PRO S05

Handheld multifunction data loggers

1 or 2-connectors for SICRAM probes

- 1 or 2-connectors
- Wide range of interchangeable and automatically recognized SICRAM probes can be connected
- Fast and accurate
- Easy to use and read due to backlit **dot matrix/clear text** display
- Various measurement views available, including life chart
- Data logger with files read out via USB
- Statistical functions Min, Avg, Max
- Acoustic alarm with high/low thresholds and optional hysteresis
- List of favorite functions for quick access to the most used operations
- Built-in foldable stand and magnet for flexible operation
- Shock and impact proof
- NiMH batteries rechargeable via USB

DESCRIPTION

PRO S05 is a single or dual (PRO S05.2) channel high class professional multifunction handheld data logger with a rich set of features, high grade robustness and operating comfort for safe and reliable use.

Probes

The wide range of probes available allows measuring:

- Temperature
- Humidity: relative and absolute, Dew Point, wet bulb temperature, mixing ratio, partial vapor pressure
- Air speed, flow rate (configurable duct section)
- Pressure: relative, differential, absolute and barometric
- Illuminance, luminance, irradiance, UVA, UVB, UVC, UVBC, PAR, global solar radiation. Integral calculation with manual start/stop and setting of time/value limit.
- Indoor Air Quality (IAQ): CO_2 and VOC index
- Continuous current/voltage (e.g., a transmitter output) via a SICRAM interface module

The SICRAM probes are supplied factory adjusted with adjustment data stored internally, allowing for interchangeability without the need for readjustment when changing the probes.

The probe type is automatically recognized, and the instrument is automatically set without any user intervention.

PRO S05.2 model – M16 sensor connectors

Display

The multilingual large dot matrix/clear text LCD has ergonomic wide-angle visibility from daylight to darkness, thanks to the backlight. It displays either large scale values, statistical data or the chart of a variable measurement history.

The HOLD feature allows freezing the measurements on display, while the REL feature allows showing the measurement against the measured value.

Many units of measurement are available.

Data logging

Large storage capacity: up to 1 million data, file system based.

The logged data are store in CVS files that can be easily viewed connecting the instrument to a PC via USB: the instrument is seen by the PC as a mass storage device, the data can be read oud and evaluated without software necessarily needed.

Automatic log with configurable interval.

The instruments integrate a Real Time Clock: date and time of each logged sample are stored.

Application software

In addition to CSV files, the free user-friendly basic **ProXware** PC application software allows for examination of a large amount of logged data.

For a more in-depth data analysis, an optional advanced version of the **ProXware** software is available.

Alarm

Configurable alarm thresholds and optionally hysteresis can be set. LCD indication and buzzer activation when thresholds are exceeded.

Statistics

Detection of MIN, AVG (average) and MAX for each displayed variable. The user can clear the statistical info to start a new statistical calculation.

PC connectivity

Via the USB C port, for viewing or downloading the files stored in the instrument internal memory or connecting to the application software **ProXware**.

Power supply

Battery operated by 4 NiMH rechargeable batteries, the instrument can also be powered via its USB C port for permanent operation and for charging the batteries. Any standard 5 Vdc power adapter or a PC USB port can be used (ensuring at least 900 mA for fast charging of the batteries).

The low power design and the configurable auto-off feature ensure a long operating life when batteries are fully charged.

Configurable LCD backlight for more energy saving options.

Ergonomics

The construction allows for both one-handed use as well as bench-top use with the foldable back stand.

Side rubber protection offers a secure grip during the use in the field.

Calibration support

Calibration reports or DAkkS/ACCREDIA certificates are available upon request in combination with referring probes.

The last calibration date is stored.

TECHNICAL SPECIFICATIONS

General specifications

Channels	1 (PRO S05) or 2 (PRO S05.2) DIN45326 8-pole M16 connector for SICRAM probes
Storage capacity	Up to 1 million data sets, file system based Each data set includes date/time stamp and measurements (of all channels for multi-channel data loggers) Data are stored in CVS files
Logging type	Automatic with manual start/stop
Logging interval	1, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 20, 30 min / 1 hour
Measurement rate	2 meas/s
Clock	User settable RTC Max. drift 1 min/month @ 25 °C
Display	140 x 160 dot matrix backlit LCD / visible area 42 x 50 mm Multiple choice of measurement screens: • Large digit single value • Multi-row • Statistical info (Min/Avg/Max) • Chart view
User interface	Multilingual (de, en, it, fr, es)
PC connection	USB C Mass Storage Device
Power supply	4 x AA NiMH rechargeable batteries External 5 Vdc via USB C (power adapter or PC USB port)
Power consumption	10 mA typ. (excluding probes)
Battery autonomy	> 200 h typ. continuous operation (fully charged batteries and backlight off). **The effective autonomy depends on the number and type of connected sensors.**
Auto power off	Yes, user configurable Automatically disabled if external power is connected
Operating conditions	-5…50 °C / 0…85 %RH non-condensing
Storage temperature	-25…65 °C (without batteries)
Protection degree	IP 67 (except probe connection) IK 04
Dimensions	170 x 78 x 38 mm
Weight	390 g approx.
Housing material	ABS, TPE (side protection), Polyester (front panel)

