



## Mod. **PL1000**

Class A Tipping Bucket Rain gauge

Collecting area 1000cm<sup>2</sup>

Highlighted specs

- High precision Rain Gauge Sensor with certification class A according to UNI 11452:2012& UNI 17277:2020 (option)
- Measure with stainless steel tipping bucket
- 400cm² Collecting mouth
- Compact and light design in aluminium
- WMO standards compliant
- According to CENE norms

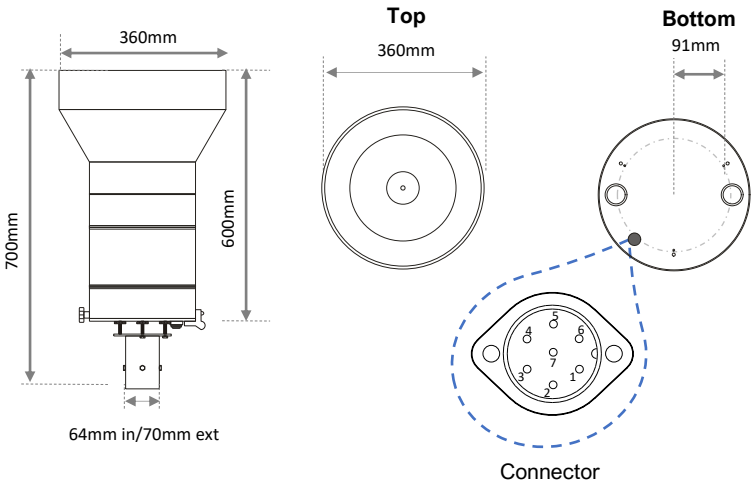
The class A PL1000 Rain Gauge sensor consists of a **cylindrical body with collection surface of 1000cm²** in **anodized aluminium** on which it's mounted a funnel shape orifice with a filter, that directs the rain towards a stainless-steel tipping bucket, realized with a knife blade shaped support system. A specific device (**reed**) feels the commutations of the tipping bucket filtering every electrical and mechanical noise. The shape of mechanical parts has been developed to **reduce interferences for the water and permitting it to fall into the tilt bucket system**. Available heated for cold climatic condition (mod. PL1000R) and with MCS module for signal normalization (**0÷2Vdc, 4÷ 20mA, RS485/Modbus**).

Orifice area	1000cm²
Operating range	Unlimited. Auto-reset 0-100mm version A, B, C (other ranges available on request)
Max counting rate	0 ÷ 600 mm/h
Conversion constant	0.2 mm/imp. (0.1mm on request)
Sensibility	0.2 mm (0.1mm on request)
Average accuracy	±2% @30mm/h (±0.10mm/min) (±1% on request) <b>certified</b> UNI 11452:2012 & UNI 17277:2020
Transducer	Tipping bucket (rugged magnetic switch) - switching time <10ms
Working temperature	0 ÷ 80°C (-40÷80°C heated version PL1000R)
Standard signal output	Dry reed contacts pulses (R<250Ω) Option: 0÷2Vdc, 4÷20mA (0-100mm full scale) o RS485 ModBus
Heather power supply	Max 60W@12Vdc (mod. PL1000R)
Protections	Polarity reverse and transient, debounce circuit
Output resistance	100mΩ / 1MΩ
Made of	Aluminium alloy, stainless steel bucket, level spirit on the base
Working conditions	0 ÷ +80°C (-40 ÷ +80°C heated version)
Power supply & Consumption	10÷30Vdc (typ 4 ÷20mA for models A-B-C)
Weight	3.5 Kg with bracket

Size and connections

Pin	PL1000-N PL1000R-N	PL1000-A PL1000R-A	PL1000-B PL1000R-B	PL1000-C PL1000R-C
1				
2		+ Out	+ Out	Rs485 A
3	+ Out (reed)	- Out	- Out	Rs485 B
4	- Out (reed)	Gnd	Gnd	Gnd
5		Vdc(10÷28V)	Vdc(10÷28V)	Vdc(10÷28V)
6 *	12Vac/dc Heater	12Vac/dc Heater	12Vac/dc Heater	12Vac/dc Heater
7 *	12Vac/dc Heater	12Vac/dc Heater	12Vac/dc Heater	12Vac/dc Heater

