



***Bio Instruments S.R.L.***

SENSORS AND SYSTEMS  
FOR MONITORING GROWING PLANTS

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# **TIR-4P**

*Pyranometer*



## ***Introduction***

The TIR-4P Pyranometer is a silicon-cell photodiode device based on the SP-110 Pyranometer (Apogee Instruments, USA), and calibrated to estimate all of the solar radiation energy in Watts per square meter.

All silicon-cell photodiode pyranometers sub-sample the shortwave radiation spectrum (from 300 to 1000 nm), and are calibrated to predict all of the solar radiation (from 280 to 2800 nm). For this reason, they should only be used to measure unobstructed solar radiation. The pyranometers should not be used to measure electric lights, under canopies of vegetation or to measure reflected radiation.

This cosine-corrected sensor is designed to maintain its accuracy when radiation comes from low zenith angles.

The sensor has not less than 4-m cable with the IP-67 BINDER plug for easy and trouble free connection to the datalogger.

## ***Installation***

Position the TIR-4P Pyranometer is supplied with the special holder for mounting on a tripod. Keep TIR-4P at vertical position.

## Connection

Plug the sensor into any analog input of the PM-11 Phytomonitor or the PTM-48A Photosynthesis Monitor. In the PC program, specify the input number where the sensor is connected to.

If you use the sensor for the first time, please make the appropriate record in the Sensors Database as described on page 5 of the PM-11 Phytomonitor Terminal Emulator software Guide or on page 11 of the PTM-48A Photosynthesis Monitor User's Guide.

Sensor data

Type: TIR-4P

ID: #xxxx

Description: Pyranometer

Units: W/m2

Format: #

Measurement mode: Normal

Measurement ranges

Minimum: 0 W/m2

Maximum: 1100 W/m2

Max Volts: 1.0 V

Coefficients

Standard

#	Coefficient
C0	0.00000e+000
C1	5.00000e+003
C2	0.00000e+000
C3	0.00000e+000
C4	0.00000e+000
C5	0.00000e+000

Edit

Defaults

*Sensors Database Window in PM-11 / PTM-48A*

*(Note: Coefficients are valid for sensors, starting from s/n 2001)*

## Specifications

Calibration	Natural sunlight
Measurement range	0 to 1100 W/m <sup>2</sup>
Absolute accuracy	±5%
Repeatability	±1%
Cosine response	±1% at 45° zenith angle ±5% at 75° zenith angle
Operating temperature	0 to 50 °C
Dimensions, mm	23.5 Ø × 28.3 H mm
Mass (without cable)	30 g
Output cable length	min 4 m
Protection index	IP 67



Phyto-Sensor Group

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