

# Vantage Pro2™ GroWeather®



**6820**  
**6820C**

GroWeather wireless and cabled weather stations include an Integrated Sensor Suite (ISS) which houses and manages the external sensor array. The wireless ISS communicates via an FCC-certified, license-free, spread-spectrum frequency-hopping (FHSS) transmitter and receiver. User-selectable transmitter ID codes allow up to eight stations to coexist in the same geographic area. The frequency hopping spread spectrum technology provides greater communication strength over longer distances and areas of weaker reception. The cabled ISS communicates via cable.

The temperature and humidity sensors are shielded with both passive shielding and a solar-powered fan that draws outside air in over the sensors, providing a much more accurate temperature reading than that available using passive shielding alone.

The ISS also includes a Solar Radiation Sensor to provide accurate evapotranspiration calculations.

## General

Operating Temperature	.....-40° to +150°F (-40° to +65°C)
Non-operating Temperature	.....-40° to +158°F (-40° to +70°C)
Wireless	
Current Draw (ISS SIM only)	.....0.14 mA (average), 30 mA (peak) at 4 to 6 VDC
Solar Power Panel	.....0.5 Watts (ISS SIM)
Battery (ISS SIM)	.....CR-123 3-Volt Lithium cell
Battery Life (3-Volt Lithium cell)	.....8 months without sunlight - greater than 2 years depending on solar charging
Cabled	
Current Draw (ISS SIM only)	.....5 mA (average) at 4 to 6 VDC
Connectors, Sensor	.....Modular RJ-11
Cable Type	.....4-conductor, 26 AWG
Cable Length, Anemometer	.....40 feet (12 m) (included) 240 feet (73 m) (maximum recommended)

Note: Maximum displayable wind decreases as the length of cable increases. At 140' (42 m) of cable, the maximum wind speed displayed is 135 mph (60 m/s); at 240' (73 m), the maximum wind speed displayed is 100 mph (34 m/s).

Wind Speed Sensor	.....Solid state magnetic sensor
Wind Direction Sensor	.....Wind vane with potentiometer
Rain Collector Type	.....Tipping bucket, 0.01" per tip (0.2 mm with metric rain adapter), 33.2 in <sup>2</sup> (214 cm <sup>2</sup> ) collection area
Temperature Sensor Type	.....PN Junction Silicon Diode
Relative Humidity Sensor Type	.....Film capacitor element
Housing Material	.....UV-resistant ABS
ISS Dimensions	
(not including anemometer or bird spikes)	.....14.3" x 9.7" x 14.5" (363 mm x 246 mm x 368 mm)

## 2 Vantage Pro2 GroWeather Sensors

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### Relative Humidity (Outside)

Resolution	.1%
Range	.1 to 100% RH
Accuracy	±2%
Drift	<0.25% per year

### Rainfall

Resolution	.01" or 0.2 mm (user-selectable) (1 mm at totals ≥ 2000 mm)
Daily/Storm Rainfall Range	.0 to 99.99" (0 to 999.8 mm)
Monthly/Yearly/Total Rainfall Range	.0 to 199.99" (0 to 6553 mm)
Accuracy	For rain rates up to 4"/hr (100 mm/hr): ±4% of total or ± one tip of the bucket (0.01"/0.2mm), whichever is greater.
Update Interval	20 to 24 seconds

### Rain Rate

Resolution and Units	.01" or 0.1 mm (user-selectable) at typical rates (see Fig. 2 and 3)
Range	.0, 0.04"/hr (1 mm/hr) to 96"/hr (0 to 2438 mm/hr)
Accuracy	±5% for rates less than 5" per hour (127 mm/hr)
Update Interval	20 to 24 seconds

### Solar Radiation

Resolution and Units	.1 W/m <sup>2</sup>
Range	.0 to 1800 W/m <sup>2</sup>
Accuracy	±5% of full scale (Reference: Eppley PSP at 1000 W/m <sup>2</sup> )
Drift	up to ±2% per year
Cosine Response	±3% for angle of incidence from 0° to 75°
Temperature Coefficient	-.067% per °F (-0.12% per °C); reference temperature = 77°F (25 °C)
Update Interval	.50 seconds to 1 minute (5 minutes when dark)

### Temperature (Outside)

Resolution	.0.1°F or 1°F or 0.1°C or 1°C nominal °C is converted from °F rounded to the nearest 1°C
Range	-40° to +150°F (-40° to +65°C)
Sensor Accuracy	±0.5°F (±0.3°C) See Fig. 1
Radiation Induced Error (Passive Shield)	+4°F (2°C) at solar noon (insolation = 1040 W/m <sup>2</sup> , avg. wind speed ≤ 2 mph (1 m/s) (reference: RM Young Model 43408 Fan-Aspirated Radiation Shield)
Radiation Induced Error (Fan-Aspirated Shield)	+0.6°F (0.3°C) at solar noon (insolation = 1040 W/m <sup>2</sup> , avg. wind speed ≤ 2 mph (1 m/s)) (reference: RM Young Model 43408 Fan-Aspirated Radiation Shield)
Update Interval	10 to 12 seconds

### Wind

#### Wind Direction

Range	0 - 360°
Display Resolution	16 points (22.5°) on compass rose, 1° in numeric display
Accuracy	±3°
Update Interval	2.5 to 3 seconds