Measurement specifications (SICRAM probes in line with the instrument)

Temperature Pt100/Pt1000 (TP... series temperature probes, not combined probes)	
Measuring range	-200...+850 °C
Resolution	0.01 °C (-200 °C ≤ t ≤ +350 °C) 0.1 °C (+350 °C < t ≤ +850 °C)
Accuracy	±0.1°C (@ 0 °C) ±0.2°C (-50 °C ≤ t ≤ 250 °C) ±0.3°C (t < -50 °C; t > 250 °C)

Temperature thermocouple (TP471D/DO/D1 interface modules)	
Measuring range	K: -200...+1370 °C J: -100...+750 °C T: -200...+400 °C N: -200...+1300 °C R: +200...+1480 °C S: +200...+1480 °C B: +200...+1800 °C E: -200...+750 °C
Resolution	0.05 °C (t < +200 °C) 0.1 °C (t ³ +200 °C)
Accuracy	K: ±0.1 °C (t ≤ 600 °C) / ±0.2 °C (t > 600 °C) J: ±0.05 °C (t ≤ 400 °C) / ±0.1 °C (t > 400 °C) T: ±0.1 °C N: ±0.1 °C (t ≤ 600 °C) / ±0.2 °C (t > 600 °C) R: ±0.25 °C S: ±0.3 °C B: ±0.35 °C E: ±0.1 °C (t ≤ 300 °C) / ±0.15 °C (t > 300 °C)
Cold junction accuracy	±0.2 °C
Long-term drift	±0.1 °C/year

Relative humidity (HP... series relative humidity and temperature combined probes)	
Sensor	Capacitive
Measuring range	0...100%
Resolution	0.1%
Accuracy	±1.5% (0...85%) / ±2.5% (85...100%) @ T=15...35 °C (2 + 1.5% measure)% @ T= remaining range
Response time	10 s (10 à 80 %RH; air speed=2 m/s @ constant temperature)
Temperature drift	±0.02 %RH/°C
Temperature accuracy of T/RH combined probes	±0.3 °C (HP47x probes) / ±0.25 °C (HP48x probes)
Calculated quantities	Absolute humidity, Dew Point, wet bulb temperature, mixing ratio, partial vapor pressure

Air speed (Hot-wire)		**AP471S1 / AP471S3**	**AP471S2 / AP471S4**	
Sensor		NTC thermistor	Omnidirectional NTC thermistor	
Measuring range	Air speed	0.02…40 m/s	0.02…5 m/s	
	Temperature	-25…+80 °C	-25…+80 °C	0…+80 °C
Resolution	Air speed	0.01 m/s (0.1 km/h, 1 ft/min, 0.1 mph, 0.1 knot)		
	Temperature	0.1 °C		
Accuracy	Air speed	±0.2 m/s (< 1 m/s) ±0.4 m/s (1…10 m/s) ±0.8 m/s (> 10 m/s)	±0.2 m/s (< 1 m/s) ±0.3 m/s (≥ 1 m/s)	
	Temperature	±0.8 °C (-10…+80 °C)		
Air temperature compensation		0…+80 °C		
Calculated quantities		Flow rate		

Air speed (vane)		**AP472S1**	**AP472S2**
Sensor		Vane Æ 100 mm	Vane Æ 60 mm
Measuring range	Air speed	0.6…25 m/s	0.5…20 m/s
	Temperature	-25…+80 °C	---
Resolution	Air speed	0.01 m/s (0.1 km/h, 1 ft/min, 0.1 mph, 0.1 knot)	
	Temperature	0.1 °C	---
Accuracy	Air speed	±(0.4 m/s + 1.5% f.s.)	
	Temperature	±0.8 °C	---
Calculated quantities		Flow rate	

Pressure (PP471 interface module for TP704 / TP705 series probes)	
Accuracy	±0.05% f.s. of connected TP704/TP705 probe
Peak duration	≥ 5 ms
Peak accuracy	±0.5% f.s. of connected TP704/TP705 probe
Peak dead band	≤ 2% f.s. of connected TP704/TP705 probe

TP704 / TP705 series pressure probes (PP471 module is required)

