

HUKX

Sensor
Technology

Brochure
Ventilation unit

VU01

VU01

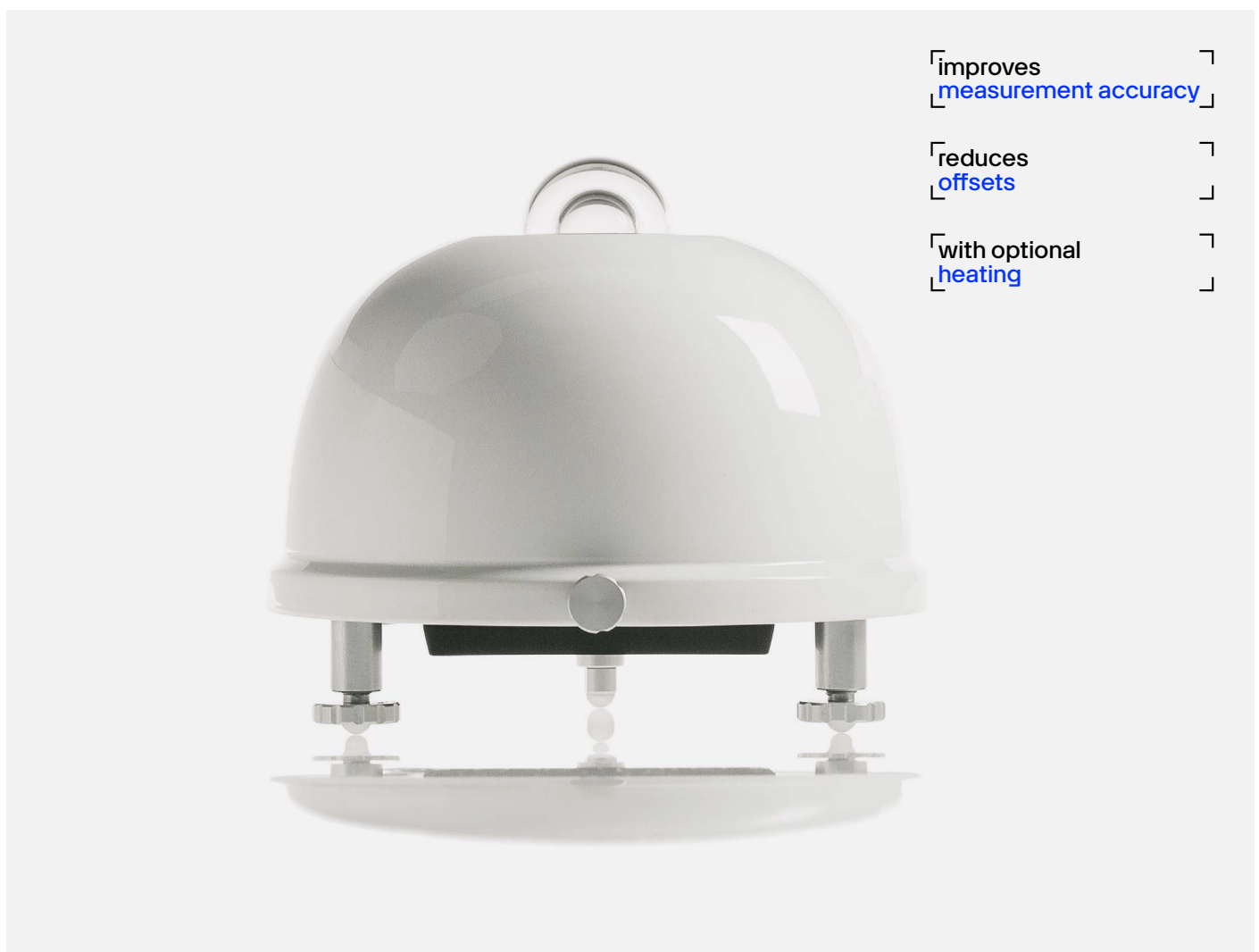
Ventilation unit

for SR20 and SR22 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 mitigation of dew and frost and quick evaporation and sublimation of water and snow. ISO/TR 9901 "Solar Energy—Field Pyranometers—Recommended practice for use" recommends the use of ventilators where high accuracy and reliability are required.

Figure 1 VU01 ventilation unit with pyranometer SR20.



