

NRG R1-HV HEATER/VENTILATOR INSTRUCTIONS



NRGSystems®

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INTRODUCTION

The NRG R1-HV Heater/Ventilator (NRG Item# 9452) increases the accuracy of solar radiation measurements while maintaining the operating temperature of the sensor uniformly. Ventilation reduces the type "A" offset (present in pyranometers and pyrgeometers) due to cooling of the dome with respect to the sensor body.

The unit can be used outdoors in any weather condition and avoids the formation of dew and frost on the optical part of the sensor.

The heating function of the unit can also be used in extreme environmental conditions, to avoid the accumulation of snow and ice on the sensor dome. Since heating can increase the type "A" offset, we recommended only using it for the time necessary to remove snow or ice.

The built-in levelling device allows for accurate horizontal installation.

The unit can be used with the following sensors:

- R1 Pyranometer (NRG Item #9450)
- R1-D Pyranometer (NRG Item #9451)

Supplied with a standard 5m cable, already connected to the unit terminal block, the R1-HV includes the following accessories:

- "Adapter disk", to mechanically adapt the height of the sensor version with mV output (lower) to that of the versions with amplified analog or digital output (higher).
- Two M5x80 mm screws to fix the sensor to the unit.

WARNINGS



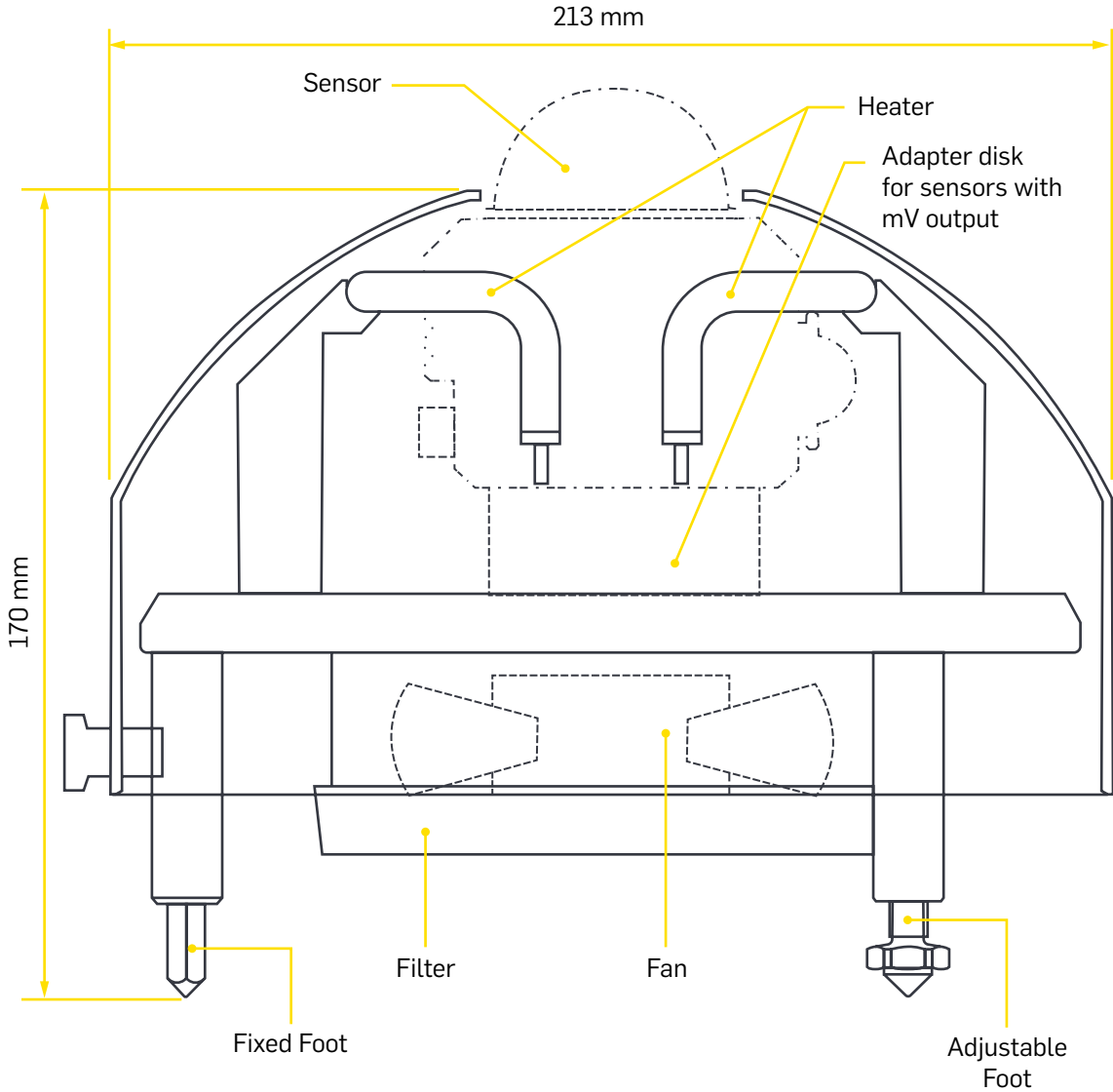
THE UNIT CONTAINS PARTS THAT COULD BE AT HIGH TEMPERATURE (HEATER) AND MOVING MECHANICAL PARTS (FAN).

