

# Vantage Vue® Weather Station



**6250 6357**  
**6351**

**VANTAGE VUE®**

The Vantage Vue® (#6250) wireless weather station includes two components: the Sensor Suite (#6357) which houses and manages the external sensor array, and the console (#6351) which provides the user interface, data display, and calculations. The Vantage Vue sensor suite and console communicate via an FCC-certified, license-free frequency-hopping transmitter and receiver. Frequency-hopping spread-spectrum (FHSS) technology provides greater communication strength over longer distances and areas of weaker reception. User-selectable transmitter ID codes allow up to eight stations to coexist in the same geographic area. (The Vantage Vue console can also receive and display data from any Vantage Pro2™ or Vantage Pro2 Plus sensor suite. The Vantage Pro2 Plus includes two additional sensors: the UV sensor and the solar radiation sensor.) The console may be powered by batteries or by the included AC-power adapter. The wireless sensor suite is solar-powered with a battery backup. Use WeatherLink Live™ or WeatherLink® data loggers to let your weather station interface with a computer, to log weather data, and upload weather information to the internet.

The Vantage Vue station relies on passive shielding to reduce solar-radiation induced temperature errors in the outside temperature sensor readings.

## Integrated Sensor Suite (ISS)

|  |  |
|--|--|
| Operating Temperature .....              | -40° to +150°F (-40° to +65°C)   |
| Non-operating (Storage) Temperature..... | -40° to +158°F (-40° to +70°C)   |
| Current Draw .....                       | 0.20 mA (average), 30 mA (peak) at 3.3 VDC   |
| Solar Power Panel .....                  | 0.5 Watts  |
| Battery .....                            | CR-123 3-Volt Lithium cell   |
| Battery Life (3-Volt Lithium cell) ..... | 8 months without sunlight - greater than 2 years depending on solar charging   |
| Wind Speed Sensor .....                  | Wind cups with magnetic detection  |
| Wind Direction Sensor .....              | Wind vane with magnetic encoder  |
| Rain Collector Type .....                | Tipping spoon, 0.01" per tip (0.2 mm with metric rain cartridge, Part No. 7345.319), 18.0 in <sup>2</sup> (116 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 & ASA plastic   |
| ISS Dimensions .....                     | 12.95" x 5.75" x 13.40" (329 mm x 146 mm x 340 mm)   |
| Package weight: .....                    | 5.44 lbs (2.47 kg)   |

## Console Specifications

|   |   |
|---|---|
| Console Operating Temperature .....         | +32° to +140°F (0° to +60°C)  |
| Non-Operating (Storage) Temperature.....    | +14° to +158°F (-10° or +70°C)  |
| Console Current Draw .....                  | 0.9 mA average, 30 mA peak,<br>(add 120 mA for display lamps, add 0.125 mA for each transmitter station received by console) at 4.4 VDC |
| Power Adapter.....                          | 5 VDC, 300 mA   |
| Battery Backup .....                        | 3 C-cells   |
| Battery Life (no AC power) .....            | Up to 9 months (approximately)  |
| Housing Material .....                      | UV-resistant ABS plastic  |
| Console Display Type .....                  | LCD Transflective   |
| Display Backlight .....                     | LEDs  |
| Dimensions:                                 |   |
| Console (with antenna) .....                | 7.5" x 5.75" x 4.5" (190 mm x 146 mm x 114 mm)  |
| Console (with antenna) mounted on wall..... | 7.5" x 7.0" x 3.0" (190 mm x 178 mm x 76 mm)  |
| Display.....                                | 4.13" x 3.0" (105 mm x 76 mm)   |
| Weight (with batteries).....                | 1.48 lbs. (.67 kg)  |



## Data Displayed on Console

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Data display categories are listed with General first, then in alphabetical order.