Introduction

Ventilation unit VU01 may be used in combination with Hukx's SR20, SR22 and SR25 Class A pyranometers and IR20 and IR20WS research grade pyrgeometers. VU01 provides an airflow over the instrument body and dome and has two heaters on board to heat the air. The use of heating (5 W or 10 W) is optional. 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. Deposition of dew and frost are mitigated. 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 data logger. ISO/TR 9901 "Solar Energy—Field Pyranometers—Recommended practice for use" recommends the use of ventilators where high accuracy and reliability are required. More details can be found in Paragraph 4.5.2 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 the accumulation of snow. The ventilator power is relatively high in order to increase the airflow. The heaters should be activated using external relays. A fan status signal may be used by the user to monitor rotation of the fan.

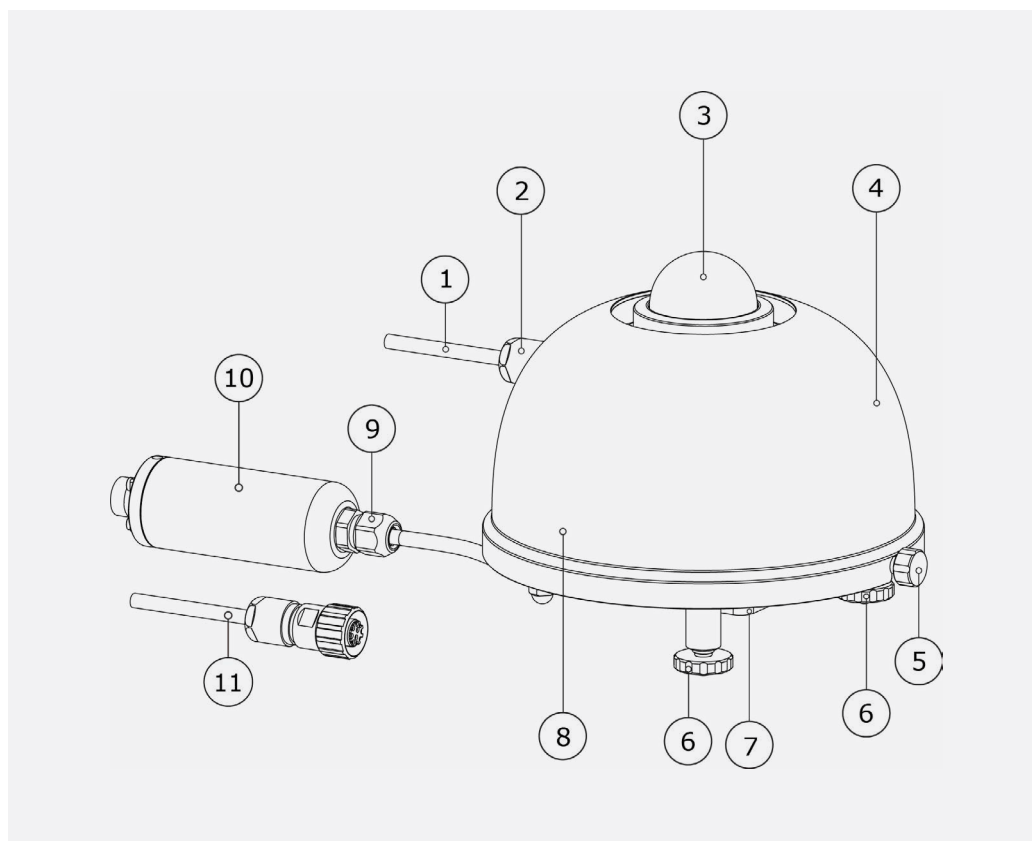


Figure 2 Overview of VU01 with SR20.

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

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: Hukx offers the highest accuracy in every class at the most attractive price level.

