



Precipitation Sensor

Features

- Precipitation Sensor for automatic weather stations
- Weighing tipping bucket system according to Joss-Tognini
- 2 cm³ (2 g water) tipping bucket for precise precipitation measuring in regions with normal rain falls
- 4 cm³ (4 g water) tipping bucket for precise precipitation measuring in regions with heavy rain falls / tropical rain
- Connectable to external data logger
- Weatherproof materials (anodized aluminium, stainless steel) guarantee a long durability
- Funnel according to the WMO Standard No. 8

Function

The weighing **precipitation sensor** measures the rain quantity by a tipping bucket developed by Joss-Tognini, the bearings of which have been arranged for low friction. Errors that normally occur due to incomplete draining because of surface tension are automatically compensated by the specific form of the tipping bucket.

The tipping bucket can hold 2 cm³ (2 g) resp. 4 cm³ (4 g) of water. The collecting surface of 200 cm² (WMO standard) means that one bucket charge is equivalent to a precipitation rate of 0.1 mm resp. 0.2 mm per square meter.

If the bucket is tipped, the reed contact that is integrated in the sensor will be closed/opened. This pulse output can be electrically scanned, remotely transmitted and recorded.

The **precipitation sensor** is mounted on a pedestal that is equipped with a connection piece and is attached to a tube with an outside diameter of 60 mm.

The **precipitation sensor** is made of weather-resistant aluminium and stainless steel. This ensures a long durability.

These high-tech precipitation sensors comply with the regulations WMO.

Dimensional drawing

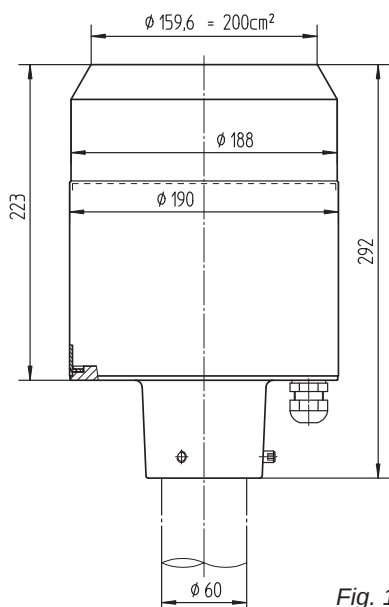


Fig. 1

Installation

Mounting of the sensor

The **precipitation sensor** must be mounted on a tube or pole with an outside diameter of 60 mm. A metallic extension tube with a minimum length of 100 mm is recommended, if a wooden pole is used.



Attention! Do not damage the measuring edge!

Place the **precipitation sensor** on the end of the pole until it fits in. By using the provided allen key (4 mm), tighten the screws in the mounting pedestal evenly. Adjust the upper measurement edge to an exact horizontal position. By doing this, the tipping bucket will automatically be positioned vertically inside the device and will work symmetrically.

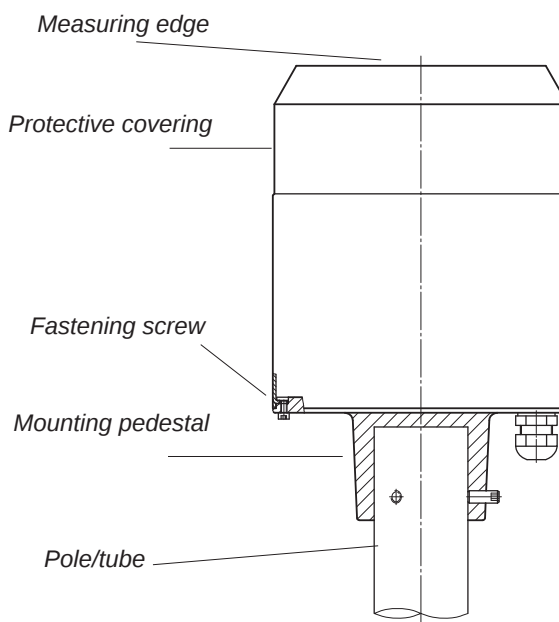


Fig. 2

Dismounting of the protective covering

Loosening the screw (fig. 1) with the provided 3 mm allen key until the protective covering can be turned right to the stop position and take off upward then.