### General

|  |   |
|--|---|
| Historical Data .....                      | Includes the past 25 values plus the current value listed unless otherwise noted; all can be cleared and all totals reset   |
| Daily Data .....                           | Includes the earliest time of occurrence of highs and lows; period begins/ends at 12:00 am  |
| Monthly Data .....                         | Period begins/ends at 12:00 am on the first of the month  |
| Yearly Data .....                          | Period begins/ends at 12:00 am on the first of January unless otherwise noted   |
| Current Data .....                         | Current data appears in the right most column in the console graph and represents the latest value within the last period on the graph; totals can be set or reset  |
| Graph Time Interval .....                  | 10 min., 1 hour, 1 day, 1 month, 1 year (user-selectable, availability depends upon variable selected) (2.5 seconds for Last 25 Wind Speeds)  |
| Graph Time Span .....                      | 26 Intervals (Current Interval plus 25 past values included; see Graph Intervals to determine time span)  |
| Graph Variable Span (Vertical Scale) ..... | Automatic (varies depending upon data range); Maximum and Minimum value in range appear in Weather Center   |
| Alarm Indication .....                     | Alarms sound for only 2 minutes (except for time) if operating on battery power. Alarm message is displayed in Weather Center as long as threshold is met or exceeded. Alarms can be silenced (but not cleared) by pressing the DONE key. |
| Transmission Interval .....                | Varies with transmitter ID code from 2.25 seconds (#1=shortest), to 3 seconds (#8=longest)  |
| Update Interval .....                      | Varies with sensor - see individual sensor specs  |

### Barometric Pressure

|   |   |
|---|---|
| Resolution and Units .....                      | 0.01" Hg, 0.1 mm Hg, 0.1 hPa/mb (user-selectable)   |
| Range .....                                     | 16.00" to 32.50" Hg, 410 to 820 mm Hg, 540 to 1100.0 hPa/mb   |
| Elevation Range .....                           | -999' to +15,000' (-600 m to +4570 m). (Note that console screen limits entry of lower elevation to -999' when using feet as elevation unit.) |
| Uncorrected Reading Accuracy .....              | ±0.03" Hg (±0.8 mm Hg, ±1.0 hPa/mb) (at room temperature)   |
| Sea-Level Reduction Equations Used .....        | United States Method employed prior to use of current "R Factor" method ("NOAA"), Altimeter Setting   |
| NOAA Equation Source .....                      | Smithsonian Meteorological Tables   |
| NOAA Equation Accuracy .....                    | ±0.01" Hg (±0.3 mm Hg, ±0.3 hPa/mb)   |
| NOAA Elevation Accuracy Required .....          | ±10' (3m) to meet equation accuracy specification   |
| Overall Accuracy .....                          | ±0.03" Hg (±0.8 mm Hg, ±1.0 hPa/mb)   |
| Trend (change in 3 hours) .....                 | Change 0.06" (2 hPa/mb, 1.5 mm Hg) = Rapidly<br>Change 0.02" (0.7hPa/mb, 0.5 mm Hg)= Slowly   |
| Trend Indication .....                          | 5 position arrow: Rising (rapidly or slowly), Steady, or Falling (rapidly or slowly)  |
| Update Interval .....                           | 1 minute  |
| Current Data .....                              | Instant and Hourly Reading; Daily, Monthly, Yearly High and Low; Barometer change 24-hour   |
| Historical Data .....                           | 15-min. and Hourly Reading; Daily, Monthly Highs and Lows   |
| Alarms .....                                    | High Threshold from Current Trend for Storm Clearing (Rising Trend)<br>Low Threshold from Current Trend for Storm Warning (Falling Trend)     |
| Range for Rising and Falling Trend Alarms ..... | 0.01 to 0.25" Hg (0.1 to 6.4 mm Hg, 0.1 to 8.5 hPa/mb)  |

