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## PORTABLE MULTIFUNCTION DATA-LOGGER INSTRUMENT DO9847



**DO9847** is a multifunctional handheld board instrument and datalogger. It is provided with a 128x64 pixel (56x38 mm) graphic display and three Independent inputs. Each input can be connected to one channel or two channel dual probes (ex. two thermocouples, relative humidity /temperature, etc.).

The instrument automatically acknowledges SICRAM probes connected to the input (memory equipped and configurable intelligent probe). Functions: watch, hold, max., min., average, record, immediate or deferred start record logging, difference between the two inputs, relative measures, three input channel measurement and inside reference temperature display. Sampling time: one per second/input. Probe calibration through SICRAM module; calibration data permanent storage

inside the probe. Storage capacity: 32.000 readings per input. Storage interval and printing can be configured between one second and 1 hour.

RS232C serial output: from 300 up to 115.200 baud rate.

Immediate or deferred print-out.

Stored data can be displayed and stored data blocks can be deleted.

Automatic shutout after 8 minutes can be disabled.

Units of measurement can be selected according to the physical quantity of the connected probe.

Firmware update through RS232C serial port. Different types of SICRAM modules or probes can be connected to the input: Platinum sensor temperature, thermocouple, relative humidity/temperature, Discomfort index, continuous voltage ( $\pm 20V$ ), current (0...24mA), pressure, air speed and light.

### TECHNICAL DATA OF THE INSTRUMENT DO 9847

#### Power supply:

Battery: 4 1.5V AA alkaline batteries; operating time with high quality batteries: about 60 hours.

Mains: through 9Vdc, 250mA external power supply, 2 pole connector..

#### Operating conditions:

Working temperature: : -10...+50°C.  
Storage temperature : -25...+65°C.  
Relative Humidity: 0...90%R.H., not condensing.  
LCD display: 128x64 pixel (56x38 mm) graphic LCD..  
Keyboard : 18 multifunction Keys and 3 function keys.  
Recorded data safety: independently from batteries charging conditions.

Measured values storage: on 16 files divided into 16-sample pages.

Quantity: 32.000 samples per input channel.

Storage interval: 1 s...1 h. Time and date, real time.

Accuracy: 1 minute/month maximum error margin.

#### Serial interface:

RS232C type galvanically insulated  
SUB D 9 male connector.

Baud rate: 300...115.200 baud. Data bit: 8.

Parity: none.

Stop bit: 1.

Flow control: Xon/Xoff. RS232C cable max.length: 15 m..

immediate printing interval: 1 s...1 h.

Firmware can be updated through PC using the instrument serial port.

Probes connections: n° 3 DIN45326 8 pole connectors

Dimensions and weight: 245x100x50 mm - 300 gr.

Case: ABS - Protection: rubber.



### DO 9847 CHARACTERISTICS OF SICRAM MODULES

When the instrument is used together with the available SICRAM modules, its accuracy and resolution are stated in the section where these modules

## SICRAM MODULES FOR DO 9847

**TP471** Temperature measure through PRT Platinum sensor  
 PRT resistance values @ 0°C 25Ω, 100Ω, 500Ω  
 temperature range Pt25, Pt100 -200°C ... +850°C  
 temperature range Pt500 -200°C ... +500°C  
 Accuracy with Pt25, Pt100 sensor ±0.03°C up to 350°C  
 ±0.3°C up to 850°C  
 Accuracy with Pt500 sensor ±0.5°C up to 500°C  
 Resolution 0.01°C from -200°C to 350°C  
 0.1°C from 350°C to 800°C  
 Temperature drift @20°C 0.002%/°C  
 Excitation current 400µA impulse,  
 length=100ms, time=1s

