb (0° to +40°C); ±1.5 mb (-20° to +50°C); ±2 mb (-40° to +60°C)

The WindSonic-QD 2-D ultrasonic anemometer is ordered as Wind Sensor option -GW. This anemometer has no moving parts reducing maintenance cost and time.



The CS516 -QD Fuel Sensor is often used with the RAWS-F. It emulates and measures the moisture content and temperature of similarly-sized twigs on the forest floor.

NOTES:

1. *Additional specifications are provided on our CR1000, TE525, HC2S3, CS300, 034B, WindSonic, and CS100 product brochures.*
2. *Sensor manufactures are Apogee, Inc., (CS300), Rotronics., (HC2S3), Texas Electronics, Inc., (TE525), Met One (034B), Gill (WindSonic4), and Setra (CS100).*