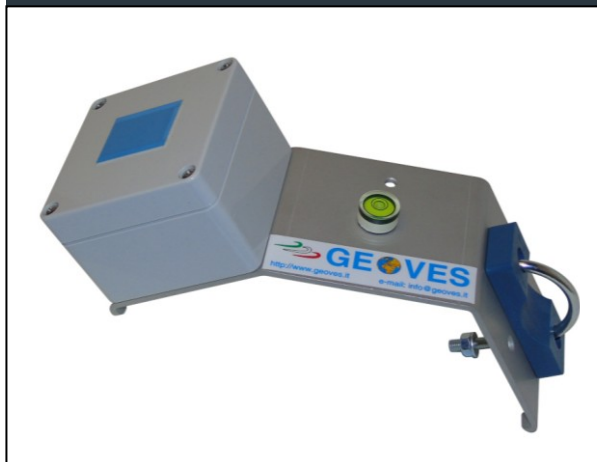


RPS1 – Rain presence sensor (Rev.1 020523)



Description

The RPS1 sensor is a rain detector based on the electrolytic-conductive principle of water which, depositing itself on the sensitive element of the sensor, generates a variable capacity according to the presence of rain or snow drops. This variation generates a 4...20mA analogue signal proportional to the presence of drops from 0 to 100% of the sensitive surface of the sensor.

A heater integrated in the sensor keeps it dry because, by evaporating the water that has fallen on the surface of the sensitive element, it avoids false signals due to fog or condensation. Furthermore, at low temperatures, the heater melts the fallen snow, thus allowing the instrument to detect snowfall.

RPS1 is equipped with a "Rain ON/OFF" switching relay contact output which signals the presence (ON status) or not (OFF status) of precipitation of rain (or snow).

The heater switches on and off automatically only when the sensor is in sufficiently wet mode.

The sensitivity of the heater activation can be varied by adjusting a potentiometer inside the PCB indicated as – SENS + . Its adjustment can delay or anticipate the closing of the relay based on the amount of water deposited on the sensitive surface.

Main applications

The rain detector is used both for connection to a PLC/Datalogger data acquisition system (for example inserted in a meteorological station that detects the duration of the rainy event) and as a stand-alone device with integrated relay contact to pilot actuators external (e.g. motors, valves, pumps, sirens, etc...).

The main applications are:

- ✓ Industrial and civil automation
- ✓ Agriculture and irrigation
- ✓ Meteorology

Advantages

- ✓ Excellent quality/price ratio
- ✓ Excellent accuracy
- ✓ Possibility to evaluate the cleaning status of the sensor from the 0...2Vdc diagnostic output

Supplied accessories

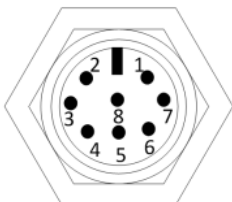
- ✓ Universal bracket for fastening on horizontal pipes $\varnothing$ max:42mm with level spirit; connectorized cable, L=4m

Technical specs

Model	RPS1 – Rain detector with heater	
Typical measurement range	ON/OFF and 0...100% of wetting	
Transducer	electrolytic-capacitive type with on-board heater	
Measurement surface	30° inclined plate	
Electrical outputs	• ON/OFF relay clean contact (it closes with rain presence) Vmax: 12Vdc Imax: 1A • 4...20mA corresponding to 0 (4mA) and 100% (20mA) of the wetted surface (see Note *) • 0...2Vdc diagnostic output to evaluate the state of cleanliness of the sensor (see Note **)	
Power	12Vdc $\pm$ 10%	
Consumption	With heater OFF: <10mA With heater ON: 180mA (typ.), 200mA (max); Absorbed Power: 0,5...2,5W	
Intervention delay	OFF>>ON < 0.1ms; ON>>OFF < 2min	

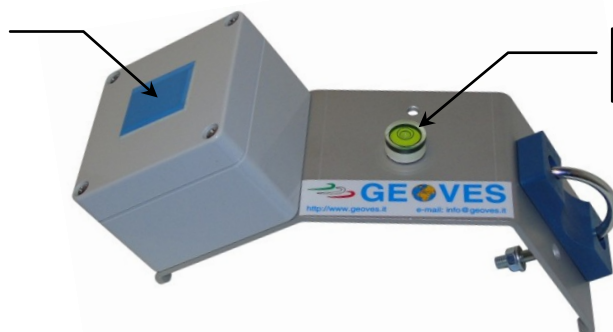
Working temperature	-15...+55°C
Cable with 8 pin M12 connector	Shielded outdoor cable, standard lenght: 4m (other lenghts on request), IP68 connector
Protection degree	IP68
Housing	ABS, Alluminium, Inox
Dimensions, weight	200 x 80 x 170mm, 350g

Electrical wiring

Vers. Rain presence sensor	RPS1
IP68 Connector on the sensor 	Pin1: Out 4÷20mA Range 0÷100% of wetted surface (White wire) * Pin2: Gnd of Signals (Green wire) Pin3: Out 0÷2Vdc diagnostic measurement of clean surface (Orange wire) ** Pin4: Gnd Power Supply (0.5mm2 Black wire) Pin5: +Vcc 12Vdc Power Supply (0.5mm2 Red wire) relais contacts Pin6: Common relais contact (Yellow wire) Pin7: Normally closed contact (Red wire) with dry sensor Pin8: Normally open contact (Gray wire) with dry sensor Notes: * The 4÷20mA analogue output is also used to evaluate whether the rain event (fog, frost, snow, etc...) is increasing (signal increasing from 4 to 20mA) or decreasing (signal decreasing from 20 to 4mA) ; the ON/OFF output of the relay contact instead indicates when the precipitation event begins (or ends), considering that the default threshold set corresponds to 15/20% of wetted surface. This threshold can be adjusted using the ±SENS trimmer. ** The 0÷2Vdc analogue output is used to check the state of cleanliness of the sensitive surface over time. To ensure perfect sensor efficiency, check that the voltage value supplied after each rainfall was close as possible to the zero mV value, while increasing values over time indicate deposits on the surface as dirt changes the sensor conductivity

Installation and maintenance

Application	Height of mounting	Localizazione and orienting
Meteorology (ref. WMO Annex 8)	0,5...2,5m from the ground	Installation: Position the detector facing SOUTH and possibly away from buildings, trees, etc..., making sure that the space above is free from any object that could hinder rain detection. For installation, use the supplied bracket which must be fixed to a horizontal pole with a diameter between 25 and 42mm; once fixed to the pole, the sensor must be leveled as shown in the image below so that the sensitive element is inclined by about 30°. For the electrical connection, use the cable supplied with the instrument. Maintenance: When in dry conditions the 0...2Vdc output shows more than 0Vdc (see Note **), clean the sensing plate using distilled water and a not too abrasive cloth to avoid damaging the conductive surface. Typically we recommend at least one cleaning every 4/6 months. The frequency of this intervention may vary according to the concentrations of dust/smog present in the environment.

Tilt of transducer:
about 30°

Leveling the
sensor