**TP471D0** Temperature measure for thermocouple with cold joint (inside ice at 0°C)

**TP471D** Temperature measure for 1 input thermocouple

**TP471D1** Temperature measure for 2 inputs thermocouple

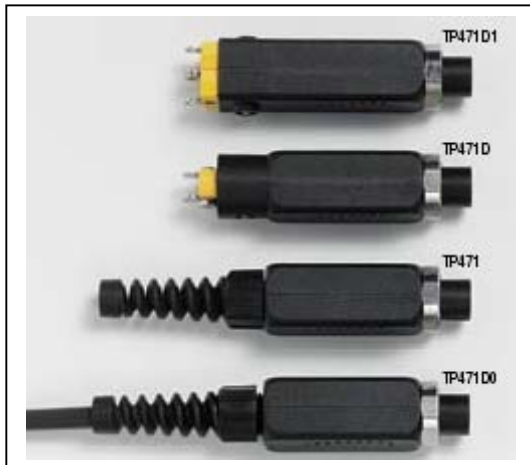
**VP472** module to connect pyranometers or albedometers. The Measurements produced during the time by a pyranometer or an albedometer can be taken, verified and stored. The signal produced by the thermopile can be read in mV or in W/m<sup>2</sup>, the net radiation of the albedometer is read in W/m<sup>2</sup>. The thermopile sensitivity can be set from 5000 to 30000nV/(Wm<sup>-2</sup>) that is between 5 and 30µV/(Wm<sup>-2</sup>).

**VP473** module for reading the continuous voltage. When connected to the output of a transmitter with voltage signal it can read and take the relevant value.  
 Measuring range: ±20Vdc. Input impedance: 1MΩ..

**IP472** module for mA reading of continuous current. When connected to the output of a transmitter with current signal, it can read and take the relevant value.  
 Measuring range: 0...24mA. Input impedance: 25Ω.

**PP471** module for measuring absolute, relative and differential pressure. It can be connected with pressure probes **TP704** and **TP705** series. It measure the instantaneous value and peak value of pressure. The module is complete with 2m cable and DIN 45326 8 pole female connector.

Accuracy: ±0.05% of full scale  
 Peak time ≥ 5ms  
 Peak accuracy: ±0.5% f.s.  
 Peak dead band ≤ 2% f.s.



## PROBES COMPLETE WITH SICRAM MODULE

### Pt100 sensor temperature probes

**TP472I** wire Pt100 immersion probe. Tube Ø 3 mm, length 300 mm. 4 wire cable 2m long.  
 Working range: -196°C...+500°C.  
 Accuracy: ±0.25°C (-196°C...+350°C)  
 ±0.4°C (+350°C...+500°C)

### Pt100 sensor temperature probes

**TP473P** wire Pt100 pointed probe. Tube Ø 4 mm, length 150 mm.. 4 wire cable 2m long  
 Working range: -100°C...+400°C.  
 Accuracy: ±0.25°C (-100°C...+350°C)  
 ±0.4°C (+350°C...+400°C))

**TP474C** Thin film Pt100 contact probe. Tube Ø 4 mm, length 230 mm, contact surface made of silver Ø 5 mm. 4 wire cable 2m long  
 Working range: -50°C...+400°C  
 Accuracy: ±0.2°C (-50°C...+350°C)  
 ±0.4°C (+350°C...+400°C)

## ACCURACY OF THE INSTRUMENT WITH SICRAM MODULE FOR TC

TC Type	Measuring Range	Accuracy	Resolution
K	-200 to 1370 °C	±0,1 °C <600 °C ±0,2 °C >600 °C	0.05°C from scale beginning to 350°C 0.1°C from 350°C to full scale.
J	-100 to 750 °C	±0,05 °C <400 °C ±0,1°C >400 °C	
T	-200 to 400 °C	±0,1 °C	
E	-200 to 750 °C	±0,05°C <300°C ±0,08>300°C	
N	-200 to 1300 °C	±0,1°C <600°C ±0,2>600 °C	
R	200 to 1480 °C	±0,25 °C	0.1°C all over the scale
S	200 to 1480 °C	±0,3 °C	
B	200 to 1800 °C	±0,35 °C	

The accuracy regards the instrument complete with module; the probe's error is not included.