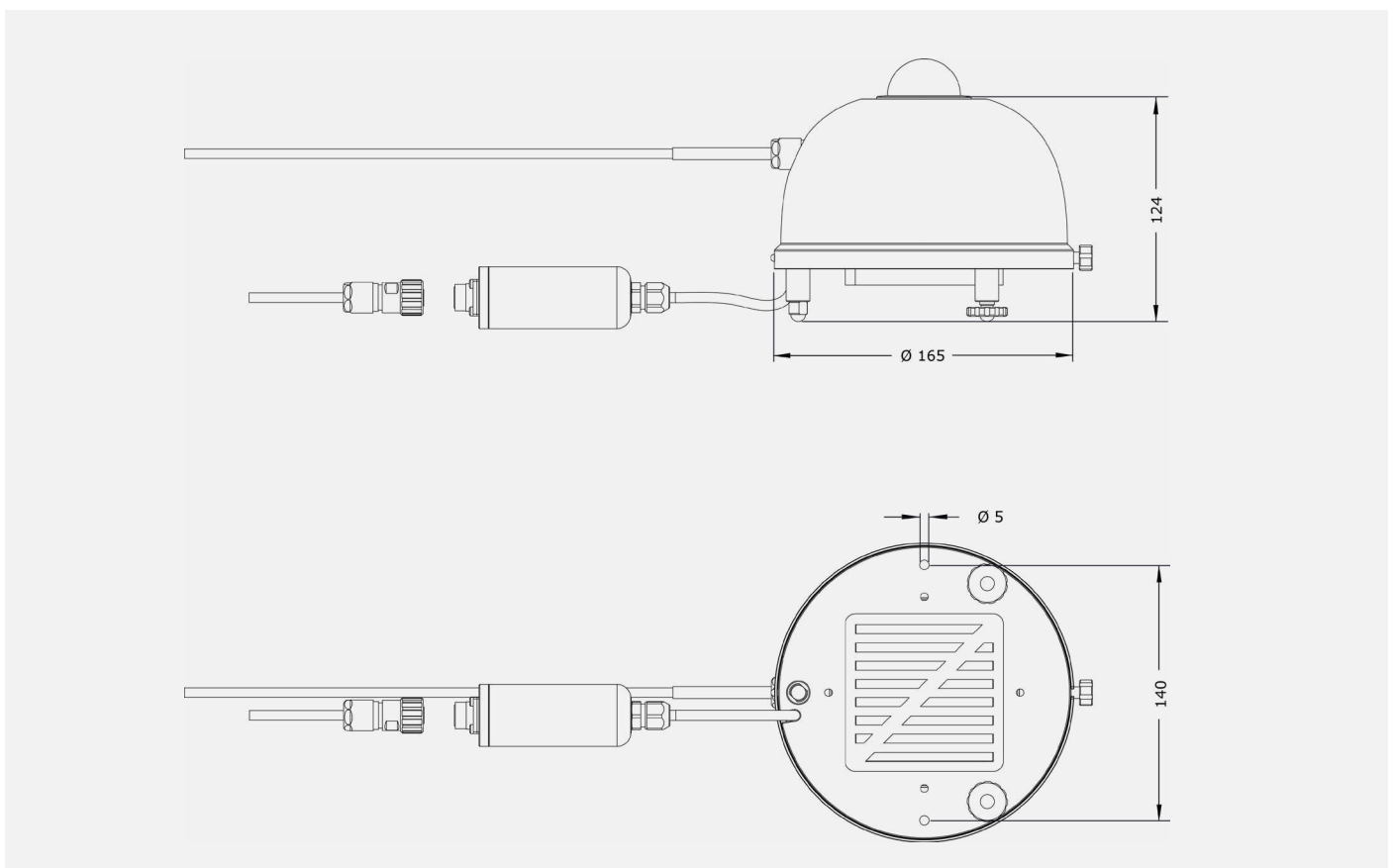
Options

- longer cable, in multiples of 5 meters (please note the voltage drop of cabling)
- pack of five filters (VU01F)

See also

- [SR20](#) pyranometer
- [IR20](#) and [IR20WS](#) research-grade pyrgeometer

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



VU01 specifications

| | | | |
|-----------------------------------|--|------------------------------------|---|
| compatible instruments | SR20, SR20-D2, SR22, SR25, SR25-D2, IR20, IR20WS | fan status signal | available (optional use) |
| compliance with standards | ISO/TR 9901 BSRN operations manual | heater | 5 and 10 W at 12 VDC (optional use) |
| rated operating power | 7.8 W at 12 VDC (unheated) | 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 |
| rated operating voltage range | 10.8 to 13.2 V | zero offset a SR20 ventilated | 2.5 W/m ² at 0 W heating |
| rated operating temperature range | (-40 to +70) °C | 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 0.15 Ω/m) |
| | | voltage drop at 10 W heating power | 0.12 V/m |
| | | footprint diameter | 0.17 m |
| | | standard cable length | 5 m (see options) |

About Hukx

Hukx is the leading innovator in solar radiation and heat flux sensor technology. We are proud to set the standard in high-accuracy measurement, and to be working at the heart of the energy transition.

Customers worldwide rely on our bestselling pyranometers and heat flux sensors. From sensor design and selection to supply and recalibration, we support you across the entire lifecycle.

Hukx is headquartered in the Netherlands, with locally owned representative sales offices in the USA, Brazil, India, China, Southeast Asia, and Japan.

Let us help you select the best sensor for your application. Get in touch with our experts today via: info@hukx.com

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