

# MODEL GEO-IR02

## PYRGEOMETER WITH HEATING



**GEO-IR02** is a sensor that can be applied for Far Infra Red (FIR) radiation observations. The main application is in meteorological outdoor experiments. The scientific name of this instrument is pyrgeometer. IR02 is heated, which improves measurement accuracy because it prevents dew deposition.

**GEO-IR02** serves to measure the FIR radiation flux that is incident on a plane surface in  $W/m^2$ . Working completely passive, using a thermopile sensor, IR02 generates a small output voltage proportional to the flux between the object within the field of view, and the IR02 sensor. IR02 has a spectrally flat response across the full FIR spectrum, effectively from 4500 to 50000 nm.

A Pt100 temperature sensor is used to estimate the sensor temperature, and makes it possible to calculate the object's emitted radiation or temperature (facing the sky, this is the so-called "sky temperature").

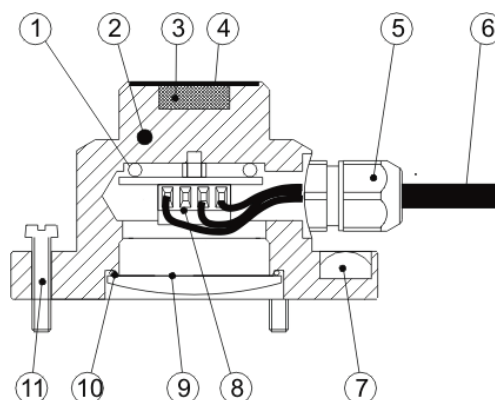
The instrument can directly be connected to most commonly used datalogging systems.

**GEO-IR02** can be used for general meteorological observations. A common application is for outdoor FIR measurements, in combination with a pyranometer, as part of a meteorological station. This application requires horizontal levelling; levelling feet (11) and a level (7) are included. The IR02 cable can easily be installed or replaced by the user. For net-FIR measurements, see also the NR01 net-radiometer. IR02 can be used for general meteorological observations. A common application is for outdoor FIR measurements, in combination with a pyranometer, as part of a meteorological station. This application requires horizontal levelling; levelling feet (10) and a level (6) are included. The IR02 cable can easily be installed or replaced by the user. For net-FIR measurements, see also the NR01 net-radiometer.

### SPECIFICATIONS

<b>Sensitivity (nominal)</b>	15 $\mu V / W/m^2$
<b>Temperature range</b>	-40 - +80 $^{\circ}C$
<b>Range</b>	-1000 - +1000 $W/m^2$
<b>Linearity</b>	Non-linearity < 1% (-250 $W/m^2$ to 700 $W/m^2$ )
<b>Response time</b>	3 s (95% response) 0.5 s (1/e signal) 1 s (1-1/e signal)
<b>Cosine</b>	< 5%
<b>Mechanical vibration</b>	No damage under normal use
<b>Calibration</b>	WISG (World Infrared Standard Group)
<b>Calibration traceability</b>	ITS 90
<b>Orientation</b>	Performance is not affected by orientation / tilt
<b>Temperature dependence</b>	< 0.1%/ $^{\circ}C$
<b>Temperature sensor</b>	Pt100
<b>Spectral range</b>	4500 - 50000 nm
<b>Window heating offset</b>	<15 $W/m^2$ @ 1000 $W/m^2$
<b>Heating power</b>	1.6 Watt @12VDC
<b>Impedance</b>	150 - 250 Ohms
<b>Cable</b>	Standard lenght 5m (additional cable lenght x meters)

### OPTIONS



**Figure 1** IR02 pyrgeometer: (1) heater, (2) Pt100 temperature sensor, (3) sensor, (4) FIR window, (5) cable gland, (6) cable, standard length 5 m, (7) level, (8) screwed cable connection, (9) access for cable connection / replacement, (10) rubber O-ring, (11) levelling feet