### Relative humidity and temperature combined probes

Typical characteristics of module of relative humidity and temperature probes

#### Relative Humidity

Sensor	Mk-33 capacitive
Typical capacity @30%RH	300pF±40pF
Probe temperature working range	-40°C...+150°C
Working range	0 ... 100%R.H.
Accuracy	±1%UR in the range 20...90%RH ±2%UR in the range 10...99%RH
Resolution	0.1%RH
Temperature drift @20°C	0.02%RH/°C
%RH response time at constant temperature	10sec (10→80%RH; air speed=2m/s)

#### Temperature

Temperature sensor	Pt100 (100Ω @ 0°C)
Working range	-50°C...+200°C.
Accuracy	±0.1°C
Resolution	0.1°C
Temperature drift @20°C	0.003%/°C
Temperature sensor (HP572AC) K thermocouple	
Working range	-50°C...+200°C.
Accuracy	±0.5°C
Resolution	0.05°C
Temperature drift @20°C	0.02%/°C



**HP472AC** RH% and temperature combined probe,  
Dimensions Ø26x170 mm. Connecting cable: 2m long.  
Working range: -20°C...+80°C,  
5...98%RH.  
RH% accuracy: ±2%  
°C accuracy: ±0.30°C.

**HP572AC** RH% and K thermocouple temperature combined probe  
Dimensions Ø 26x170 mm. Connecting cable: 2m long.  
Working range: -20°C...+80°C,  
5...98% RH.  
UR% accuracy: ±2%  
°C accuracy: ±0.5°C.

**HP473AC** RH% and temperature combined probe.  
Handle Ø 26x130 mm, Probe Ø 14x110 mm.  
Connecting cable: 2m long.  
Working range -20°C...+80°C,  
5...98% RH.

RH% accuracy: ±2%  
°C accuracy: ±0.30°C..

**HP474AC** RH% and temperature combined probe.  
Handle Ø 26x130 mm, probe Ø 14x210 mm.  
Connecting cable: 2m long.  
Working range: -40°C...+150°C,  
5...98% RH.

RH% accuracy: ±2,5%  
°C accuracy:±0.30°C

**HP475AC** RH% and temperature combined probe.  
Handle Ø 26x110 mm. Stainless steel tube Ø12x560 mm  
Terminal tip Ø 13,5x75 mm.  
Connecting cable: 2m long.  
Working range: -40°C...+150°C,  
5...98% RH.

RH% accuracy: ±2,5%  
°C accuracy: ±0.35°C

**HP477DC** RH% and temperature sword combined probe,  
Handle Ø 26x110 mm. Tube 18x4 mm, Length: 520 mm.  
Connecting cable: 2m.  
Working range -40°C...+150°C, 5...98% RH.  
RH% accuracy: ±2,5%  
°C accuracy: ±0.35°C

### Pressure Probes

**PP472** Probe for measuring barometric pressure.  
Working range: 600 ... 1100mbar  
Resolution: 0.1mbar  
Accuracy @ 20°C: ±0.3mbar  
Temperature range: -10 ... +60°C

**TP704-705** Probes to couple to the **SICRAM PP471** module to measure the absolute, relative or differential pressure..

**AP473 S1...S8** Differential pressure probes  
Working range S1=f.s.10mbar, S2=f.s.20mbar,  
S3=f.s.50mbar, S4=f.s.100mbar,  
S5=f.s.200mbar, S6=f.s.500mbar,  
S7=f.s.1bar, S8=f.s.2bar

Maximum over-pressure S1,S2,S3=200mbar  
S4=300mbar  
S5,S6=1bar  
S7=3bar  
S8=6bar

Accuracy @ 25°C ±0.5%f.s. (10, 20,50mbar)  
±0.25%f.s.(100mbar)  
±0.12% f.s.(200, 500, 1000,  
2000mbar)

Temperature range -10 ... +60°C

Fluid in contact with the membrane:  
non-corrosive and dry gas or air  
Connection tube Ø 5mm



