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WHEN MEASUREMENTS MATTER

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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