Full scale pressure	Over-pressure	Resolution	MODEL			Accuracy (20…25°C)	Operating temperature	Connection
			Differential pressure	Relative pressure	Absolute pressure			
			Non isolated membrane	Isolated membrane	Isolated membrane			
10 mbar	20 mbar	0.01 mbar	TP705-10MBD			0.50% FSO	0…60 °C	Tube Æ 5 mm
20 mbar	40 mbar	0.01 mbar	TP705-20MBD			0.50% FSO	0…60 °C	Tube Æ 5 mm
50 mbar	100 mbar	0.01 mbar	TP705-50MBD			0.50% FSO	0…60 °C	Tube Æ 5 mm
100 mbar	200 mbar	0.1 mbar	TP705-100MBD			0.25% FSO	0…60 °C	Tube Æ 5 mm
				TP704-100MBGI		0.25% FSO	-30…80 °C	¼ BSP
200 mbar	400 mbar	0.1 mbar	TP705-200MBD			0.25% FSO	0…60 °C	Tube Æ 5 mm
				TP704-200MBGI		0.25% FSO	-30…80 °C	¼ BSP
400 mbar	1000 mbar	0.1 mbar		TP704-400MBGI		0.25% FSO	-40…125 °C	¼ BSP
500 mbar	1000 mbar	0.1 mbar	TP705-500MBD			0.25% FSO	0…60 °C	Tube Æ 5 mm
600 mbar	1000 mbar	0.1 mbar		TP704-600MBGI		0.25% FSO	-40…125 °C	¼ BSP
1 bar	2 bar	1 mbar	TP705-1BD			0.25% FSO	0…60 °C	Tube Æ 5 mm
					TP705BARO	0.25% FSO	0…60 °C	Tube Æ 5 mm
				TP704-1BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-1BAI	0.25% FSO	-40…125 °C	¼ BSP
2 bar	4 bar	1 mbar	TP705-2BD			0.25% FSO	0…60 °C	Tube Æ 5 mm
				TP704-2BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-2BAI	0.25% FSO	-25…85 °C	¼ BSP
5 bar	10 bar	1 mbar		TP704-5BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-5BAI	0.25% FSO	-25…85 °C	¼ BSP
10 bar	20 bar	0.01 bar		TP704-10BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-10BAI	0.25% FSO	-25…85 °C	¼ BSP
20 bar	40 bar	0.01 bar		TP704-20BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-20BAI	0.25% FSO	-25…85 °C	¼ BSP
50 bar	100 bar	0.01 bar		TP704-50BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-50BAI	0.25% FSO	-25…85 °C	¼ BSP
100 bar	200 bar	0.1 bar		TP704-100BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-100BAI	0.25% FSO	-25…85 °C	¼ BSP
200 bar	400 bar	0.1 bar		TP704-200BGI		0.25% FSO	-40…125 °C	¼ BSP
					TP704-200BAI	0.25% FSO	-25…85 °C	¼ BSP

500 bar	1000 bar	0.1 bar		**TP704-500BGI**		0.25% FSO	-40…125 °C	¼ BSP
	700 bar	0.1 bar			**TP704-500BAI**	0.25% FSO	-25…85 °C	¼ BSP

Barometric Pressure (PP472 module)	
Measuring range	600…1100 hPa
Resolution	0.1 hPa
Accuracy	±0.3 hPa @ 20 °C
Operating temperature	-10…+60 °C
Long-term drift	< ±1 hPa/year

Pressure (PP473S0 probe with **auto-zero**)	
Measuring range	± 250 Pa
Resolution	0.1 Pa
Accuracy	± (0.2 Pa + 1.5% of the measure) @ 25 °C ± (0.2 Pa + 3% of the measure) @ 0…50 °C
Operating temperature	-10…+60 °C
Overpressure	50 kPa
Response time	0.125 s
Long-term drift	± 0.5% f.s. nominal (1000 h @ 25 °C)

Pressure (PP473S1…S8 probes)	
Measuring range	S1: ±10 hPa S2: ±20 hPa S3: ±50 hPa S4: ±100 hPa S5: ±200 hPa S6: ±500 hPa S7: ±1000 hPa (1 bar) S8: ±2000 hPa (2 bar)
Accuracy	± 0.5% f.s. (S1, S2, S3) ± 0.25% f.s. (S4) ± 0.15% f.s. (S5, S6, S7, S8)
Operating temperature	-10…+60 °C
Overpressure	20 kPa (S1, S2, S3) 30 kPa (S4) 100 kPa (S5, S6) 300 kPa (S7) 600 kPa (S8)

Illuminance (LP471PHOT / LP471P-A probes)				
Measuring range (lux)	0.10…199.99	…1999.9	…19999	…199.99x10^3
Resolution(lux)	0.01	0.1	1	0.01 x 10^3
Spectral range	in accordance with standard photopic curve V(l)			
α (temperature coefficient) f_6(T)	<0.05% K			
Calibration uncertainty	<4%			
f'_1 (accordance with photopic response V(l))	<6%			
f_2 (response as law of cosines)	<3%			
f_3 (linearity)	<1%			
f_4 (error in instrument reading)	<0.5%			
f_5 (fatigue)	<0.5%			
Class	B			
1 year drift	<1%			
Operating temperature	0…50 °C			
Reference standard	CIE n°69 – UNI 11142			