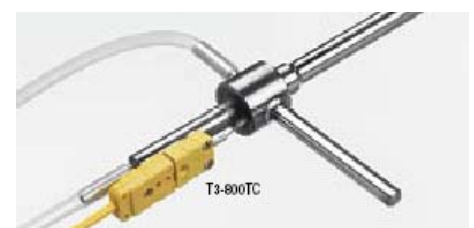
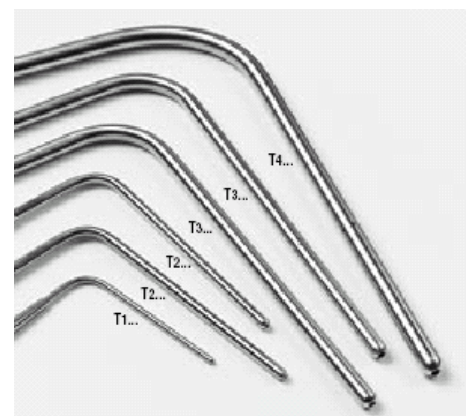
Bottom scale pressure	Maximum over-pressure	ORDER CODES			Accuracy From 20 to 25°C	Working temperature	Connection
		Differential pressure	Relative pressure (compared to atmosphere)	Absolute pressure			
		NON insulated membrane	insulated membrane	insulated membrane			
10,0 mbar	20,0 mbar	TP705-10MBD			0,50 % FSO	0...60 °C	Tube Ø 5 mm
20,0 mbar	40,0 mbar	TP705-20MBD			0,50 % FSO	0...60 °C	Tube Ø 5 mm
50,0 mbar	100 mbar	TP705-50MBD			0,50 % FSO	0...60 °C	Tube Ø 5 mm
100 mbar	200 mbar	TP705-100MBD			0,25 % FSO	0...60 °C	Tube Ø 5 mm
200 mbar	400 mbar	TP705-200MBD			0,25 % FSO	0...60 °C	Tube Ø 5 mm
			TP704-200MBGI		0,25 % FSO	0...80 °C	¼ BSP
500 mbar	1000 mbar	TP705-500MBD			0,25 % FSO	0...60 °C	Tube Ø 5 mm
			TP704-500MBGI		0,25 % FSO	0...80 °C	¼ BSP
1,00 bar	2,00 bar	TP705-1BD	TP705BARO Non insulated		0,25 % FSO	0...60 °C	Tube Ø 5 mm
			TP704-1BGI		0,25 % FSO	0...80 °C	¼ BSP
2,00 bar	4,00 bar	TP705-2BD			0,25 % FSO	0...60 °C	Tube Ø 5 mm
			TP704-2BGI	TP704-2BAI	0,40 % FSO	0...80 °C	¼ BSP
5,00 bar	10,0 bar		TP704-5BGI	TP704-5BAI	0,40 % FSO	0...80 °C	¼ BSP
10,0 bar	20,0 bar		TP704-10BGI	TP704-10BAI	0,40 % FSO	0...80 °C	¼ BSP
20,0 bar	40,0 bar		TP704-20BGI	TP704-20BAI	0,40 % FSO	0...80 °C	¼ BSP
50,0 bar	100 bar		TP704-50BGI	TP704-50BAI	0,40 % FSO	0...80 °C	¼ BSP
100 bar	200 bar			TP704-100BAI	0,40 % FSO	0...80 °C	¼ BSP
200 bar	400 bar			TP704-200BAI	0,40 % FSO	0...80 °C	¼ BSP
500 bar	750 bar			TP704-500BAI	0,40 % FSO	0...80 °C	¼ BSP



### Probes for air speed measurements

Pitot tube air speed probes AP473 S1 - AP473 S2 - AP473 S3 - AP473 S4

	AP473 S1	AP473 S2	AP473 S3	AP 473 S4
<b>Type of measure</b>	Air speed, calculated flow, differential pressure, air temperature			
<b>Measuring range</b>				
Differential pressure	10 mbar F.S.	20 mbar F.S.	50 mbar F.S.	100 mbar F.S.
Speed (*)	1...40 m/s	1...55 m/s	1...90 m/s	1...130 m/s
Temperature	-200...600 °C	-200...600 °C	-200...600 °C	-200...600 °C
<b>Resolution</b>				
Speed	0,01 to 19,99 - 0,1 from 20,0			
	0,1 to 199,9 - 1 from 200			
	1 to 1999 - 10 from 2,00x10 <sup>3</sup> - 100 from 20,0x10 <sup>3</sup>			
Temperature	0,1			
	0,1 °C			
<b>Accuracy</b>				
Speed	±0, 4% F.S. of pressure		±0,25 % F.S. of pressure	
Temperature	±0,1 °C		±0,1 °C	
<b>Minimum Speed</b>	1 m/s			
<b>Compensation of air temperature</b>	-200...600 °C (if 'K' thermocouple is connected to the module)			
<b>Unit of measure</b>				
Speed	m/s - km/h - ft/min - mph			
Flow	l/s - m <sup>3</sup> /h - cfm			
<b>Pipeline section for flow rate calculation</b>	0,001...1,999 m			