### Clock

|                   |   |
|-------------------|---|
| Resolution .....  | 1 minute  |
| Units .....       | Time: 12 or 24 hour format (user-selectable)  |
| Date .....        | US or International format (user-selectable)  |
| Accuracy .....    | ±8 seconds/month  |
| Adjustments ..... | Time: Automatic Daylight Savings Time (for users in North America and Europe that observe it in AUTO mode, MANUAL setting available for all other areas.) Date: Automatic Leap Year |
| Alarms .....      | Once per day at set time when active  |

**Dewpoint (calculated)**

|                            |   |
|----------------------------|---|
| Resolution and Units ..... | 1°F or 1°C (user-selectable)                                      |
| Range .....                | -105° to +130°F (-76° to +54°C)                                   |
| Accuracy .....             | ±2°F (±1°C) (typical)   |
| Update Interval.....       | 10 to 12 seconds  |
| Source .....               | World Meteorological Organization (WMO)                           |
| Equation Used .....        | WMO Equation with respect to saturation of moist air over water   |
| Variables Used.....        | Instant Outside Temperature and Instant Outside Relative Humidity |
| Current Data .....         | Instant Calculation; Daily, Monthly High and Low                  |
| Historical Data .....      | Hourly Calculations; Daily, Monthly, Yearly Highs and Lows        |
| Alarms .....               | High and Low Threshold from Instant Calculation                   |

**Evapotranspiration (calculated, requires Vantage Pro2 ISS with solar radiation sensor)**

|                              |  |
|------------------------------|--|
| Resolution and Units .....   | 0.01" or 0.1 mm (user-selectable)  |
| Range .....                  | Daily to 32.67" (999.9 mm); Monthly & Yearly to 199.99" (1999.9 mm)  |
| Accuracy .....               | Greater of 0.01" (0.25 mm) or ±5%, Reference: side-by-side comparison against a CIMIS ET weather station                                   |
| Update Interval.....         | 1 hour   |
| Calculation and Source ..... | Modified Penman Equation as implemented by CIMIS (California Irrigation Management Information System) including Net Radiation calculation |
| Current Data .....           | Latest Hourly Total Calculation, Daily, Monthly, Yearly Total  |
| Historical Data .....        | Hourly, Daily, Monthly, Yearly Totals  |
| Alarm .....                  | High Threshold from Latest Daily Total Calculation   |

**Forecast**

|                           |   |
|---------------------------|---|
| Variables Used.....       | Barometric Reading & Trend, Wind Speed & Direction, Rainfall, Temperature, Humidity, Latitude & Longitude, Time of Year |
| Update Interval.....      | 1 hour  |
| Display Format.....       | Icons on top center of display; displays weather conditions that may occur for the next 12 hours.                       |
| Variables Predicted ..... | Sky Condition, Precipitation  |

**Heat Index (calculated)**

|                            |  |
|----------------------------|--|
| Resolution and Units ..... | 1°F or 1°C (user-selectable)   |
| Range .....                | -40° to +165°F (-40° to +74°C)   |
| Accuracy .....             | ±2°F (±1°C) (typical)  |
| Update Interval.....       | 10 to 12 seconds   |
| Source .....               | United States National Weather Service (NWS)/NOAA                                      |
| Formulation Used.....      | Steadman (1979) modified by US NWS/NOAA and Davis Instruments to increase range of use |
| Variables Used.....        | Instant Outside Temperature and Instant Outside Relative Humidity                      |
| Current Data .....         | Instant Calculation; Daily, Monthly High   |
| Historical Data .....      | Hourly Calculations; Daily, Monthly, Yearly Highs                                      |
| Alarm .....                | High Threshold from Instant Calculation  |

**Humidity**

Inside Relative Humidity (sensor located in console)

|                           |   |
|---------------------------|---|
| Resolution and Units..... | 1%  |
| Range.....                | 1 to 100% RH  |
| Accuracy.....             | ±2%   |
| Update Interval .....     | 1 minute  |
| Current Data .....        | Instant (user adjustable) and Hourly Reading; Daily, Monthly High and Low |
| Historical Data .....     | Hourly Readings; Daily, Monthly, Yearly Highs and Lows                    |
| Alarms .....              | High and Low Threshold from Instant Reading                               |

