

RG – Rain gauge 200, 400cm² orifice (option: heater for snow and ice) (Rev.4 271125)



Description

The RG series rain gauge is a double tilting bucket sensor for measuring atmospheric precipitation. It is available in versions with a 200 or 400 cm² collection orifice. It is constructed entirely of corrosion-resistant materials to ensure long-lasting durability, reliability and robustness.

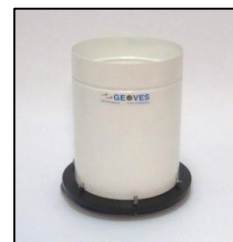
The rain gauge consists of a polyethylene base supporting the tilting bucket, which is housed within a sealed compartment that protects it from dirt and insects. The base has three adjustment screws for leveling the basin, which is checked with a spirit level.

The rain collection cone, which has an internal anti-rebound shaping compliant with WMO guidelines, is treated with special non-stick paints to ensure optimal drainage of precipitated water. The bottom of the cone is equipped with a removable vertical filter that prevents atmospheric deposits from entering the tilting rainwater measurement basin.

The filter has an elongated vertical shape designed to trap larger deposits such as leaves, twigs, and solid precipitates, preventing them from clogging the hole that carries water to the tilting measurement basin. This prevents sediment from depositing in the basin, which could alter the balance of the basin, and ensures accurate readings over time.

Measurement principle

Once a certain amount of water is reached (approximately 4cm³), the calibrated container, under its own weight, tips onto one side, discharging the water. During rotation, the normally open reed contact closes, generating an electrical pulse. Rainfall measurement is therefore based on counting the number of times the container empties, corresponding to the reed contact pulses. Each pulse corresponds to the instrumental constant of the rain gauge, which is 0.1mm/pulse for the 400cm² version and 0.2 for the 200cm² version. The number of pulses is then counted and acquired by the ISDM, MicroMET3, Butterfly Geoves dataloggers, or any other pulse meter. For data loggers that do not have a pulse input, the CP/VI interface can be used to count pulses and convert them into a rising 4...20mA or 0...10Vdc analog signal that resets to zero when the full scale is reached.



Rain gauge with
200cm² orifice

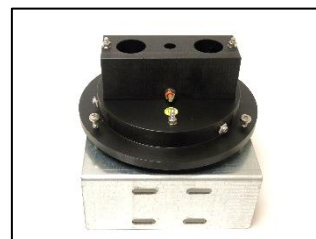
To ensure accurate measurement even in low-temperature conditions or in the presence of snowfall, a version with heating is available that automatically activates at around +4°C to prevent snow buildup and ice formation.

Advantages

- ✓ Simple maintenance
- ✓ Excellent accuracy
- ✓ Very good behaviour in temperature

Main applications

- ✓ Environmental analysis
- ✓ Meteorology
- ✓ Hydrometry e Ice research
- ✓ Agriculture
- ✓ Monitoring of reservoirs and dams



Internal view of the rain
gauge base and pole
mounting bracket.



Internal view of the rain
gauge filter and conic shape
of rain collecting

Technical data

Model	RG200, RG400	RG200R, RG400R (with heater)
Measurement range	infinite	
Transducer	Tipping bucket	
Funnel area	Vers. RG200: 200cm ² Vers. RG400: 400cm ²	
Outputs: Vers. -N with CP/VI interface	NO Contact (normally open, closes during the commutation) 4...20mA or 0...10Vdc (automatic reset when it reaches the full scale)	
Power supply	None	None
Accuracy	Class B ref.UNI 11452:2012 (class A with linking to the dataloggers Geoves)	
Resolution	Versions RG200: 0.2mm/commutation, Versions RG400: 0.1mm/commutation	
Heater turn-on temperature	/	/
Working temperature	0...+80°C	0...+80°C
Protection degree	IP67	
Materials	Painted AISI304 stainless steel (body), painted aluminium (orifice), polyethylene (base and tilting bucket), nickel-plated brass (filter)	
Mounting bracket	4mm galvanized steel for mounting on ø25...60mm vertical poles, ø25...42mm horizontal or on the wall	
Dimensions, weight	RG200: h210 x ø160mm, 1000g; RG400: h350 x ø224mm, 1100g	
Recommended maintenance	Quarterly cleaning	

Accessories

Cable	Shielded for outdoors. Available lengths: 4, 12, 22m (others upon request)
Cod. CSxx (xx=meters of cable)	Sensor cable with IP68 plug connector (sensor side) and open wires (datalogger side)
Cod. CSDxx	Sensor cable with IP68 plug connector (sensor side) and terminal (Geoves datalogger side)
Supports and brackets	Zinc-coated steel
Cod. SPL100	Rain gauge support with pole ø45mm h=100cm, plate for fastening on the concrete floor
Cod. SPL-P	Bracket for wall for ø40...60mm poles fastening
Cod. SPL-L	L bracket for mounting on the poles ø25...76mm.
Interfacce elettriche	
Cod. TERMST	Thermostatic device for rain gauges and anemometers
Cod. JB220-24	Power supply device for rain gauge heater RGxxx IN: 220Vac/OUT:24Vdc, Box IP65.
Cod. CP/VI	4...20mA or 0...10Vdc converter with automatic reset. DIN bar fastening