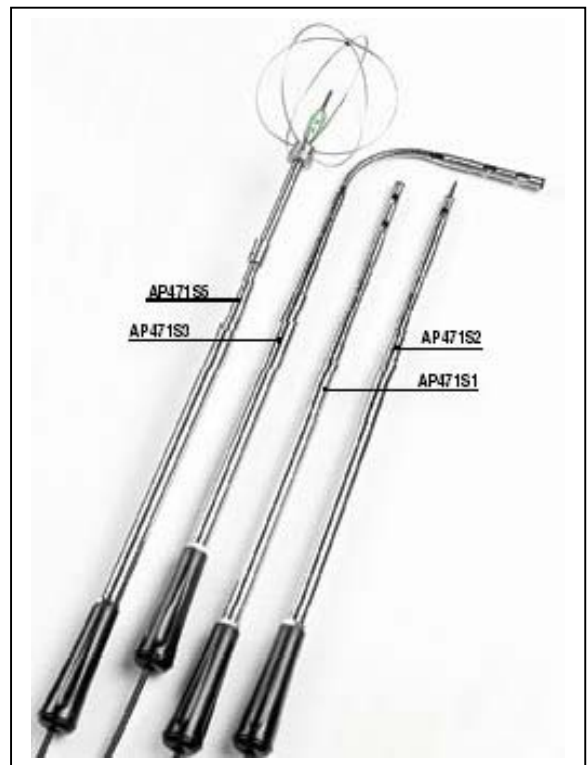


(\*) At 20°C, 1013mbar and Ps negligible.

## Hot wire probes

AP471 S1 - AP471 S2 - AP471 S3 - AP471 S4 - AP471 S5

	AP471 S1 AP471 S3	AP471 S2	AP471 S4 AP471 S5
Type of measure	Air speed, calculated flow rate, air temperature		
<b>Type of sensor</b>			
Speed	NTC Thermistor	NTC Thermistor	
Temperature	NTC Thermistor	NTC Thermistor	
<b>Measurement range</b>			
Speed	0 to 40 m/s	0 to 5 m/s	
Temperature	-30 to 110 °C	-30 to 110	0 to 80 °C
<b>Measurement resolution</b>			
Speed	0,01 m/s 0,1 km/h 1 ft/min 0,1 mph 0,1 knot		
Temperature	0,1 °C		
<b>Measurement accuracy</b>			
Speed	±0,05m/s (0 a 0,99 m/s)	±0,02 m/s (0 a 0,99 m/s)	
	±0,02 m/s (1 a 9,99 m/s)	±0,01m/s (1 a 9,99 m/s)	
	±0,6 m/s (10 a 40 m/s)		
Temperature	±0,4 °C (-30 a 110 °C)	±0,4 °C (-30 a 110 °C)	
Minimum speed	0 m/s		
Air temperature compensation	0 to 80 °C		
Battery life	~ 20 hours @ 20m/s with alkaline batteries	~ 30 hours @ 20m/s with alkaline batteries	
<b>Unit of measurement</b>			
Speed	M/s - km/h - ft/min - mph - knot		
Flow rate	l/s - m <sup>3</sup> /s - m <sup>3</sup> /min - m <sup>3</sup> /h - ft <sup>3</sup> /min		
Pipeline section for flow rate calculation	0,0001 to 1,9999 m <sup>2</sup>		
Cable length	~ 2 m		



## PITOT TUBE PROBES

- AP473 S1:** Pitot tube probe, 10mbar f.s. differential pressure. Air speed from 2 to 40m/s. The Pitot tubes have to be ordered separately.
- AP473 S2:** Pitot tube probe, 20mbar f.s. differential pressure. Air speed from 2 to 55m/s. The Pitot tubes have to be ordered separately.
- AP473 S3:** Pitot tube probe, 50mbar f.s. differential pressure. Air speed from 2 to 90m/s. The Pitot tubes have to be ordered separately.
- AP473 S4:** Pitot tube probe, 100mbar f.s. differential pressure. Air speed from 22 to 130m/s. The Pitot tubes have to be ordered separately.

