

VU01

Ventilation unit for SR20 pyranometers and IR20 pyrgeometers

VU01 is a high-quality ventilation unit for use with pyranometers and pyrgeometers. Its purpose is to improve the dependability of the measurement. Measurement accuracy improves because offsets are reduced. Reliability benefits from prevention of dew and frost formation and quick evaporation and sublimation of water and snow. ISO/TR 9901 "Solar Energy - Field Pyranometers - Recommended practice for use" recommends use of ventilators where high accuracy and reliability are required.



Figure 1 VU01 ventilation unit with pyranometer SR20

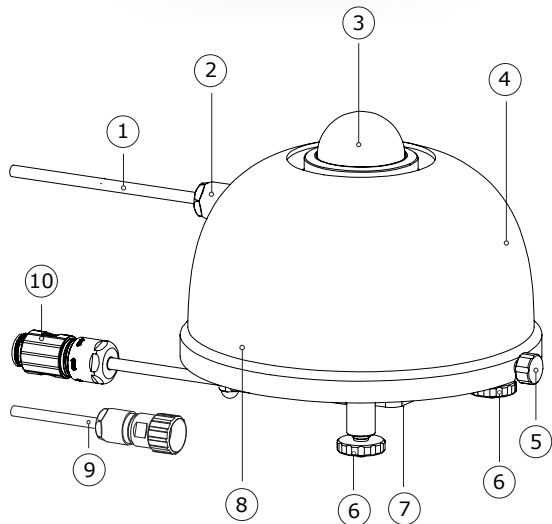


Figure 2 overview of SR20-VU01:

(1) SR20 cable, (2) SR20 connector, (3) SR20 dome, (4) VU01 cover, (5) fixation of cover, (6) levelling feet, (7) VU01 filter retainer, (8) VU01 ventilator, heaters and filter replacement system (below cover), (9) VU01 cable and cable connector, (10) VU01 connector

Introduction

VU01 may be used in combination with Hukseflux' SR20 secondary standard pyranometers and IR20 and IR20WS research grade pyrgeometers. VU01 provides an airflow over the instrument body and dome and has a 5 W and a 10 W heater on board to heat the air. The VU01 ventilation unit runs on 12 VDC voltage.

Improved measurement dependability

Ventilation promotes thermal equilibrium between all components of radiometers, and thereby reduces zero offsets. Dew and frost formation is prevented. Additional heating will promote evaporation of water droplets and sublimation of snow. It should be noted that heating in combination with pyranometers will lead to increased thermal offsets, so heating is only recommended if necessary.

Maintenance / cleaning

Ventilation is typically used with high accuracy measurement requirements. In such cases the need for a high level of instrument maintenance and dome cleaning still exists; evaporating droplets of water might leave stains on the instrument domes. The bottom of VU01 provides access to the removable dust filter.

Operation

Using VU01 is easy. The ventilator is generally used continuously; the heater is typically controlled by the datalogger. ISO/TR 9901 "Solar Energy - Field Pyranometers - Recommended practice for use" recommends use of ventilators where high accuracy and reliability are required. More details can be found in paragraph 5.2.2 and annex A. The Baseline Surface Radiation Network, BSRN, recommends ventilation for radiometers in its BSRN operations manual v2.1.

VU01 design

VU01 is designed, using high-quality materials, in agreement with the recommendations of ISO/TR 9901 and BSRN. The footprint of VU01 is small, which prevents accumulation of snow. The ventilator power is relatively high in order to increase the airflow. The heaters should be activated using external relays. The alarm output may be used to monitor rotation of the fan. The high / low voltage output may be adjusted by the user with a fixed resistor.

Suggested use

- PV system performance monitoring
- scientific meteorological observations
- extreme climates (tropical / polar)

Choosing the right instrument

Pyranometers are subject to classification in three classes according to ISO 9060. Our pyranometer [selection guide](#) assists you in choosing the right instrument. Whatever your application is: Hukseflux offers the highest accuracy in every class at the most attractive price level.

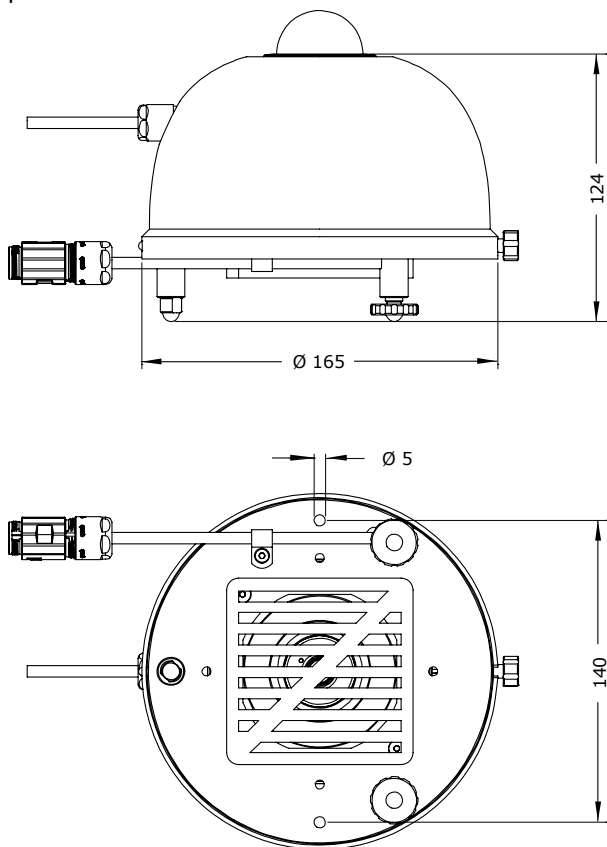


Figure 3 VU01 dimensions in $\times 10^{-3}$ m

VU01 specifications

| | |
|------------------------------------|---|
| Compatible instruments | SR20, IR20, IR20WS |
| Compliance with standards | ISO/TR 9901 BSRN operations manual |
| Rated operating power | 7.8 W at 12 VDC (unheated) |
| Rated operating voltage range | 10.8 to 13.2 V |
| Rated operating temperature range | -40 to +70 °C |
| Alarm output | high / low adjustable voltage |
| Standard cable length | 5 m (see options) |
| Heater | 5 and 10 W at 12 VDC (optional use) |
| Increase of air temperature | 0.5 °C at 0 W heating 1.0 °C at 5 W heating 1.5 °C at 10 W heating |
| Zero offset a reduction | SR20 50 % at 0 W heating |
| Offset SR20 by heating | - 2 W/m ² at 5 W heating - 4 W/m ² at 10 W heating |
| Offset IR20 by heating | 0 W/m ² at 5 W heating 0 W/m ² at 10 W heating |
| Cable resistance | 0.3 Ω/m (2 x 1.5 Ω/m) |
| Voltage drop at 10 W heating power | 0.24 V/m |
| Footprint diameter | 0.17 m |

Options

- longer cable, in multiples of 5 metres (please note the voltage drop of cabling)
- 12 VDC power supply (VU01PS)
- pack of 5 filters (VU01F)

See also

- [SR20](#) secondary standard pyranometer
- [IR20](#) research grade pyranometer
- view our complete [range of solar sensors](#)

Interested in this product?
 E mail us at: comercial@sensovant.com