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LP PYRHE 16 : Pyrheliometer (First Class According to ISO 9060 Classification)

Includes:-

- Pyrheliometer
- 10 Meter cable with connector
- Light shield
- Revolving filter wheel (5positions) with 3 Shott filters (OG530, RG630, RG695)
- Cartridge for silica-gel crystals, 3 refills
- Calibration Certificate
- Manual

Each Pyrheliometer is factory calibrated and typified by its own calibration factor.

The **LP PYRHE 16 Pyrheliometer** (First Class Pyrheliometer according to ISO 9060 classification) is an instrument for direct measurement of solar irradiance (Watt/m2). The receiving surface must be positioned (via a solar tracker or else) perpendicularly to sun's rays. The use of apposite diaphragms allows only direct light to hit the surface of the sensor. According to WMO (Seventh edition 2008) and ISO 9069 regulations, the Pyrheliometer has a field of view of 5°.

Working Principle

The LP PYRHE 16 Pyrheliometer is based on a new passive thermopile sensor. The sensitive surface of the thermopile is coated with a matt black paint, which makes the instrument not selective to the different wave lengths. The spectral range of the Pyrheliometer is determined by the transmission of the quartz window, whose function is to protect the sensor from dust and water. A special quartz allows to perform a 200nm-4000nm non-selective measurement.

The adopted sensor allows to have a response time lower than the requirements of the ISO9060 for the classification of first class Pyrheliometers (the response time is under 9 seconds while the standard requires a response time lower than 20 seconds). Radiant energy is absorbed by the blackened surface of the thermopile, thus creating a difference in temperature between the hot junction and the body of the pyrheliometer, which in this case acts as a cold junction. Through the Seebeck effect, the difference in temperature between hot and cold junction is converted into a Difference of Potential.

LP PYRHE 16 should be mounted in an easily reachable place to allow periodic cleaning of the quartz window and maintenance. At the same time you should avoid buildings, trees or obstructions of any kind intercepting the path of the sun during the day, all year round. For the automatic tracking of the pyrheliometer.

Technical Specification

ISO 9060 Classification : First class
Detector type : Based on a passive thermopile sensor
Measuring range : 0 to 2000 W/m^2
Spectral range : 200 nm to 4000 nm
Typical sensitivity : 10 μV/(W/m^2)
Operating temperature : - 40 ^{0}C to 80 ^{0}C
Operating humidity : 0 to 100%
Response time (95%) : < 9 sec.
Field of View : 5° (slope 1°)
Zero Off-set : Response to temperature change of 5K/h : <± 3 W/m^2
Long term instability (over 1 year) : <± 1%
Non linearity : <± 0.5%
Response depending on temperature : <± 2%
Response depending on Tilt : <± 0.5%
Spectral selectivity : <± 1%
Impedance : 5Ω to 50Ω
Cable : 10 meter cable
Weight : 1.5 Kg

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HD 32.36 : Data logger and Accessories

Includes:-

- 16 Channel Data logger & Software
- Weather Proof enclosure
- 12V Rechargeable backup battery
- 100 to 240 Vac mains power adopter
- Terminal block for power supply
- Data Download cable
- 2 GB SD card
- LCD Display & GPS module
- Manual

The HD32MT.1 is a 16-channel data logger capable of capturing and logging the values measured by a series of sensors connected to its inputs. The data logger is completely programmable by the user and is therefore very versatile. The supplied HD32MTLogger application software, supplied with the instrument, allows simple and intuitive programming by using graphic interfaces, without need of learning any programming language, thus minimizing time needed to make the system operational.

The values recorded by the instrument can be transferred to a PC by using the HD32MTLogger software. The data logger can be configured to memorize the instant value, the minimum value, the maximum value, the average value and the standard deviation of the measurements. Different acquisition/recording intervals can be programmed per each input. Each recording includes acquisition date and time The data logger has a “flash” internal memory arranged in circular mode: when the memory is full the new data overwrite the older ones. with 8 sensors capturing at the same instant you can **store 100,000 records**, each one composed of 8 instantaneous measurements. Data can also be directly recorded to a removable **SD-type memory card with a capacity of 2 GB**. The use of a memory card allows extending the memory capacity of the instrument, allowing not to loose the data when the memory is full.

Technical Specification

Total no. of channels: 16 Channels
Analog inputs: 8 channels
Digital input/output ports (I/O): 8 ports
Measurement ranges: ±25mV, ±100mV, ±1000mV, ±2500mV
Resolution: 16 bit, Accuracy: 0.01% f.s.
Input impedance: 100Mohm
Display : LCD Display
Data acquisition interval from sensors: Programmable from 1 to 60 sec.
Data logging interval: Programmable from 2 seconds to 24 hours
Storage capacity: 4 MB internal memory & SD memory card reader 2 GB
Max. input voltage: 5.5 V
Inputs for high frequency pulse counting: 2 inputs, Frequency 50kHz max.
Minimum pulse duration : 10 µs
Switch frequency : 50Hz max.
Minimum opening or closing time : 10 ms
RS232 connection : 2 RS232 ports, one connection to PC or optional Radio Modem and second for GSM module.
Alarm outputs : 2 insulated voltage-free contact outputs
GPS module : GPS module for automatically time synchronization of the data logger.
Auxiliary supply outputs : +5V regulated, max. 500 mA
Operating conditions : -20 to 50°C , RH 0 to 85% RH no condensation
Storage temperature : -25 to 65°C
Power Supply : 12 to 30 Vdc

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