## HOT-WIRE PROBES

- AP471 S1:** Hot-wire telescopic probe, measuring range: 0...40m/s. Cable length 2 metres.
- AP471 S2:** Omnidirectional hot-wire probe, measuring range: 0...5m/s. Cable length 2 metres.
- AP471 S3:** Hot-wire telescopic probe with terminal tip for easy position, measuring range: 0...40m/s. Cable length 2 metres.
- AP471 S4:** Omnidirectional hot-wire telescopic probe with base, measuring range: 0...5m/s. Cable length 2 metres.
- AP471 S5:** Omnidirectional hot-wire telescopic probe, measuring range: 0...5m/s. Cable length 2 metres.



Vane probes

AP472 S1 ... - AP471 S2 - AP471 S4....

	AP472 S1..		AP472 S2	AP472 S4..			
	L	H		L	LT	H	HT
Type of measure	Air speed, calculated flow rate, air temperature		Air speed, calculated flow rate,	Air speed, calculated flow rate,	Air speed, calculated flow rate, air temperature	Air speed, calculated flow rate,	Air speed, calculated flow rate, air temperature
Diámetro	100 mm		60 mm	16 mm			
<b>Type of sensor</b>							
Speed	Vane		Vane	Vane			
Temperature	TCK		-	-	TCK	-	TCK
<b>Measurement range</b>							
Speed m/s	0,6 20	10 30	0,25 20	0,6 to 20		10 to 50	
Temperature °C	-25 to 80 (*)		-25 to 80 (*)	-25 to 80 (*)	-30 to 120 (**)	-25 to 80 (*)	-30 to 120 (**)
<b>Resolution</b>							
Speed	0,01 m/s 0,1 km/h 1 ft/min 0,1 mph 0,1 knot						
Temperature	0,1 °C	-	-	0,1°C	-	0,1°C	-
<b>Accuracy</b>							
Speed	±(0,1 m/s +1,5% f.s.)		±(0,2 m/s +1,0% f.s.)				
Temperature	±0,5 °C		-	-	±0,5 °C	-	±0,5 °C
Minimum speed	0,6 m/s	10 m/s	0,25 m/s	0,60 m/s		10 m/s	
<b>Unit of measurement</b>							
Speed	m/s - km/h - ft/min - mph - knot						
Flow rate	l/s - m <sup>3</sup> /s - m <sup>3</sup> /min - m <sup>3</sup> /h - ft <sup>3</sup> /min						
Pipeline section for flow rate calculation	0,0001 to 1,9999 m <sup>2</sup>						
Cable length	~ 2 m						

(\*) The indicated value refers to the vane's working range.

(\*\*) The temperature limit refers to the probe head, where the vane and emperature sensors are located, and not to the handle, cable and telescopic rod that can withstand up to the maximum temperature of 80°C.



**VANE PROBES:**

**AP472 S1L:** Vane probe with thermocouple, Ø100mm. Speed from 0.6 to 20m/s; temperature from -25 to 80°C. Cable length 2 metres.

**AP472 S1H:** Vane probe with thermocouple, Ø100mm speed from 10 to 30m/s; temperature from -25 to 80°C. Cable length 2 metres.

**AP472 S2:** Vane probe, Ø 60mm. Measurement range: 0.25...20m/s. Cable length 2 metres.

**AP472 S4L:** Vane probe, Ø 16mm. speed from 0.6 to 20m/s. Cable length 2 metres.

**AP472 S4LT:** Vane probe with thermocouple, Ø16mm, speed from 0.6 to 20m/s. Temperature from -30 to 120°C with thermocouple K sensor(\*). Cable length 2 metres.