BEFORE PERFORMING INSTALLATION AND MAINTENANCE OPERATIONS, DISCONNECT THE POWER SUPPLY AND WAIT FOR THE HEATER TO COOL DOWN.

- The unit is not intended for use with sensors other than those indicated.
- Respect the power supply values indicated in the technical specifications and pay attention to the indicated polarities.
- Do not use extension cables. In case of replacing the supplied cable with longer cables, respect the characteristics of the supplied cable and use low resistance cables.

TECHNICAL SPECIFICATIONS

Ventilation Power Supply	12 VDC \pm 10% / 5 W
Heating Power Supply	12 VDC \pm 10% / 6 W
Operating Temperature	-30 °C to +70 °C
Cable Length	5 m standard (other lengths on request) Ending with free wires



INSTALLATION

Connections

The unit is supplied with the cable already connected. In case it is necessary to access the terminal block, unscrew the screws that secure the protective cover of the terminal block under the base of the unit.



Fig. 3.1: Bottom view of the unit

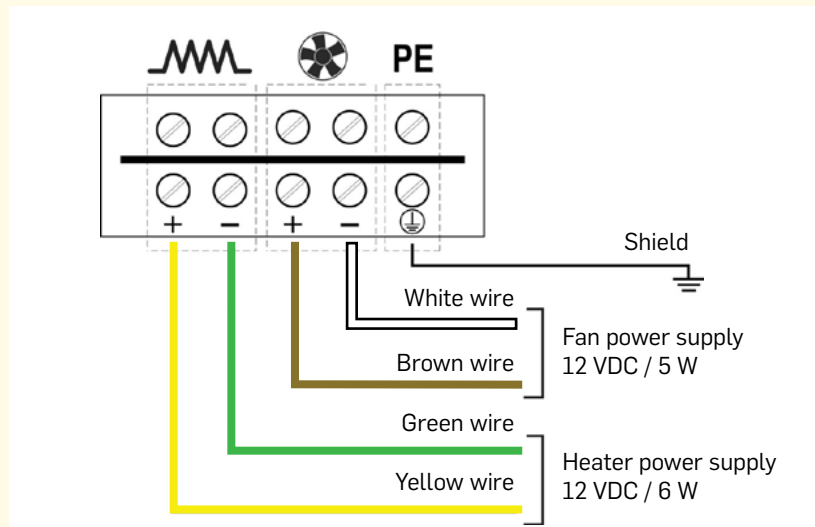


Fig. 3.2: Connections

To assure proper air flow, make sure polarity of fan is correct.

