

PLUDAL - TIPPING BUCKET RAIN GAUGE

The PLUDAL is a reliable and sturdy bucket rain gauge, built entirely from corrosion resistant materials in order to guarantee its durability. So as to ensure accurate measurement even with low temperature climatic conditions or during and after precipitations of snow, a version with a heater which is automatically activated around +4°C has been developed so that snow deposits and ice formations are prevented. The rain gauge is formed by a metal base on which a tipping bucket is set. The rain collector cone, fixed to the aluminium cylinder, channels the water inside the tipping bucket: once the predefined level is reached, the calibrated bucket rotates under the action of its own weight, discharging the water. During the rotation phase, the usually closed reed contact opens for a fraction of a second, sending an impulse to the counter. The quantity of rainfall measured is based on the count of the number of times the bucket is emptied: the reed contacts, usually closed, open at the moment of the rotation between one bucket's section and the other. The number of impulses can be detected and recorded by a rain gauge datalogger or by a pulse counter. A removable filter for periodic cleaning and maintenance is inserted in the water collector cone so as to prevent leaves or other elements blocking the end of the hole. For better water flow, the collector cone is treated with a non-stick paint. The PLUDAL, the version with a heater, operates using either 12Vdc or 24Vdc voltage (to be specified in the order) and uses about 165W. Heating is activated around +4°C. On request a bird dissuader, made of 8 3mm diameter spikes, 60 mm in height, can be installed on the rain gauge.



DESCRIPTION

Upon request the rain gauge can be supplied ready calibrated at 0.2mm of rain per commutation of the bucket (upon request, 0.1 or 0.5 mm calibration can be provided): the calibration value is shown on the instrument's label. The instrument must be installed in an open area, away from buildings, trees, etc..., ensuring the space over it is free from all objects which could obstruct rain measurements, and in an easily accessible position for the filter to be cleaned periodically. Avoid installation in areas exposed to gusts of wind, turbulence (for example the top of a hill) as these may distort the measurements. The rain gauge can be installed on the ground or raised 0.5 m, 1 m or 2 m above the ground. Three adjustable support feet have been provided for ground installation so that the instrument can be levelled correctly, and the holes aligned so that it can be fixed to the floor. For raised installations a collar has been provided which fastens around the base of the instrument on which the support staff must be inserted. The staff may end with either a flange so that it can be fixed to the floor, or a tip to be driven into the ground. For the tipping device to function correctly and so for the measurement to be correct, it is important that the instrument is placed perfectly level. The base of the rain gauge is fitted with a bubble level. For installation, unscrew the three screws at the sides of the cylinder that supports the water collector cone.

TECHNICAL SPECIFICATION

	PLUDAL	PLUDAL/R
Power:		
Type of output contact:	NC contact (opens during commutation)	
Resolution:	0.1 - 0.2 or 0.5 mm/commutation (on request at the time of placing the order)	
Precision:	+/-2% from 20 to 300mm/h	
Temperature:	+4...+60 °C	-20...+60 °C
Heater intervention temperature:		+4°C
Protection degree:	IP67	
Collector area:	400 cm ²	
Minimum sections of the wires	0,5mm ² (PLUDAL) - 2,5mm ² (PLUDAL/R)	

Accessory:

- Bird spike
- kit for the installation of the rain gauge raised 500 mm or 1 m or 2 m from ground, formed by water collection cup with threaded shaft for support bar + Flange with tip for the ground to support the raised from the ground rain gauge
- Device for levelling the rain gauge when it is installed on a support bar. The adjustment is performed by means of fine pitch screws
- Level base for fastening the raised from the ground rain gauge



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RAIN GAUGE DATALOGGER

Rain Gauge Datalogger is a data logger that has been specifically developed to capture and store rainfall trends. It works with a long life lithium battery that provides, together with the large memory, remarkable recording capacity without user intervention. For user convenience, the supplied lithium battery, when exhausted, can be also replaced by three alkaline batteries (not supplied with instrument). The backlit display shows in real time the rain quantity during various time intervals.

The instrument is perfectly waterproof thanks to the use of reed relays, instead of the common push-buttons. The reed relays are operated through a magnet, attached to the end of an aluminum handle tied to the case. When not in use, the magnet is placed back into its holder. The software MTLogger supplied with the instrument allows setting of the parameters of the instrument, the real time display of the values captured by the data logger, the download to a PC and the process of the stored data.

The connection to the PC is made via the M12 8-pole RS232C serial connector placed at the bottom of the instrument.

Rain Gauge Datalogger can be connected to the most popular types of rain gauges with normally closed (NC) or normally open (NO) output contact. The display auto power-off feature allows to prolong the battery life. A front LED

lets you check the operating status of the instrument when the display is off.

The LED changes color when the rain gauge contact switches, thus allowing to verify that the rain gauge tipping bucket returns correctly in the stable position after emptying.



DESCRIPTION

The data logger counts and stores the number of emptying of the rain gauge tipping bucket. Each emptying of the bucket corresponds to a quantity of rain equal to the resolution of the rain gauge. The resolution can be set from 0.050 to 1.599 mm of rain by using the MTLogger software. The rain gauge contact can be both NC and NO type (it is not necessary to set the contact type, the data logger automatically works with both types of contact). The LED indicator of the data logger indicates the status of the contact of the rain gauge. The LED blinks red if the contact is open, and green if the contact is closed. Therefore, the LED color allows to highlight the emptying of the bucket and check that the bucket returns in the stable position after emptying. The display is backlit; to minimize the battery consumption, the display is switched off if no operation is performed on the data logger for 2 minutes.

The data logger is still working even when the display is off, and its activity is signaled by the flashing status indicator LED. In order to turn the display on, press any of the two buttons. When the display is on, the following screens are displayed sequentially:

- quantity of rain in mm in the last hour and the last 4 hours;
- quantity of rain in mm in the last 24 and 48 hours;
- quantity of rain in mm in the last 72 and 96 hours;
- quantity of rain in mm from the last counter reset (partial rainfall); if the correction table is enabled, both the uncompensated and the compensated values are displayed
- date/time and battery voltage;
- user code and serial number of the data logger

TECHNICAL SPECIFICATIONS

Supply/battery life:	Internal 3.6 V lithium-thionyl chloride (Li-SOCl ₂) not rechargeable battery, size C, capacity 8400 mAh, Molex 5264 2-pole connector / 3 x 1.5 V alkaline batteries (not supplied). 5 years of continuous use with the supplied lithium battery and in typical operating mode, in which the backlit display is turned on occasionally (about 10 minutes per day) - 18 months of continuous use with 3 alkaline batteries with 2200 mAh capacity
Recorded event:	NC or NO contact.
Resolution:	Configurable from 0.050 to 1.599 mm/sample
Storage capacity:	32.255 samples (equal to 6451 mm of rainfall with 0.2 mm/sample resolution) - Non-volatile memory
PC interface:	Isolated RS232C serial port – 115200 baud
Display:	2-row backlit LCD
Indications on display:	Rain quantity in mm from the counter reset Rain quantity in mm in the last hour and the last 4, 24, 48, 72 and 96 hours
LED indicator:	Flashes red if the rain gauge contact is open Flashes green if the rain gauge contact is closed
Operating temperature:	- 30...+60 °C
Protection:	IP67, including connectors



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