**AP472 S4H:** Vane probe, Ø 16mm speed from 10 to 50m/s. Cable length 2 metres.

**AP472 S4HT:** Vane probe with thermocouple, Ø16mm speed from 10 to 50m/s. Temperature from -30 to 120°C with thermocouple K sensor(\*). Cable length 2 metres.

(\*)The temperature limit refers to the probe head, where the vane and emperature sensors are located, and not to the handle, cable and telescopic rod that can withstand up to the maximum temperature of 80°C.



**Photometric / Radiometric Probes**

**LP 471 PHOT Probe for measuring the ILLUMINANCE**

Measuring range (lux):	0,01 a 199,99	1999	19,99x10 <sup>3</sup>	199,9x10 <sup>3</sup>
Resolution (lux):	0,01	1	0,01x10 <sup>3</sup>	0,1x 10 <sup>3</sup>
Spectral range	according to the photopic standard curve V(λ)			
Calibration uncertainty:	<4% Class C (CIE n°69 - UNI 11142)			
Working temperature	0...50°C			

**LP 471 LUM 2 Probe for measuring the LUMINANCE**

Measuring range (cd/m <sup>2</sup> ):	1 a 1999	19.99x10 <sup>3</sup>	199.9x10 <sup>3</sup>	1.999x10 <sup>6</sup>
Resolution (cd/m <sup>2</sup> ):	0.1/1	0.01x10 <sup>3</sup>	0.1x10 <sup>3</sup>	0.001x10 <sup>6</sup>
Field of view:	2°			
Spectral range:	according to the photopic standard curve V(λ)			
Calibration uncertainty::	<5% Class C (CIE n°69 - UNI 11142)			
Working temperature:	0...50°C			

**LP 471 RAD Probe for measuring the IRRADIANCE**

Measuring range (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> a 1.999	19.99	199.9	1999
Resolution (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> / 0.001	0.01	0.1	1
Spectral range:	400nm...1050nm			
Calibration uncertainty::	<5%			
Working temperature:	0...50°C			

**LP 471 PAR Quantum-radiometric probe for measuring the photons flow in the PAR chlorophyll field**

Measuring range (imol/m <sup>2</sup> s):	0.01... 19.99	199.9	1999	9.99x10 <sup>3</sup>
Resolution (imol/m <sup>2</sup> s):	0.01	0.1	1	0.01x10 <sup>3</sup>
Spectral range:	400nm...700nm			
Calibration uncertainty:	<5%			
Rango de funcionamiento:	0...50°C			

**LP 471 UVA Probe for measuring the IRRADIANCE**

Measuring range (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> a 1.999	19.99	199.9	1999
Resolution (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> / 0.001	0.01	0.1	1
Spectral range	315nm...400nm (Peak 360nm)			
Calibration uncertainty:	<5%			
Working temperature:	0...50°C			

**LP 471 UVB Probe for measuring the IRRADIANCE**

Measuring range (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> a 1.999	19.99	199.9	1999
Resolution (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> / 0.001	0.01	0.1	1
Spectral range	280nm...315nm (Peak 305nm)			
Calibration uncertainty:	<5%			
Working temperature:	0...50°C			

**LP 471 UVC Probe for measuring the IRRADIANCE**

Measuring range (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> a 1.999	19.99	199.9	1999
Resolution (W/m <sup>2</sup> ):	0.1x10 <sup>-3</sup> / 0.001	0.01	0.1	1
Spectral range:	220nm...280nm (Peak 260nm)			
Calibration uncertainty:	<5%			
Working temperature:	0...50°C			



**VP472**  
 module to connect pyranometers or albedometers. The measurements produced during the time by a pyranometer or an albedometer can be taken, verified and stored. The signal produced by the thermopile can be read in mV or in W/m<sup>2</sup>, the net radiation of the albedometer is read in W/m<sup>2</sup>. The thermopile sensitivity can be set from 5000 to 30000nV/(Wm<sup>-2</sup>) that is between 5 and 30μV/(Wm<sup>-2</sup>)

**VP473**  
 module for reading the continuous voltage. When connected to the output of a transmitter with voltage signal it can read and take the relevant value. Measuring range: ±20Vdc. Input impedance: 1MΩ.