Luminance (LP471LUM2 probe)				
Measuring range (cd/m^2)	1…1999.9	…19999	…199.99x10^3	…1999.9x10^3
Resolution(cd/m^2)	0.1	1	0.01 x 10^3	0.1 x 10^3
Angle of view	2°			
Spectral range	in accordance with standard photopic curve V(l)			
α (temperature coefficient) f_6(T)	<0.05% K			
Calibration uncertainty	<5%			
f'_1 (accordance with photopic response V(l)	<8%			
f_3 (linearity)	<1%			
f_4 (error in instrument reading)	<0.5%			
f_5 (fatigue)	<0.5%			
Class	C			
1 year drift	<1%			
Operating temperature	0…50 °C			
Reference standard	CIE n°69 – UNI 11142			

PAR (LP471PAR / LP471PAR02 probes)			
Measuring range (mmol/m^2s)	0.1… 199.99	200.0…1999.9	2000…10000
Resolution(mmol/m^2s)	0.01	0.1	1
Spectral range	400 nm…700 nm		
Calibration uncertainty	<5%		
f_2 (response as law of cosines)	<6%		
f_3 (linearity)	<1%		
f_4 (error in instrument reading)	±1digit		

f_5 (fatigue)	<0.5%
1 year drift	<1%
Operating temperature	0…50 °C

Irradiance (LP471RAD probe)				
Measuring range (W/m²)	$1x10^{-3}$… $999.9x10^{-3}$	1.000…19.999	20.00…199.99	200.0…1999.9
Resolution(W/m²)	$0.1x10^{-3}$	0.001	0.01	0.1
Spectral range	400 nm…1050 nm			
Calibration uncertainty	<5%			
f_2 (response as law of cosines)	<6%			
f_3 (linearity)	<1%			
f_4 (error in instrument reading)	±1digit			
f_5 (fatigue)	<0.5%			
1 year drift	<1%			
Operating temperature	0…50 °C			

UVA irradiance (LP471UVA / LP471P-A probes)				
Measuring range (W/m²)	$1x10^{-3}$… $999.9x10^{-3}$	1.000…19.999	20.00…199.99	200.0…1999.9
Resolution(W/m²)	$0.1x10^{-3}$	0.001	0.01	0.1
Spectral range	315 nm…400 nm (Peak 365 nm)			
Calibration uncertainty	<5%			
f_3 (linearity)	<1%			
f_4 (error in instrument reading)	±1digit			
f_5 (fatigue)	<0.5%			
1 year drift	<2%			
Operating temperature	0…50 °C			

UVB irradiance (LP471UVB probe)				
Measuring range (W/m²)	$1x10^{-3}$… $999.9x10^{-3}$	1.000…19.999	20.00…199.99	200.0…1999.9
Resolution(W/m²)	$0.1x10^{-3}$	0.001	0.01	0.1
Spectral range	280 nm…315 nm (Peak 305 nm)			
Calibration uncertainty	<5%			
f_3 (linearity)	<2%			
f_4 (error in instrument reading)	±1digit			
f_5 (fatigue)	<0.5%			
1 year drift	<2%			
Operating temperature	0…50 °C			

UVC irradiance (LP471UVC probe)

Measuring range (W/m²)	$1x10^{-3}$... $999.9x10^{-3}$	1.000...19.999	20.00...199.99	200.0...1999.9
Resolution(W/m²)	$0.1x10^{-3}$	0.001	0.01	0.1
Spectral range	220 nm...280 nm (Peak 260 nm)			
Calibration uncertainty	<5%			
f_3 (linearity)	<1%			
f_4 (error in instrument reading)	±1digit			
f_5 (fatigue)	<0.5%			
1 year drift	<2%			
Operating temperature	0...50 °C			

UVBC irradiance (LP471UVBC probe)				
Measuring range (W/m²)	$1x10^{-3}$... $999.9x10^{-3}$	1.000...19.999	20.00...199.99	200.0...1999.9
Resolution(W/m²)	$0.1x10^{-3}$	0.001	0.01	0.1
Spectral range	210 nm...355 nm (Peak 265 nm)			
Calibration uncertainty	<7% (calibration @ 254 nm)			
f_3 (linearity)	<2%			
f_4 (error in instrument reading)	±1digit			
f_5 (fatigue)	<0.5%			
1 year drift	<2%			
Operating temperature	0...50 °C			

Irradiance in the Blue light spectral range (LP471BLUE probe)				
Measuring range (W/m²)	$1x10^{-3}$... $999.9x10^{-3}$	1.000...19.999	20.00...199.99	200.0...1999.9
Resolution(W/m²)	$0.1x10^{-3}$	0.001	0.01	0.1
Spectral range	<10%			
Calibration uncertainty	<6%			
f_2 (response as law of cosines)	<3%			
f_3 (linearity)	±1digit			
f_4 (error in instrument reading)	<0.5%			
f_5 (fatigue)	<2%			
1 year drift	0...50 °C			
Operating temperature	<10%			

