

# GLOBAL SOLAR RADIATION Sensor

*t055 TPIR*



High accuracy and data reliability

Robust and easy to install

Long-term stability

# Description

TPIR measures the global solar radiation, calculated as sum of the direct sun radiation, and the radiation diffused by the sky and scattered clouds. Thanks to its standards of accuracy the sensor is a very suitable device for various applications in the field of meteorology.

TPIR is equipped with a thermopile element, specifically designed and developed for SIAP + MICROS. The sensing element generates a tension proportional to the captured radiation, which is acquired by a signal conditioning electronics that normalizes the output in a standard tension, current, Modbus or SDI-12 signal. Performance features are significantly improved thanks to a double dome made of special optical glass (Schott K5), which allows a wide range of solar radiation frequency measurement ( $0.3 \div 3 \mu\text{m}$ ). The production process is fulfilled by a calibration in a climatic chamber with an artificial light source, in order to obtain high accuracy even when the temperature varies.

The sensor is supplied with power and signal cable (4m).



## Main features

- **High accuracy and data reliability**
- **Robust and easy to install**
- **Protection against overvoltages**
- **Low power consumption**

## Technical Specifications\*

### Measurement performance

#### Piranometer First Class WMO

Transducer	Thermopile
Measurement range	$0 \div 1300 \text{ W/m}^2$
Accuracy	$\pm 10 \text{ W/m}^2$
Resolution	$1 \text{ W/m}^2$
Directional response	$< \pm 20 \text{ W/m}^2$
Non linearity	$\pm 1 \%$
Spectral range	$0.3 \div 3 \mu\text{m}$
Inclination response	$\pm 2 \%$

### Operating conditions

Temperature	$-30^\circ\text{C} \div +60^\circ\text{C}$
Humidity	$0\% \div 100\%$

### Outputs

RS485 - Modbus	Solar radiation [ $\text{W/m}^2$ ]
SDI - 12	Solar radiation [ $\text{W/m}^2$ ]
Tension	$0 \div 2 \text{ V} \leftrightarrow 0 \div 1300 \text{ W/m}^2$
Current	$4 \div 20 \text{ mA} \leftrightarrow 0 \div 1300 \text{ W/m}^2$

### Power supply and Consumptions

Voltage supply	$7 \div 30 \text{ Vdc}$		
Power consumption (mA)	Min	Typical	Max
RS485-Modbus / SDI - 12 / $0 \div 2 \text{ V}$	-	1	3
$4 \div 20 \text{ mA}$	5	-	25

### Mechanical specifications

Protective body	Plastic material, aluminium alloy, brass, stainless steel screws
Weight	1.1 kg
Dimensions	$\varnothing = 210 \text{ mm}$ ; Height: = 250 mm
Electrical connections	IP67 / 7 pole male connector

### Ordering codes

Current output, Tension output, RS485-Modbus serial output	t055d-TPIR-IVS
SDI-12 serial output	t055i-TPIR-12

\*Changes on technical performances can be applied upon request of specific calibration