

ALB - ALBEDOMETER

PYRA 05 is constructed starting from two 1st class* pyranometers and the PYRA 06 starting from two 2nd class* pyranometers (* according to ISO 9060 standards and to specifications published by the World Meteorological Organization). An albedometer basically consists of two pyranometers, mounted back-to-back, one looking upward (sky) and one downward (earth). The upward pyranometer measures the incident global radiation (direct radiation + diffuse radiation) striking the ground, while the downward one, measures the global radiation reflected from the ground. The outputs of the two pyranometers electric signals (the two pyranometers which made up of the PYRA 05 are coupled in order to have the same sensitivity) can be directly sent to a data logger or to an automatic data processor. Albedo is the fraction of solar radiation that is reflected from the ground, with respect to incident radiation:

$$\text{ALBEDO} = \frac{\text{Reflected Global Radiation}}{\text{Incident Global Radiation}}$$

By using albedometers, we can calculate the net radiation obtained through the difference between incident global radiation and reflected global radiation.

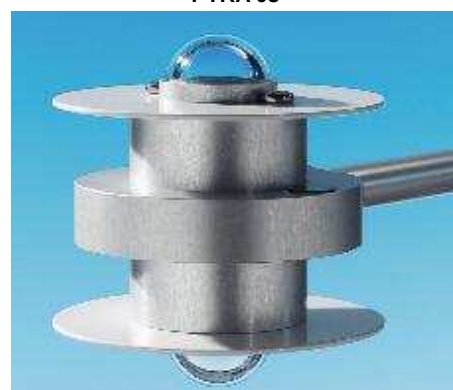
Albedometers operate within $0.3 \mu\text{m} \pm 3 \mu\text{m}$ spectral range. No power supply is needed, as the two pyranometers generate a voltage which is usually equal to: $10 \text{ (mV / (kW} \cdot \text{m}^2))$

Every pyranometer composing the albedometer is calibrated separately as per the WRR (World Radiometric Reference) standard and is supplied with the relevant Report of Calibration. These are strong and reliable

Recommended use: climatological research, weather stations, road weather stations, agriculture stations, etc



PYRA 05



PYRA 06

TECHNICAL SPECIFICATION

Models	PYRA 05	PYRA 06
Typical sensitivity	10 microV/W/m2)	
Impedance:	33 ... 45 Ohm	
Measuring range:	0...2000 W/m2	
Viewing field:	$2 \pi \text{ sr}$	
Spectral field:	305 nm ... 2800 nm W/m2 (50%)	
Operating temperature:	$-40 \dots +80^\circ\text{C}$	
Weight (pyranometer only):	1.35 kg	1.1 kg
ISO 9060 Specification:		
Response time:	< 28 sec	< 30 sec
Zero Off-set		
a) Response to thermal radiation (200W/m2)	15 W/m2	25 W/m2
b) Response to temperature change 5K/h	<1+/- 4IW/m2	<1+/- 6IW/m2
3a) Non stability over 1 year	<1+/- 1.51%	<1+/- 2.51%
3b) Non linearity	<1+/- 11%	<1+/- 21%
3c) Cosine response	<1+/- 18IW/m2	<1+/- 22IW/m2
3d) Spectral selectivity	<1+/- 51%	<1+/- 71%
3e) Temperature response	< 4 %	< 8 %
3f) Tilt response	<1+/- 21%	<1+/- 41%

*All technical data, excluding weight, are referred to one of the two pyranometers composing the albedometer.



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ORDERING CODE

PYRA05:	Albedometer made up of two 1st Class pyranometers, according to ISO 9060. Complete with: top shade disk and bottom shade disc, drying cartridge with silicagel crystals, 2 silica gel cartridges, spirit level, rod for attachment to a mast, and Report of Calibration. Typical sensitivity 10 $\mu\text{V}/(\text{W}/\text{m}^2)$. The connection cable has to be ordered separately.
PYRA SP1:	Top shade disc for albedometer PYRA 05 (upward pyranometer).
PYRA SP3:	Bottom shade disc for albedometer PYRA 05 (downward pyranometer).
PYRA SG:	Drying cartridge with silicagel crystals, complete with O-ring.
PYRA G:	Pack of 5 cartridges of silicagel.
PYRA06:	Albedometer made up of two 2nd Class pyranometers, according to ISO 9060. Complete with: top shade disk and bottom shade disc, spirit level, rod for attachment to a mast, connecting cable 5m and Report of Calibration. Typical sensitivity 10 $\mu\text{W}/(\text{W}/\text{m}^2)$. The connection cable has to be ordered separately.
CPM12AA802:	8-pole M12 connector with UV resistant cable L= 2m
CPM12AA805:	8-pole M12 connector with UV resistant cable L= 5m
CPM12AA810:	8-pole M12 connector with UV resistant cable L= 10m

WIRING DIAGRAM



Connector	Function		Color
8	V out (+) of the signal generated by the lower detector	↑	Green
6	Housing (PYRA05) Not connected (PYRA06)		White
2	V out (-) of the signal generated by the upper detector	↓	Blue
1	V out (+) of the signal generated by the upper detector	↓	Red
7	Shield		Black
5	V out (-) of the signal generated by the lower detector	↑	Brown



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