Weighted effective total irradiance according to UV action curve (LP471A-UVeff probe)	
Effective total irradiance	
Measuring range (W/m²)	0.010...19.999
Resolution(W/m²)	0.001
Spectral range	UV action curve for the measurement of erythema (250 nm...400 nm)

Calibration uncertainty	<15%
f_3 (linearity)	<3%
f_4 (error in instrument reading)	±1digit
f_5 (fatigue)	<0.5%
1 year drift	<2%
Operating temperature	0…50 °C
Reference standard	CEI EN 60335-2-27
UV irradiance	
Measuring range (W/m^2)	0.1… 1999.9
Resolution(W/m^2)	0.1
Spectral range	315 nm…400 nm
UV-BC irradiance	
Measuring range (W/m^2)	0.010… 19.999
Resolution(W/m^2)	0.001
Spectral range	250 nm…315 nm

Global solar irradiance (LP471SILICON-PYRA pyranometer)				
Measuring range (W/m^2)	0…999.9x10^{-3}	1.000…19.999	20.00…199.99	200.0…1999.9
Resolution(W/m^2)	0.1x10^{-3}	0.001	0.01	0.1
Spectral range	400 nm…1100 nm			
Calibration uncertainty	<3%			
f_2 (response as law of cosines)	<3%			
f_3 (linearity)	<1%			
f_4 (error in instrument reading)	±1digit			
f_5 (fatigue)	<0.5%			
1 year drift	<2%			
Operating temperature	0…50 °C			

Global solar irradiance (LP471PYRA… pyranometers)	**LP471PYRA02**	**LP471PYRA03**	**LP471PYRA10**
Measuring range (W/m^2)	0…2000		
Resolution(W/m^2)	1		
Field of view	2p sr		
Spectral range	283…2800 nm	300…2800 nm	283…2800 nm
Operating temperature	-40…+80 °C		
Technical features according to ISO 9060			
Class	B Spectrally Flat	C Spectrally Flat	A Spectrally Flat
Response time (95%)	<10 s	<20 s	<5 s
Zero Offset a) Response at 200 W/m^2	<|±10| W/m^2	<|±15| W/m^2	<|±7| W/m^2

b) Response to 5 K/h ambient temperature variation	<|±4| W/m²	<|±4| W/m²	<|±2| W/m²
c) Total zero offset including the effects a), b) and other sources	<|±15| W/m²	<|±20| W/m²	<|±10| W/m²
Long-term instability (1 year)	<|±1|%	<|±1|%	<|±0.5|%
Nonlinearity	<|±1|%	<|±1.5|%	<|±0.2|%
Response according to cosine law	<|±18| W/m²	<|±20| W/m²	<|±10| W/m²
Spectral error	<|±0.5|%	<|±2|%	<|±0.2|%
Temperature response	<1.5%	<3%	<1%
Tilt response	<|±2|%	<|±2|%	<|±0.2|%

For the spectral response curves of the LP471... probes, see the probes datasheet available on the Delta OHM website.

Photo-radiometric module (VP472)	
Measuring range	±25 mV
Resolution	1 W/m², 1 µV
Accuracy	±1 W/m² , ±3 µV
Sensitivity	Configurable from 5 to 30 µV/Wm^{-2}

QP47... series IAQ probes (temperature, relative humidity, barometric pressure, CO2, VOC index)		
Sensor	Temperature/RH	CMOS
	Pressure	Piezoresistive
	CO_2	Non-Dispersive Infrared (NDIR)
	VOC	Metal-Oxide film
Measuring range	Temperature	-40...+125 °C
	RH	0...100% (*)
	Pressure	300...1250 hPa
	CO_2	0...5000 ppm
	VOC	1...500 (dimensionless index)
Resolution	Temperature	0.1 °C
	RH	0.1%
	Pressure	0.1 hPa
	CO_2	1 ppm
	VOC	1
Accuracy (typ.)	Temperature	± 0.1 °C (20...60 °C) / ± 0.2 °C (remaining range)
	RH	±2% (0...80%RH) / ±3% (80...100%RH) @ T=10...50 °C
	Pressure	± 0.5 hPa (300...1100 hPa / -20...65 °C)
	CO_2	± (50 ppm + 3% of the measure) @ 25 °C / 1013 hPa
	VOC	Relative qualitative measurement

Temperature drift	Pressure	± 0.75 Pa/°C (0…55 °C / 700…1100 hPa)
	CO_2	1 ppm/°C (-20…45 °C)
Long-term drift	Temperature	< 0.03 °C/year
	RH	< 0.25 %RH/year
	Pressure	± 0.33 hPa/year
	CO_2	5% of the measure/5 years
Response time	Temperature/RH	10 s (T_{63} with 1 m/s air flow)
	CO_2	< 120 s (T_{90} with 2 m/s air flow)

(*) The sensor shows best performance when operated in 20…80 %RH humidity range. Long term exposure outside the indicated range (especially at high humidity) may temporarily offset the sensor response.