\* Only heated version



Order Code

Sensor	Class A Rain Gauge Sensor Class A Heated Rain Gauge Sensor Class A certificate	PL1000 PL1000R CERT-PL			
Output	0÷2Vdc 4÷20mA RS485 / Modbus Reed contact		A B C N		
Accessories	CS05 – Cable 5m sensor-datalogger CS10 – Cable 10m sensor-datalogger CSxx – Cable xx* m length, sensor-datalogger – to be specified at order SPL1 – Anticorrodal support in Anodized aluminum, heigh = 1000mm (Orifice mouth heigh ~ 1500mm) SPL2 – Base for Nesa rain gauge, for fixing the instrument on the floor or directly on a flat surface (h 10cm) SPL4 – Wall support or pole arm for Nesa rain gauge. Distance from the wall about 30 cm			05 10 xx	SPL1 SPL2 SPL4
example of order code					
		PL1000R	C	10	SPL1

## Instrument Characterization

### References

The A class compliance of the Nesa Rain Gauges, PLxxx series, according to the **UNI 11452:2012 & UNI 17277:2020**, requires the determination of the response curve of the instrument to different streams of rain in order to calculate the **algorithm of characterization** which can be introduced into a data acquisition system Nesa datalogger, for rain gauges with pulse output, or added directly into on-board electronics of rain gauges models with output A, B or C (current, voltage or digital).

### Operations

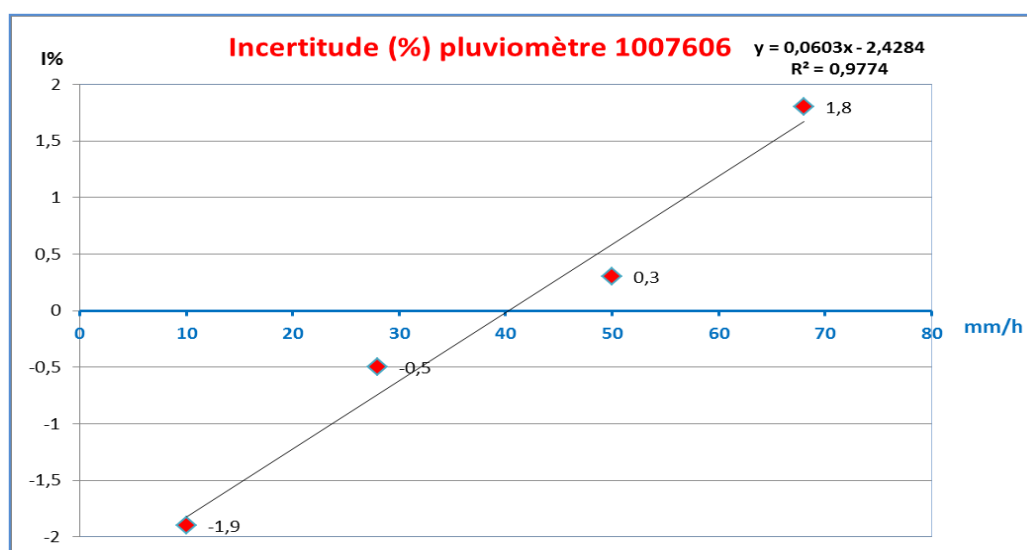
The carried-out test, specifically, consists in precipitating into the rain gauge mouth a known amount of water, to create a number of switching of the tipping bucket, at different streams (4-5 points), by measuring with a certified system, the amount of outgoing water.

### Characterization

Here is reported the characterization curve for a standard Nesa's rain gauge for some different flows, calibrated with a constant of 0.2 mm water equivalent, in which are poured 200g of water at different flows. The error obtained and the deviation from the ideal behaviour, allows to obtain the real correction algorithm. For each rain gauge, the determination of its specific curve can be requested as option.

*Only as example*

Theorical amount of precipitated H <sub>2</sub> O	Detected amount at the end of measurement	Produced intensity	Uncertainty %
200g	196,2g	10 mm/h	-1,9%
200g	199,1g	28 mm/h	-0,5%
200g	200,7g	50 mm/h	0,3%
200g	207,6g	68 mm/h	1,8%



$$E\% = 0,0603[\text{mm/h}] - 2,4284 \quad R^2 = 0,9774$$