**Outside Relative Humidity (sensor located in ISS)**

|                            |   |
|----------------------------|---|
| Resolution and Units ..... | 1%  |
| Range .....                | 1 to 100% RH  |
| Accuracy .....             | ±2%   |
| Drift .....                | ±0.25% per year   |
| Update Interval .....      | 50 seconds to 1 minute  |
| Current Data .....         | Instant (user adjustable) and Hourly Reading; Daily, Monthly, Yearly High and Low |
| Historical Data .....      | Hourly Readings; Daily, Monthly Highs and Lows                                    |
| Alarms .....               | High and Low Threshold from Instant Reading                                       |

**Moon Phase**

|                              |  |
|------------------------------|--|
| Console Resolution .....     | 1/8 (12.5%) of a lunar cycle, 1/4 (25%) of lighted face on console   |
| WeatherLink Resolution ..... | 0.09% of a lunar cycle, 0.18% of lighted face maximum (depends on screen resolution)                               |
| Range .....                  | New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Last Quarter, Waning Crescent |
| Accuracy .....               | ±38 minutes  |

**Rainfall**

|                                  |  |
|----------------------------------|--|
| Resolution and Units .....       | 0.01" or 0.2 mm (user-selectable) (1 mm at totals ≥ 2000 mm)   |
| Range .....                      | 0 to 199.99" (0 to 6553 mm)  |
| Accuracy .....                   | For rain rates up to 10"/hr (250 mm/hr): ±4% or one tip of the spoon (0.01"/0.2 mm), whichever is greater  |
| Update Interval .....            | 20 to 24 seconds   |
| Storm Determination Method ..... | 0.02" (0.5 mm) begins a storm event, 24 hours without further accumulation ends a storm event  |
| Current Data .....               | Totals for Past 15-min, Past 24-hour, Daily, Monthly, Yearly (start date user-selectable) and Storm (with begin date); Umbrella is displayed when 15 minute total exceeds zero |
| Historical Data .....            | Totals for 15-min, Daily, Monthly, Yearly (start date user-selectable) and Storm (with begin and end dates)  |
| Alarms .....                     | High Threshold from Latest Flash Flood (15-min. total, default is 0.50", 12.7 mm), 24-hour Total, Storm Total,   |
| Range for Rain Alarms .....      | 0 to 99.99" (0 to 999.7 mm)  |

**Rain Rate**

|                            |  |
|----------------------------|--|
| Resolution and Units ..... | 0.01" or 0.1 mm (user-selectable) at typical rates (see Fig. 1)  |
| Range .....                | 0 to 30"/hr (0 to 762 mm/hr)   |
| Accuracy .....             | ±5% when rate is under 10"/hr (254 mm/hr)  |
| Update Interval .....      | 20 to 24 seconds   |
| Calculation Method .....   | Measures time between successive tips of rain collector. Elapsed time greater than 15 minutes or only one tip of the rain collector constitutes a rain rate of zero. |
| Current Data .....         | Instant and Hourly, Daily, Monthly and Yearly High   |
| Historical Data .....      | Hourly, Daily, Monthly and Yearly Highs  |
| Alarm .....                | High Threshold from Instant Reading  |

**Solar Radiation (requires Vantage Pro2 ISS with solar radiation sensor)**

|                               |  |
|-------------------------------|--|
| 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 ..... | -0.067% per °F (-0.12% per °C); reference temperature = 77°F (25 °C) |
| Update Interval .....         | 50 seconds to 1 minute (5 minutes when dark)                         |
| Current Data .....            | Instant Reading and Hourly Average; Daily, Monthly High              |