ORDERING CODES

PRO S05 1-channel handheld data logger for SICRAM probes. Supplied with 4 NiMH rechargeable batteries, USB cable and software downloadable from Senseca website.

Art.No. 486656

PRO S05.2 2-channel handheld data logger for SICRAM probes. Supplied with 4 NiMH rechargeable batteries, USB cable and software downloadable from Senseca website.

Art.No. 486657

Probes and modules must be ordered separately.

ATTACHABLE PROBES

4-wire Pt100 SICRAM temperature probes

TP472I Immersion probe, Pt100 sensor. Operating temperature -196…+500 °C. Stem Ø3 mm, length 300 mm. Cable length 2 m.

TP472I.O Immersion probe, Pt100 sensor. Operating temperature -50…+300 °C. Stem Ø3 mm, length 230 mm. Cable length 2 m.

TP473P.I Penetration probe, Pt100 sensor. Operating temperature -50…+400 °C. Stem Ø4 mm, length 150 mm. Cable length 2 m.

TP473P.O Penetration probe, Pt100 sensor. Operating temperature -50…+300 °C. Stem Ø4 mm, length 150 mm. Cable length 2 m.

TP474C.O Contact probe, Pt100 sensor. Operating temperature -50…+300 °C. Stem Ø4 mm, length 230 mm, contact surface Ø 5 mm. Cable length 2 m.

TP475A.O Air probe, Pt100 sensor. Operating temperature -50…+250 °C. Stem Ø4 mm, length 230 mm. Cable length 2 m.

TP472I.5 Penetration probe, Pt100 sensor. Operating temperature -50…+400 °C. Stem Ø6 mm, length 500 mm. Cable length 2 m.

TP472I.10 Penetration probe, Pt100 sensor. Operating temperature -50…+400 °C. Stem Ø6 mm, length 1000 mm. Cable length 2 m.

TP49A.I Immersion probe, Pt100 sensor. Operating temperature -70…+250 °C. Stem Ø2.7 mm, length 150 mm. Cable length 1.5 m. Aluminum handle.

TP49AC.I Contact probe, Pt100 sensor. Operating temperature -70…+250 °C. Stem Ø4 mm, length 150 mm. Cable length 1.5 m. Aluminum handle.

TP49AP.I Penetration probe, Pt100 sensor. Operating temperature -70…+250 °C. Stem Ø2,7 mm, length 150 mm. Cable length 1.5 m. Aluminum handle.

TP87.O Immersion probe, Pt100 sensor. Operating temperature -50…+200 °C. Stem Ø3 mm, length 70 mm. Cable length 2 m.

Direct (non SICRAM) Pt100/Pt1000 temperature probes

TP47.100.O Class A 4-wire Pt100 immersion probe. Operating temperature -50…+250 °C. Probe stem Ø3 mm, length 230 mm. Cable length 2 m. TP47 connector.

TP47.1000.O Class A 4-wire Pt1000 immersion probe. Operating temperature -50…+250 °C. Probe stem Ø3 mm, length 230 mm. Cable length 2 m. TP47 connector.

TP87.100.O Class A 4-wire Pt100 immersion probe. Operating temperature -50…+200 °C. Probe stem Ø3 mm, length 70 mm. Cable length 2 m. TP47 connector.

TP87.1000.O Class A 4-wire Pt1000 immersion probe. Operating temperature -50…+200 °C. Probe stem Ø3 mm, length 70 mm. Cable length 2 m. TP47 connector.

Modules for direct Pt100/Pt1000 temperature probes

TP47 Connector (non SICRAM) for direct 4-wire Pt100 or 2/4-wire Pt1000 temperature probes.

TP471 SICRAM module for direct 4-wire Pt100 temperature probes.

Thermocouple temperature probes and modules

For the available thermocouple temperature probes, please visit **www.deltaohm.com**.

TP471D0 1-input SICRAM module for K-J-E-T-N-R-S-B thermocouple probes. **Without cold junction compensation**.

TP471D 1-input SICRAM module for K-J-E-T-N-R-S-B thermocouple probes. **With internal sensor for cold junction compensation**.

TP471D1 2-input SICRAM module for K-J-E-T-N-R-S-B thermocouple probes. **With internal sensor for cold junction compensation**.

Relative humidity and temperature combined SICRAM probes

HP472ACR Relative humidity and temperature (Pt100) combined probe. Operating temperature -20…+80 °C. Dimensions Ø26x170 mm. Cable length 2 m.