Assembly of the tipping bucket



To avoid damage of the tipping bucket during transport, it is separately packed and should be inserted in the precipitation sensor on site only after mounting the gauge on the mast.

For the assembly first you must remove the protective covering.

Attention!



When fitting the tipping bucket, proceed with utmost caution so that the sharp edges of the tipping bucket are not damaged and the middle wall is not bent!



Attention! In order to protect the tipping bucket the dirt spiral must be inserted in the collecting funnel (fig. 3)

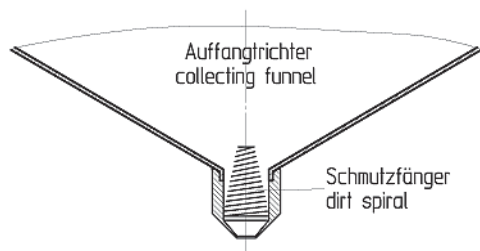
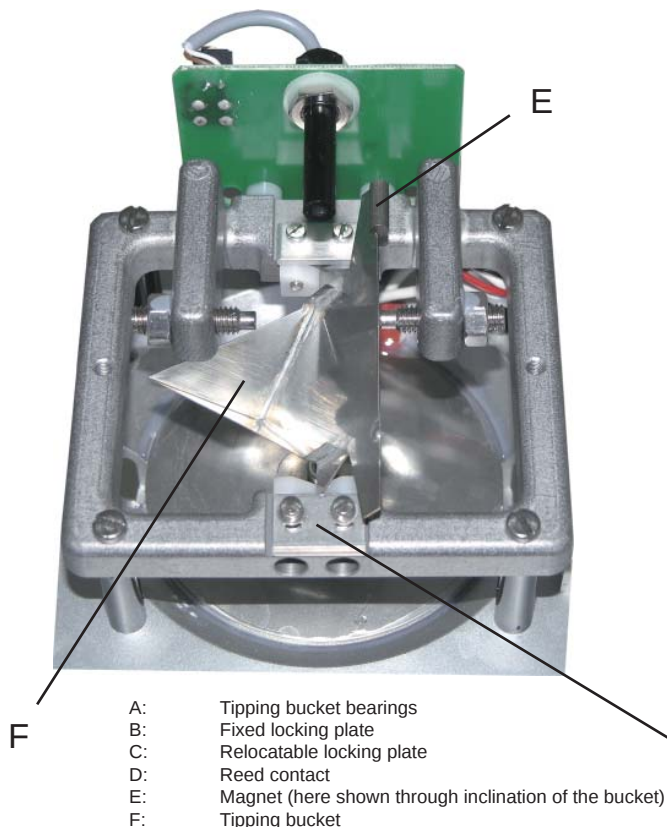


Fig. 3



During operation the tipping bucket lies on the precision bucket bearings. To reduce the friction the bearings are made of abrasion-resistant delrin.

The mounted tipping bucket is secured against eventual changes of position by means of two plates.

To insert the tipping bucket, first the relocatable locking plate C (Fig. 4) must be pushed back.

Now insert the tipping bucket F. Make sure that the magnet E attached at the middle wall of the tipping bucket rests under the capsule with the embedded reed contact D.

Finally the tipping bucket must be secured by pushing back the relocatable locking plate C.