## Sunrise and Sunset

|                  |                                 |
|------------------|---------------------------------|
| Resolution ..... | 1 minute                        |
| Accuracy .....   | ±1 minute                       |
| Reference .....  | United States Naval Observatory |

## Temperature

### Inside Temperature (sensor located in console)

|                            |  |
|----------------------------|--|
| Resolution and Units ..... | Current Data: 0.1°F or 1°F or 0.1°C or 1°C (user-selectable)<br>Historical Data and Alarms: 1°F or 1°C (user-selectable)                 |
| Range .....                | +32° to +140°F (0° to +60°C)   |
| Sensor Accuracy .....      | ±0.5°F (±0.3°C)  |
| Update Interval .....      | 1 minute   |
| Current Data .....         | Instant Reading (user adjustable); Daily, Monthly, Yearly High and Low   |
| Historical Data .....      | Hourly Readings; Daily and Monthly Highs and Lows; Highs and Lows for Last 25 Days; Temp change per hour, Temp change for last 24 hours. |
| Alarms .....               | High and Low Thresholds from Instant Reading   |

### Outside Temperature (sensor located in ISS)

|  |  |
|--|--|
| Resolution and Units .....                     | Current Data: 0.1°F or 1°F or 0.1°C or 1°C (user-selectable) nominal (see Fig. 1) Historical Data and Alarms: 1°F or 1°C (user-selectable)                       |
| Range .....                                    | -40° to +150°F (-40° to +65°C)   |
| Sensor Accuracy .....                          | ±1°F (±0.5°C) above +20°F (-7°C); ±2°F (±1°C) under +20°F (-7°C) (see Fig. 2)  |
| 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) |
| Update Interval .....                          | 10 to 12 seconds   |
| Current Data .....                             | Instant Reading (user adjustable); Daily, Monthly, Yearly High and Low   |
| Historical Data .....                          | Hourly Readings; Daily, Monthly, Yearly Highs and Lows   |
| Alarms .....                                   | High and Low Thresholds from Instant Reading   |

## Ultra Violet (UV) Radiation Index (requires Vantage Pro2 ISS with UV sensor)

|                            |  |
|----------------------------|--|
| Resolution and Units ..... | 0.1 Index  |
| Range .....                | 0 to 16 Index  |
| Accuracy .....             | ±5% of full scale (Reference: Yankee UVB-1 at UV index of 10 (Extremely High)) |
| Cosine Response .....      | ±4% (0° to 65° incident angle); 9% (65° to 85° incident angle)                 |
| Update Interval .....      | 50 seconds to 1 minute (5 minutes when dark)                                   |
| Current Data .....         | Instant Reading  |

## Wind

### Wind Chill (Calculated)

|                            |   |
|----------------------------|---|
| Resolution and Units ..... | 1°F or 1°C (user-selectable)                            |
| Range .....                | -110° to +135°F (-79° to +57°C)                         |
| Accuracy .....             | ±2°F (±1°C) (typical)                                   |
| Update Interval .....      | 10 to 12 seconds  |
| Source .....               | United States National Weather Service (NWS)/NOAA       |
| Equation Used .....        | Osczevski (1995) (adopted by US NWS in 2001)            |
| Variables Used .....       | Instant Outside Temperature and 10-min. Avg. Wind Speed |
| Current Data .....         | Instant Calculation; Hourly, Daily, Monthly, Yearly Low |
| Historical Data .....      | Hourly, Daily and Monthly Lows                          |
| Alarm .....                | Low Threshold from Instant Calculation                  |

### Wind Direction

|                          |  |
|--------------------------|--|
| Display Resolution ..... | 16 points (22.5°) on compass rose, 1° in numeric display                             |
| Range .....              | 1-360°   |
| Accuracy .....           | ±3°  |
| Update Interval .....    | 2.5 to 3 seconds   |
| Current Data .....       | Instant Reading (user adjustable); 10-min. Dominant; Hourly, Daily, Monthly Dominant |
| Historical Data .....    | Past 6 10-min. Dominants on compass rose only; Hourly, Daily, Monthly Dominants      |