Install the Sensor

To install the sensor:

- Remove the external housing by unscrewing the three knobs.
- Remove protection screen and sensor feet.
- **Only for sensors with mV output** (lower than the versions with amplified analog or digital output): Place Adapter Disk under the sensor, in order to modify the height of the sensor.
- Attach the sensor to the base of the unit using the two supplied M5 screws.

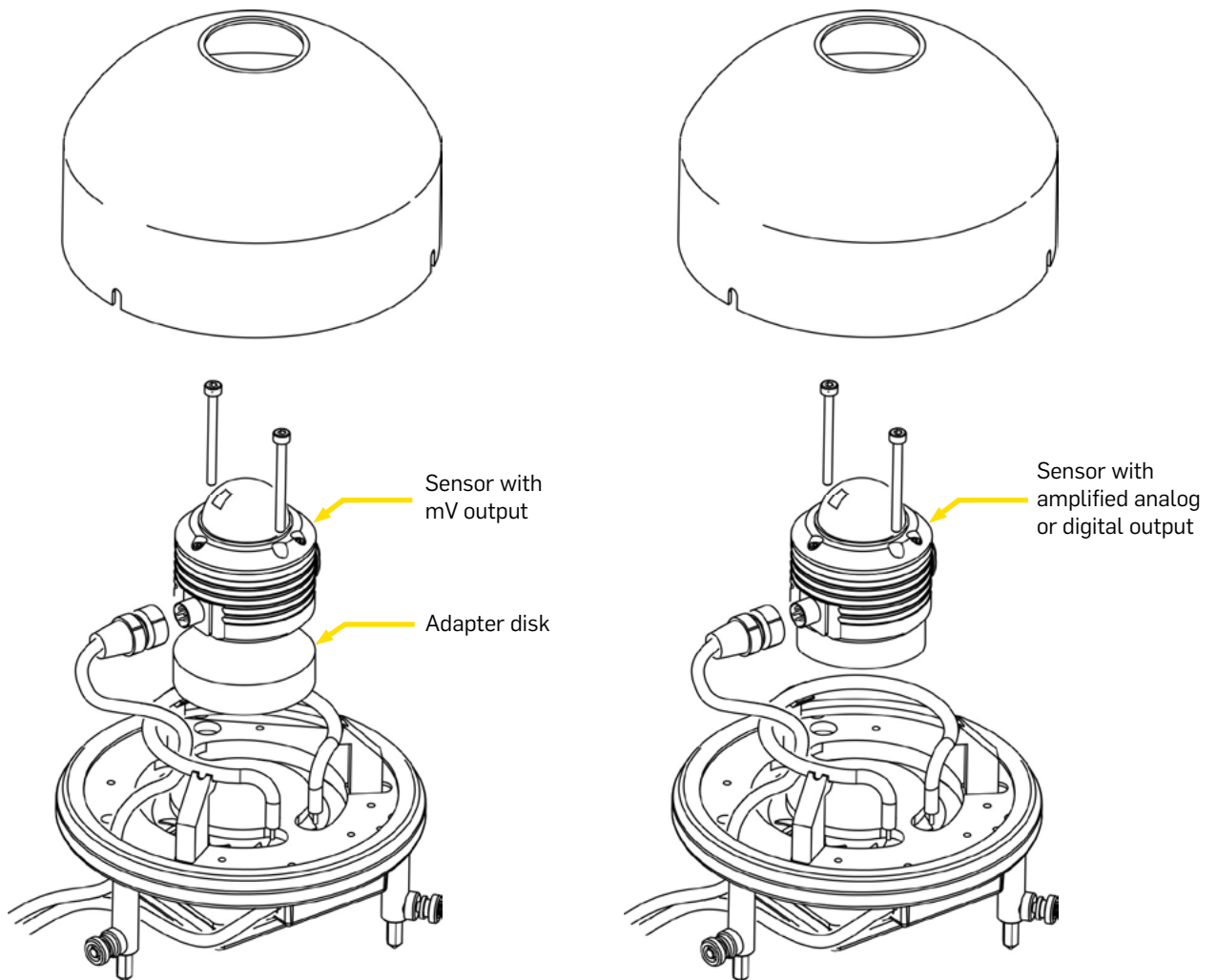


Fig. 3.3: Installing the sensor inside the unit

The sensor cable should be routed through the groove on the edge of the base. The sensor must be oriented so that the connector faces the cable exit groove.