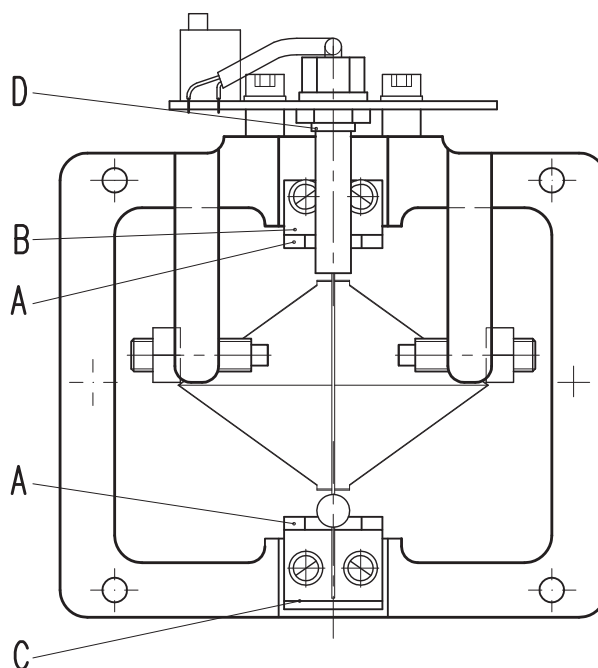


Fig. 4

Electrical connections

The sensor will be connected to the cable by leading the cable through the conduit gland to the connector inside the sensor housing (see connection diagram, fig. 5).



When the cable is transferred inside the ground it is recommended to protect the cable with a protecting plastic tube.

Initial operation

If the sensor system has been completely mounted and electrically assembled, the sensor will be ready for operation. An operational check has to be performed.

Maintenance and operational check

The precipitation sensor is nearly maintenance-free. The sensor should be checked and cleaned periodically in order to guarantee its proper operation, because dirt accumulation may cause errors of measurement. The time interval of cleaning depends on the local conditions.

The **operational check** of the sensor may be performed by using artificial precipitation. The volume of a 200 cm³ resp. 400 cm³ (by 4 cm³ buckets) test container of water must be piped into the collecting funnel through a nozzle in such a way that the drops fall into the funnel beside the outlet. The nozzle of the test container (approx. Ø 0.6 mm) should be adjusted to allow a complete water run out into the funnel within 10 to 20 minutes.

Rinse the sensor thoroughly for cleaning. Clinging particles of dirt in the collecting funnel or outlet pipe may be removed with a piece of wood.

If unsatisfying measurement results occur after this cleaning procedure, the tipping bucket should be disassembled for cleaning.



Absolute care must be taken not to damage the tipping bucket!

The dismounted tipping bucket can be cleaned by placing it in warm water with some scouring material and by carefully scraping off unwanted dirt by using a small piece of wood.

Technical data



1. Before setting into operation, please read all appropriate manuals!
2. Please take notice of internal and state-specific guidelines and/or rules for the prevention of accidents (e. g. the professional association). If necessary ask your responsible safety representative.
3. Use the system according to the manual's regulations only.
4. Always leave the manual at hand at the place of work of the system.
5. Use the system in technically correct conditions only! You have to eliminate influences immediately, which impair the security .
6. Please note the loss of warranty and non-liability by unauthorized manipulation of the system. You need a written permission of the **Adcon Telemetry GmbH** for changes of system components. These activities must be operated by a qualified technician.
7. Prevent the ingress of liquids into the devices without permission.



Quality Certificate

We herewith assert that the object of declaration described below meets the specifications of the manufacturer. The design and accuracy of the wind sensor has been made using defect-free materials and monitored in accordance with our QM-System in compliance with DIN EN ISO 9001:2008.

The wind sensor is calibrated to reference norms used for the measurements which are traceable to the national standard. The measurement instruments used are certified continuously at accredited calibration laboratories.



Product name:	ADCON Precipitation Sensor
Product description:	Precipitation Sensor for automatic Weather Stations
Item number:	800.000.320 200.733.063
Measuring element:	Weighing tipping bucket designed according to Joss-Tognini
Measuring range:	2 cm ³ (2 g water) – volume of bucket 0...8 mm/min
Accuracy:	0.1 mm

The wind sensor has passed the product inspection. It conforms to the specifications in the technical information of the operating instructions.

Date of issue: November 15, 2013
Performed by: Stephan Wills



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Product description:	Precipitation Sensor for automatic Weather Stations
Item number:	800.000.321 200.733.064
Measuring element:	Weighing tipping bucket designed according to Joss-Tognini
Measuring range:	4 cm ³ (4 g water) – volume of bucket 0...16 mm/min
Accuracy:	0.2 mm

The wind sensor has passed the product inspection. It conforms to the specifications in the technical information of the operating instructions.

Date of issue: November 15, 2013
Performed by: Stephan Wills