HP473ACR Relative humidity and temperature (Pt100) combined probe. Operating temperature -20…+80 °C. Dimensions: handle Ø26x130 mm, stem Ø14x120 mm. Cable length 2 m.

HP474ACR Relative humidity and temperature (Pt100) combined probe. Operating temperature -40…+150 °C. Dimensions: handle Ø26x130 mm, stem Ø14x215 mm. Cable length 2 m.

HP475ACR Relative humidity and temperature (Pt100) combined probe. Stainless steel stem. Operating temperature -40…+150 °C. Dimensions: handle Ø26x110 mm, stem Ø12x560 mm, tip Ø13,5x75 mm. Cable length 2 m.

HP475AC1R Relative humidity and temperature (Pt100) combined probe. Stainless steel stem. Operating temperature -40…+180 °C. Dimensions: handle 80 mm, stem Ø14x480 mm. Cable length 2 m.

HP477DCR Relative humidity and temperature (Pt100) combined probe. Operating temperature -40…+100 °C. Dimensions: handle Ø26x110 mm, stem length 520 mm, tip 18x4 mm,. Cable length 2 m.

HP478ACR Relative humidity and temperature (Pt100) combined probe. Stainless steel stem. Operating temperature -40…+150 °C. Dimensions Ø14x130 mm. Cable length 5 m.

HP480 Relative humidity and temperature (Pt100) combined probe for compressed air systems. 15 µm AISI 316 sintered stainless steel filter. Operating temperature -40…+60 °C. Supplied with measurement chamber, airflow control valve and 3 quick connect couplings 1/4" (Italian, German and American standard). Cable length 2 m.

HP481 Relative humidity and temperature (Pt100) combined probe for in-line installation. 15 µm AISI 316 sintered stainless steel filter. Operating temperature -40…+60 °C. Cable length 2 m.

Hot-wire air speed and temperature combined SICRAM probes

AP471S1 Extensible hot-wire air speed and temperature (NTC) probe. Cable length 2 m.

AP471S2 Omnidirectional extensible hot-wire air speed and temperature (NTC) probe. Cable length 2 m.

AP471S3 Extensible hot-wire air speed and temperature (NTC) probe with shapeable end. Cable length 2 m.

AP471S4 Omnidirectional extensible hot-wire air speed and temperature (NTC) probe with base. Cable length 2 m.

Vane air speed SICRAM probes

AP472S1 Vane air speed and temperature (Tc K) probe, Ø100 mm. Cable length 2 m.

AP472S2 Vane air speed probe, Ø60 mm. Cable length 2 m.

AST.1 Extension rod (210 mm completely closed, 870 mm completely open) for AP472S1 and AP472S2 vane probes.

AP471S1.23.6 Fixed extension element Ø16 x 300 mm, M10 male thread on one side, female on the other side. For AP472S1 and AP472S2 vane probes.

AP471S1.23.7 Fixed extension element Ø16 x 300 mm, M10 female thread on one side only. For AP472S1 and AP472S2 vane probes.

Pressure probes and modules

PP471 SICRAM module for the connection of TP704 / TP705 series pressure probes. Cable length 1.5 m. 8-pole DIN 45326 female connector. Detection of instant and peak values.

See TP704 / TP705 specification table for pressure probes models.

PP472 Barometric pressure SICRAM probe. Measuring range 600...1100 mbar.

PP473S0 Relative or differential pressure SICRAM probe. Measuring range ±250 Pa. With **auto-zero** circuit. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S1 Differential pressure SICRAM probe. Measuring range ±10 hPa. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S2 Differential pressure SICRAM probe. Measuring range ±20 hPa. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S3 Differential pressure SICRAM probe. Measuring range ±50 hPa. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S4 Differential pressure SICRAM probe. Measuring range ±100 hPa. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S5 Differential pressure SICRAM probe. Measuring range ±200 hPa. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S6 Differential pressure SICRAM probe. Measuring range ±500 hPa. For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S7 Differential pressure SICRAM probe. Measuring range ±1000 hPa (1 bar). For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

PP473S8 Differential pressure SICRAM probe. Measuring range ±2000 hPa (2 bar). For non-corrosive dry gas or air. Inputs for Ø 5 mm Tube.

Photo-radiometric SICRAM probes and modules

LP471PHOT SICRAM photometric probe for the measurement of **illuminance**, spectral response according to standard photopic vision, diffuser for cosine correction. Measuring range: 0.1…200x10^3 lux. Cable length 1.5 m.

LP471RAD SICRAM radiometric probe for the measurement of **irradiance** in the spectral range 400…1050 nm, diffuser for cosine correction. Measuring range: 1x10^{-3}…2000 W/m^2. Cable length 1.5 m.

LP471PAR SICRAM quantum-radiometric probe for the measurement of photon flux in the PAR chlorophyll field (photosynthetically Active Radiation 400…700 nm), mmol/m^{2}s measurement, diffuser for cosine correction. Measuring range 0.1…10x10^3 mmol/m^{2}s. Cable length 1.5 m.