#### Wind Speed

Resolution and Units	1 mph, 1 km/h, 0.4 m/s, or 1 knot (user-selectable). Measured in mph, other units are converted from mph and rounded to nearest 1 km/hr, 0.1 m/s, or 1 knot.
Range	0 to 200 mph, 0 to 173 knots, 0 to 89 m/s, 0 to 322 km/h
Update Interval	Instant Reading: 2.5 to 3 seconds, 10-minute Average: 1 minute
Accuracy	±1 mph (1 kts, 1.5 km/h, 0.5 m/s) or ±5%, whichever is greater
Maximum Cable Length	240 feet (73 m) (See note on page 1)

## Wireless Communications (wireless versions only)

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### Transmit/Receive Frequency

US Models	902 - 928 MHz FHSS,
EU Models	868.0 - 868.6 MHz FHSS
Japan Models	928.15 - 929.65 MHz FHSS
NZ Models	921 - 928 MHz FHSS
India Models	865.0 - 867.0 MHz FHSS

ID Codes Available . . . . . 8

### Output Power

US Models	902 - 928 MHz FHSS: FCC-certified low power, less than 8 mW, no license required
EU Models	868.0 - 868.6 MHz FHSS. CE-certified, less than 8 mW, no license required.
Japan Models	928.15 - 929.65 MHz FHSS, less than 1 mW, no license required.
NZ Models	921- 928 MHz FHSS, less than 10mW, no license required.
India Models	865.0 - 867.0 MHz, less than 10mW, no license required.

### Range: All models except Japan

Line of Sight	up to 1000 feet (300 m)
Through Walls	200 to 400 feet (60 to 120 m)

### Range: Japan models

Line of Sight	up to 300 feet (100 m)
Through Walls	50 to 200 feet (15 to 60m)

### Sensor Inputs

RF Filtering	RC low-pass filter on each signal line
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# Sensor Charts

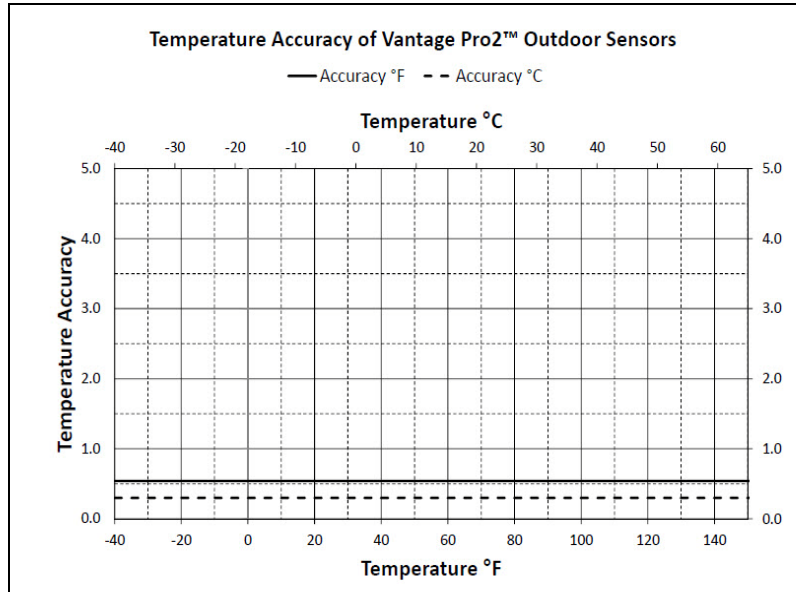


Figure 1: Temperature Accuracy of GroWeather Sensor

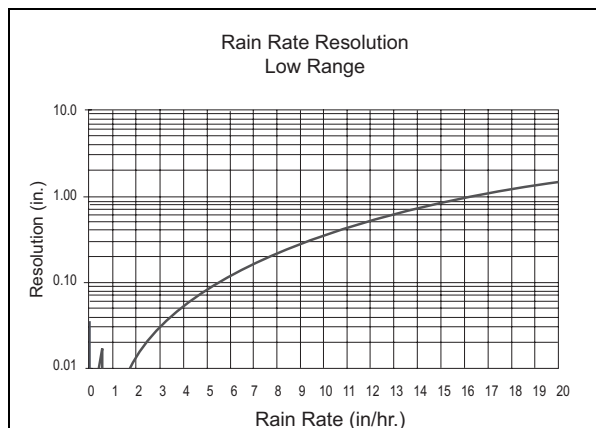


Figure 2. Low Range Rain Rate Resolution

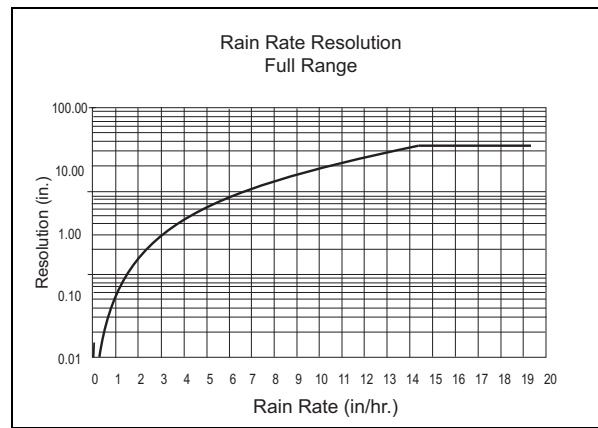


Figure 3. Full Range Rain Rate Resolution

# Package Dimensions

Product #	Package Dimensions (Length x Width x Height)	Package Weight	UPC Codes
6820 6820OV	17.5" x 10.63" x 16" (L x W x H) (445 mm x 270 mm x 406 mm)	11 lbs 1 oz. (5.0 kg)	011698012770 011698012794
6820C 6820CM	17.5" x 10.63" x 16" (L x W x H) (445 mm x 270 mm x 406 mm)	11 lbs 2 oz. (5.1 kg)	011698012787 011698012817