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RainVUE20

SDI-12 Precipitation Sensor with Aluminum Funnel

Simple and Robust Digital Sensor

Overview

The RainVUE™20 is ideal for many hydrological or meteorological applications such as weather stations and flood warning systems. The RainVUE 20 is an SDI-12 tipping bucket rain gage in the RainVUE family of products. Advanced algorithms and digital processing within the sensor compensate for errors caused by high-intensity rain and provide accurate precipitation and intensity measurements. Constructed of an aerodynamic powder-coated aluminum funnel, the RainVUE 20 is robust and minimizes the amount of liquid precipitation that is lost due to the effects of wind. This rain gage offers the user flexibility with the option to select from a series of set cable lengths or a user-defined cable length.

Benefits and Features

- Powder-coated aluminum bucket suitable for all environments
- Extremely robust and versatile for applications where data precision and accuracy are critical
- Unique aerodynamic shape to minimize wind effects and increase accuracy
- Measures precipitation intensity up to 1500 mm/h (60 in./h)
- Meets WMO recommendations for funnel area
- Digital processing corrects for high-intensity precipitation errors up to 1500 mm/h (60 in./h)
- Tilt measurement for remote diagnostics on the sensor
- Internal temperature measurement
- Easy leveling with external leveling bubble
- Adjustable mounting feet to simplify leveling

Detailed Description

The RainVUE™20 funnels rainfall through a stainless-steel gauze filter that traps and removes debris. The rainfall flows through a nozzle into one of the two halves of the tipping bucket. The internal tipping bucket assembly rotates around precision, rolling pivot bearings, it tips when the first bucket fills to a fixed calibrated level, and then the balance arm moves the second bucket under the funnel. A magnet attached to the balance arm actuates a reed switch as the bucket tips.

The aerodynamic design of the RainVUE™20 prevents wind from carrying the rainfall away from the collecting vessel. With traditional cylindrical rain gages, wind can reduce the rainfall catch by up to 20%. The RainVUE™20 also includes a microprocessor that corrects for rainfall intensity and outputs an SDI-12 signal.

Specifications

Sensor Type	Tipping bucket with magnetic reed switch
Material	❱ LM6 marine-grade aluminum (for base) ❱ 2 mm-thick powder-coated aluminum (for main collector body)
Output	SDI-12 version 1.4
Sensor Configuration	SDI-12 or USB
Operating Temperature Range	❱ -40 to +70°C (including melting snow) ❱ 1° to 70°C (liquid precipitation only)
Power Requirements	6 to 18 Vdc
Current Drain	❱ 0.07 mA (quiescent) ❱ 0.8 mA or 1 mA (active)
Internal Battery	240 mAh lithium battery (provides up to 15 days of continual operation after power loss; battery will last longer under ideal conditions)
Response Time	❱ 0 s (for M0! command) ❱ 1 s (for M1! command)
Measurement Uncertainty	❱ 0.25°C (temperature) ❱ *Note: Accuracy over the rain intensity range requires a mechanical calibration that is within 1% at a 1 in./h intensity.* *RainVUE™20 sensors are calibrated at the factory to meet this specification but should be verified prior to deployment.* ❱ 1° (tilt) ❱ 0.5 V (supply voltage)
Orifice Diameter	20.0 cm (7.87 in.)
Collecting Area	314.16 cm^2 (48.67 $in.^2$)
Height	43.5 to 46.5 cm (17.1 to 18.3 in.) with feet adjustment
Weight	6 kg (13 lb)

0.01 Inch Option

Measurement Range	0 to 1200 mm/h (0 to 48 in./h)
Precipitation Amount Resolution	0.254 mm (0.01 in.)
Precipitation Amount Measurement Uncertainty	1% at 0 to 500 mm/h intensity (0 to 19.7 in./h intensity)
Precipitation Intensity Range	0 to 1200 mm/h (0 to 48 in./h)
Precipitation Intensity Measurement Uncertainty	1% at 0 to 500 mm/hh intensity (0 to 19.7 in./h intensity)
WMO Compliant	No

0.1 Millimeter Option

Measurement Range	0 to 600 mm/h (0 to 23.6 in./h)
Precipitation Amount Resolution	0.1 mm (0.004 in.)
Precipitation Amount Measurement Uncertainty	❱ 3.08% at 0 to 20 mm/h intensity (0 to 0.88 in./h intensity) ❱ 3.6% at 20 to 600 mm/h intensity (0.8 to 23.6 in./h intensity)
Precipitation Intensity Range	0.1 to 600 mm/h (0.004 to 23.6 in./h)
Precipitation Intensity Measurement Uncertainty	3.58% at 0 to 600 mm/h (0 to 23.6 in./h intensity)
WMO Compliant	Yes

For comprehensive details, visit: www.campbellsci.com.au/rainvue20

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