Mounting

The rain gauge is supplied pre-calibrated with an instrument constant of 0.1 mm/switch for the 400 cm² models and 0.2 mm for the 200 cm² models. This calibration value is shown on the instrument label so it can be easily identified when calculating the measurement using non-Geoves dataloggers. The Geoves rain gauge is equipped with a series of accessories that allow for installation in the following ways:

- Raised off the ground** and mounted on a post with a base for anchoring to a concrete slab (bracket code SPL100)
- On a post **fixed to the wall** (bracket code SPL100+SPL-P) or on other structures such as enclosures
- Mounting on a **vertical pole** (bracket code SPL-L) with an L-shaped arm or directly on a **horizontal arm** (bracket code SBS2D).

In all installation types, three height-adjustable feet are provided for proper instrument leveling, which can be verified using a spirit level.



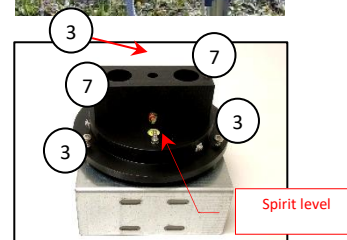
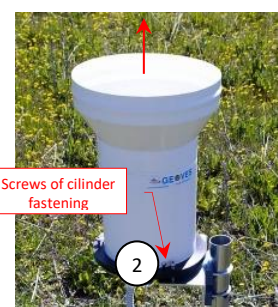
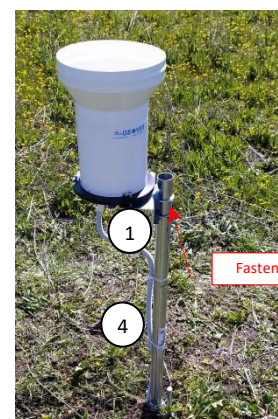
Rain gauge installation on pole with L bracket cod. SPL-L



Rain gauge installation on pole with bracket cod. SBS2D

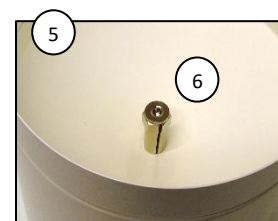
Rain gauge installation on vertical poles

1. Securely fasten the pole to the ground, pavement, or wall.
2. Insert the supplied $\varnothing 40 \dots 60$ mm collars into the pole, then secure them to the pole's base plate ①.
3. Unscrew the three 120° screws ② of the white cylinder located at the bottom near the black base of the rain gauge, then carefully remove the cylinder from the base.
4. Adjust the leveling of the rain gauge by turning the 3 screws ③, checking that the bubble is centered with respect to the reference circle. If necessary, loosen the two locking screws between the metal plate and the black base of the rain gauge.
5. Once the 3 screws for leveling the rain gauge have been adjusted, tighten the 2 screws securing the plate to the rain gauge.
6. Insert the cylinder, making sure to center the three slots with the three screws on the black base, then push the cylinder until it rests on the base. Secure the cylinder to the base using the 3 screws ② positioned at 120°.
7. Secure the connection cable ④ to the pole using plastic ties. This will prevent the cable from being damaged by the wind.
8. Pour a little water into the collection orifice, count the number of swings, then, based on the rain gauge constant of 0.1 or 0.2, calculate the precipitated water (e.g., for a 400cm² rain gauge with a constant of 0.1 x 8 swings counted = 0.8mm) and check it on the datalogger display.



Rain gauge maintenance

- Using clean water, a brush, and a cloth, clean the collection orifice ⑤, removing all deposits (leaves, insects, dust, soil, etc.).
- Remove the filter ⑥ using the appropriate Allen key and a wrench, then clean it with clean water and a brush.
- Also using clean water and a brush, clean the double-bowl bucket visible through the two holes ⑦ in the black base.
- Thoroughly rinse the bucket, filter, and collection hole, then reassemble the filter and cylinder onto the base.



Installation

Application	Height of mounting	Localization e orienting
Meteorology (ref. WMO Annex 8)	Top of the orifice 0,5...2,5m from the ground	Distance from eventual obstacles at least 2 times their height (better 4 times). Avoid installation close to the trees or other obstacles overlaying that could falsify the measurement. It's not recommended the installation on windy sites or with turbulence (eg. On hilltops). The sensor must be installed possibly on a dedicated pole with a heavy-duty structure to avoid false measurements caused from vibrations of the wind that can generate not correct tilting movement. Install the rain gauge on sites easy to reach to ensure easy and safe maintenance for orifice and filter cleaning.