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Mod. PL400

Class A Tipping Bucket Rain gauge

Collecting area 400cm²

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Highlighted specs

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

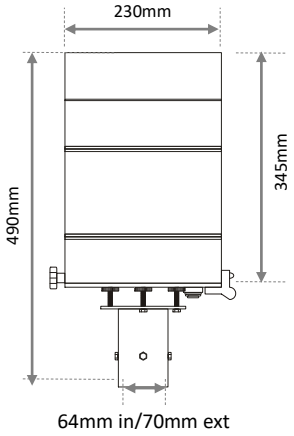
The class A PL400 Rain Gauge sensor, is constituted by a **cylindrical body with collection surface of 400cm²** in **anodized aluminium**. Inside this body comes mounted a funnel shape orifice with specific filter, that directs the rain towards a stainless-steel tipping bucket, realized with a knife blade 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 with heater for cold climatic condition (mod. PL400R) and with MCS module for signal normalization (**0÷2Vdc, 4÷ 20mA, RS485/Modbus**).

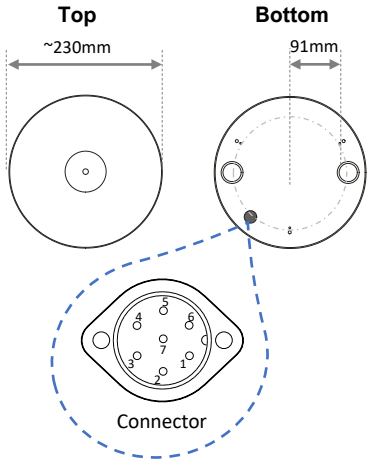
Orifice area	400cm²
Operating range	Unlimited reed contact (N model). A, B, C models with auto-reset 0-100mm (other ranges on request -S)
Max counting rate	0 ÷ 600 mm/h
Conversion constant	0.2 mm/im
Sensibility	0.2 mm
Average accuracy	±2% @30mm/h; (±1% on request) certified UNI 11452:2012 & UNI 11452:2012 & UNI 17277:2020
Transducer	tipping bucket (rugged magnetic switch) - switching time <10ms
Working temperature	0 ÷ 80°C (-40÷80°C PL400R)
Signal output	dry reed contact pulses (R<250Ω); Option: 0÷2Vdc, 4÷20mA (0-100mm full scale) or RS485 ModBus
Heater power supply	Max 60W@12Vdc (mod. PL400R)
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 with heater)
Power supply & Consumption	10÷30Vdc (typ 4 ÷20mA for models A-B-C)
Weight	3.3 Kg with bracket

Size and connections

Pin	PL400-N PL400R-N	PL400-A PL400R-A	PL400-B PL400R-B	PL400-C PL400R-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	**PL400**		
	Class A Heated Rain Gauge Sensor	**PL400R**		
	Class A certificate	CERT-PL		
Output	0÷2Vdc		A	
	4÷20mA		B	
	RS485 / Modbus		C	
	Reed contact		N	
Accessories	CS05 – Cable 5m sensor-datalogger			05
	CS10 – Cable 10m sensor-datalogger			10
	CSxx – Cable xx* m length, sensor-datalogger – to be specified at order			xx
	SPL1 – Anticorrodal support in Anodized aluminum, heigh = 1000mm (Orifice mouth heigh ~ 1500mm)			SPL1
	SPL2 – Base for Nesa rain gauge, for fixing the instrument on the floor or directly on a flat surface (h 10cm)			SPL2
	SPL4 – Wall support or pole arm for Nesa rain gauge. Distance from the wall about 30 cm			SPL4
	example of order code	**PL400R**	**C**	**10** **SPL1**

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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

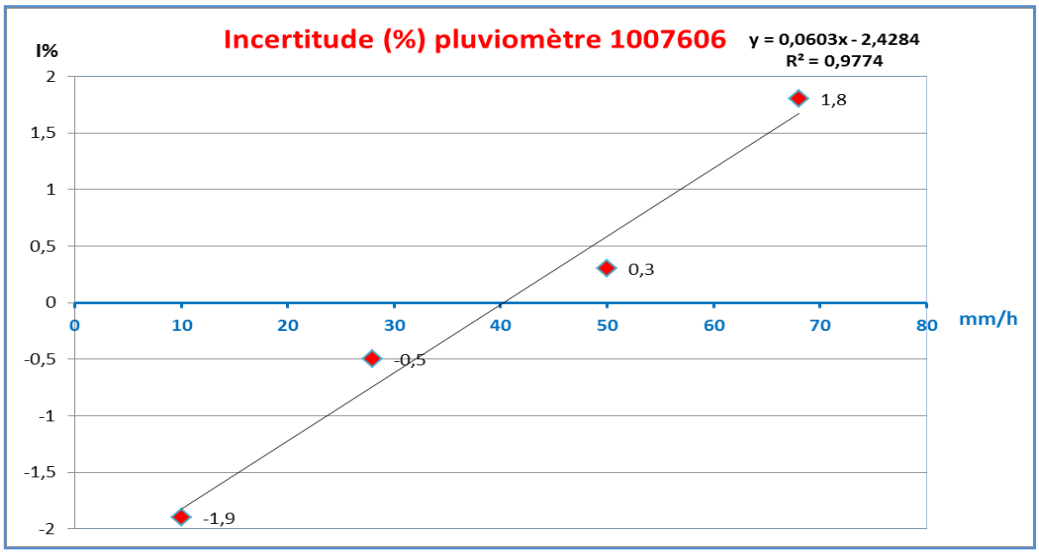
The carried-out test, specifically, consists in precipitating into the rain gauge mouth a known amount of water, to create a number of switching of the tipping bucket, at different streams (4-5 points), by measuring with a certified system, the amount of outgoing water.

Characterization

Here is reported the characterization curve for a standard Nesa's rain gauge for 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_2O	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	203,6g	68 mm/h	1,8%



E%= 0,0603[mm/h]-2,4284 R^2=0,9774

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