LP471PAR02 SICRAM quantum-radiometric probe for the measurement of photon flux in the PAR chlorophyll field (photosynthetically Active Radiation 400…700 nm), mmol/m^{2}s measurement, **quartz** diffuser for cosine correction. Measuring range 0.1…10x10^3 mmol/m^{2}s. Cable length 1.5 m.

LP471UVA SICRAM radiometric probe for the measurement of **irradiance** in the 315…400 nm **UVA** spectral range, peak at 365 nm, quartz diffuser for cosine correction. Measuring range: 1x10^{-3}…2000 W/m^2. Cable length 1.5 m.

LP471UVB SICRAM radiometric probe for the measurement of **irradiance** in the 280…315 nm **UVB** spectral range, peak at 305 nm, quartz diffuser for cosine correction. Measuring range: 1x10^{-3}…2000 W/m^2. Cable length 1.5 m.

LP471UVC SICRAM radiometric probe for the measurement of **irradiance** in the 220…280 nm **UVC** spectral range, peak at 260 nm, quartz diffuser for cosine correction. Measuring range: 1x10^{-3}…2000 W/m^2. Cable length 1.5 m.

LP471UVBC SICRAM radiometric probe for the measurement of **irradiance** in the 210…355 nm **UVBC** spectral range, peak at 265 nm, quartz diffuser for cosine correction. Measuring range: 1x10^{-3}…2000 W/m^2. Cable length 1.5 m.

LP471LUM2 SICRAM Photometric probe for the measurement of **luminance**, spectral response according to standard photopic vision, angle of view 2°. Measuring range: 1…2000x10^3 cd/m^2. Cable length 1.5 m.

LP471BLUE SICRAM radiometric probe for the measurement of **effective irradiance** in the **Blue** light spectral band. Spectral range 380…550 nm, diffuser for cosine correction. Measuring range: 1x10^{-3}…2000 W/m^2. Cable length 1.5 m.

LP471P-A SICRAM combined probe for the measurement of **illuminance** (lux), with standard photopic spectral response, and measurement of **irradiance** (µW/cm^2) in the UVA spectral range (315…400 nm, with peak at 365 nm). Diffuser for cosine correction. Illuminance measuring range: 0.1…200x10^3 lux. Irradiance measuring range: 1x10^{-3}…2000 W/m^2. The probe provides the ratio between UV irradiance and illuminance in µW/lumen. Cable length 1.5 m.

LP471A-UVeff SICRAM combined probe for the measurement of **effective total irradiance** according to UV

action curve (250…400 nm). Diffuser for cosine correction. The probe provides the effective total irradiance (E_{eff}), the effective irradiance in the UV-CB band and UV irradiance. Effective total irradiance measuring range: 0.01…20 W/m^2. Effective irradiance measuring range B_C: 0.01…20 W/m^2. UV irradiance measuring range: 0.1…2000 W/m^2. Cable length 1.5 m.

LP471Silicon-Pyra	SICRAM pyranometer with Silicon photodiode for the measurement of the **global solar irradiance**, diffuser for cosine correction. Spectral range: 400…1100 nm. Measuring range: 0…2000 W/m^2. Cable length 5 m.
LP471PYRA02.5	SICRAM Spectrally Flat class B pyranometer. Cable length 5 m.
LP471PYRA03.5	SICRAM Spectrally Flat class C pyranometer. Cable length 5 m.
LP471PYRA10.5	SICRAM Spectrally Flat class A pyranometer. Cable length 5 m.
VP472	SICRAM module for the connection of pyranometers or albedometers. Input range ±25 mV.

Accessories for photo-radiometric probes

LPBL	Base with bubble level for photometric and radiometric probes (except LP471LUM2 and LP471PYRA...).
LPBL3	Adjustable wall mount support for photometric and radiometric probes (except LP471LUM2 and LP471PYRA...).

Air quality SICRAM probes

QP47-17B4	SICRAM CO_2, temperature, relative humidity and atmospheric pressure probe. Operating conditions -20…60 °C / 0…95 %RH non-condensing. Dimensions 167 x 30 x 19 mm. Direct connection without cable.
QP47-17BV4	SICRAM CO_2, VOC index, temperature, relative humidity and atmospheric pressure probe. Operating conditions -20…60 °C / 0…95 %RH non-condensing. Dimensions 167 x 30 x 19 mm. Direct connection without cable.

Modules for the measurement of continuous voltage and current

VP473	SICRAM module for the measurement of continuous voltage (e.g., a transmitter output). Measuring range ±20 Vdc. Input impedance 1 MΩ.
IP472	SICRAM module for the measurement of continuous current (e.g., a transmitter output). Measuring range 0…24 mA. Input impedance 25 Ω.