BRACKETS

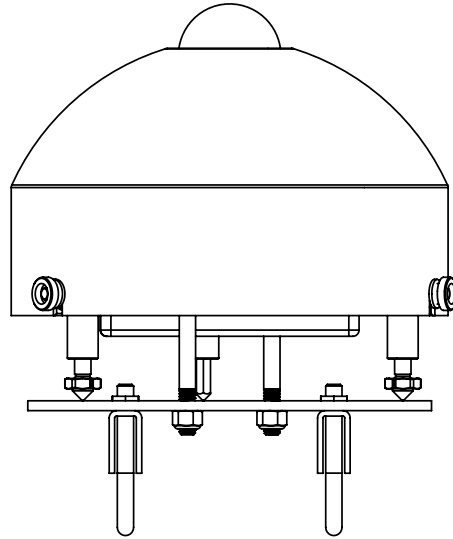


Fig. 3.4: Placing sensor on bracket

Once sensor is in the heating unit, place onto 18366 bracket.

Positioning the Unit

For accurate horizontal positioning, use the levelling device on the top of the base. The unit has two height-adjustable feet for levelling.

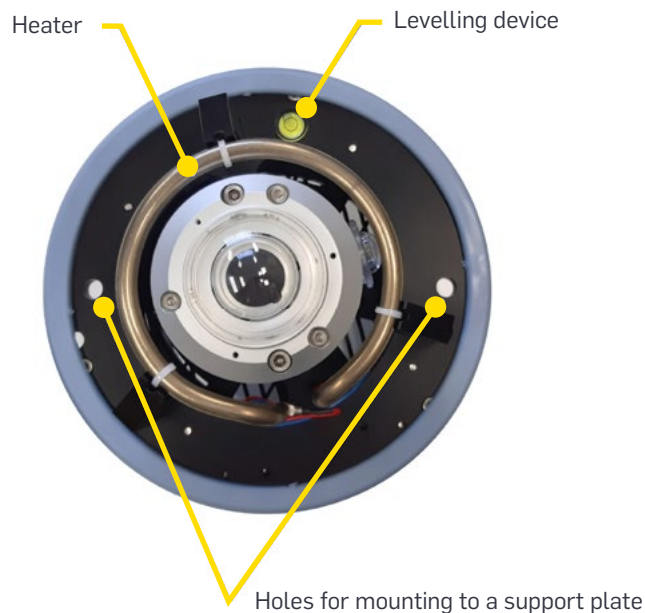


Fig. 3.5: Top view of the unit without external housing

The 9 mm through holes on the base can be used to mount the unit to a support plate.