### Wind Speed

|                            |   |
|----------------------------|---|
| Resolution and Units ..... | 1 mph, 1 km/h, 0.5 m/s, or 1 knot (user-selectable)   |
| 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 .....             | ±2 mph (2 kts, 3 km/h, 1 m/s) or ±5%, whichever is greater  |
| Current Data .....         | Instant Reading; 10-minute and Hourly Average; 10-minute High Gust with Direction of Gust; 2-minute Average; Hourly High; Daily, Monthly and Yearly High with Direction of High; Beaufort Scale |
| Historical Data .....      | 2.5 sec., 10 min. and Hourly Averages; Hourly Highs; Daily, Monthly and Yearly Highs with Direction of Highs  |
| Alarms .....               | High Thresholds from Instant Reading and 10-minute Average  |

## Wireless Communication Specifications

### Transmit/Receive Frequency

|                     |                        |
|---------------------|------------------------|
| US Models .....     | 902 - 928 MHz FHSS,    |
| EU Models .....     | 868.0 - 868.6 MHz FHSS |
| Japan Models .....  | 928.1 - 928.9 MHz FHSS |
| NZ Models .....     | 921 - 928 MHz FHSS     |
| India Models .....  | 865.0 - 867.0 MHz FHSS |
| Russia Models ..... | 868.7 - 869.2 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 .....  | 928.1 - 928.9 MHz FHSS, less than 1 mW, no license required.                     |
| NZ Models .....     | 921- 928MHz FHSS, less than 10mW, no license required.                           |
| India Models .....  | 865.0 - 867.0 MHz, less than 10mW, no license required.                          |
| Russia Models ..... | 868.7 - 869.2 MHz, less than 8mW, 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 |
|--------------------|--|

## Sensor Charts

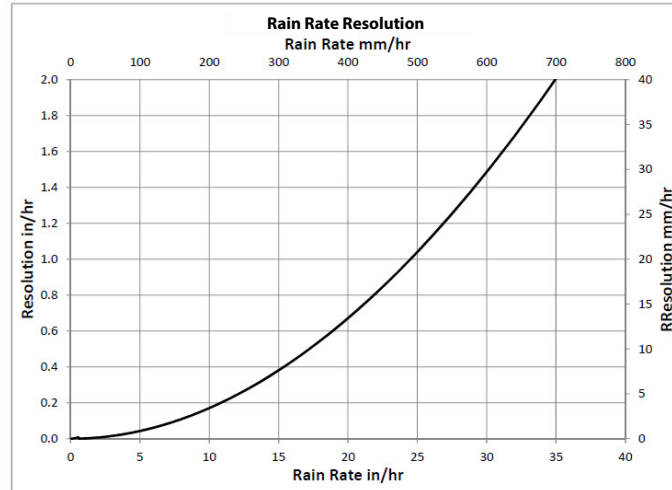


Figure 1. Rain Rate Resolution

## Package Dimensions

| Product #                | Package Dimensions<br>(Length x Width x Height)          | Package Weight        | UPC Codes       |
|--------------------------|--|-----------------------|-----------------|
| 6250<br>Complete Station | 18.25" x 7.25" x 15.25"<br>(46.4 cm x 18.4 cm x 38.7 cm) | 6.88 lbs<br>(3.12 kg) | 0 11698 00912 1 |
| 6351<br>Console          | 8.0" x 8.0" x 4.0"<br>(20.3 cm x 20.3 cm x 10.1 cm)      | 1.76 lbs<br>.80 kg    | 0 11698 00913 8 |
| 6357<br>ISS              | 18.25" x 7.25" x 15.25"<br>(46.4 cm x 18.4 cm x 38.7 cm) | 5.44 lbs<br>(2.47 kg) | 0 11698 00914 5 |