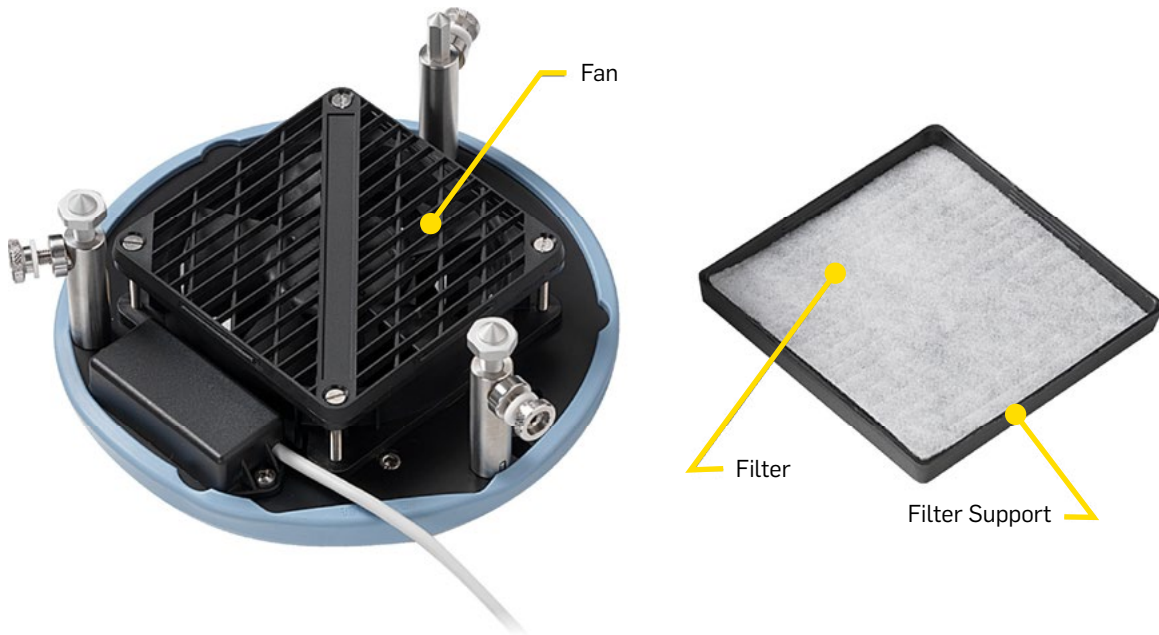
At the end of the installation, replace the external housing of the unit and mount it by screwing the three knobs.

MAINTENANCE

The filter covering the fan must be periodically checked. The maintenance period depends on the degree of pollution of the environment in which the unit is installed.

The filter must be replaced if dirty or clogged.

To access the filter, gently pull the filter support to slide it off the fan body.



NRG PART #	DESCRIPTION
19187	Filter Pads, Heater Ventilator
19186	Filter Assembly, Heater Ventilator

NRG R1-HV SPECIFICATIONS

DESCRIPTION	Sensor Type	Pyranometer Heating and Ventilation unit
	Applications	Solar resource assessment and monitoring in cold climates
	Sensor Compatibility	<ul style="list-style-type: none"> • NRG R1 Pyranometer • NRG R1-D Pyranometer
POWER REQUIREMENTS	Power Required	<ul style="list-style-type: none"> • 12 VDC Fan (5W) • 12 VDC Heater (6W)
INSTALLATION	Mounting	<p>Mounts to 1-3/4 Inch diameter boom (44 mm diameter) on SRA and SRM towers using NRG's 18366 mounting assembly</p> <p>Pyranometers mount with M5 screws included with pyranometers</p>
	Tools Required	<p>2 X 1/2-inch wrenches</p> <p>4 mm hex key for mounting pyranometer</p> <p>No. 1 Phillips head screwdriver for removing pyranometer sun shield</p>
ENVIRONMENTAL	Operating Temperature Range	-30 °C to 70 °C (-22 °F to 158 °F)
PHYSICAL	Connections	Separate pairs of screw terminals for Fan and Heater
	Cable Length	5 m
	Weight	2.55 kg (5.62 lb)
	Dimensions	9.2 mm diameter x 170 mm height (approx)

SAFETY INSTRUCTIONS

General safety instructions

The unit has been manufactured and tested in accordance with the safety standard 61010-1 "Safety requirements for electrical equipment for measurement, control and laboratory use" and has left the factory in perfect safety technical conditions.

The unit proper operation and operating safety can be ensured only if all standard safety measures as well as the specific measures described in this manual are followed.

The unit proper operation and operating safety can be ensured only in the climatic conditions specified in this manual.

Do not use the unit in places where there are:

- Corrosive or flammable gases.
- Direct vibrations or shocks to the instrument.
- High-intensity electromagnetic fields, static electricity.

NRG R1 PYRANOMETER ASSOCIATED ITEMS LIST

These items are commonly used in conjunction with the NRG R1 Heating and Ventilating Unit. Please contact NRG for further information.

NRG PART #	DESCRIPTION
18366	Assembly, Boom Mount, R1-HV
9450	Sensor, Pyranometer, NRG R1, Analog
9451	Sensor, Pyranometer, NRG R1-D, Digital