

MRW500 Weighing Rain Gauge

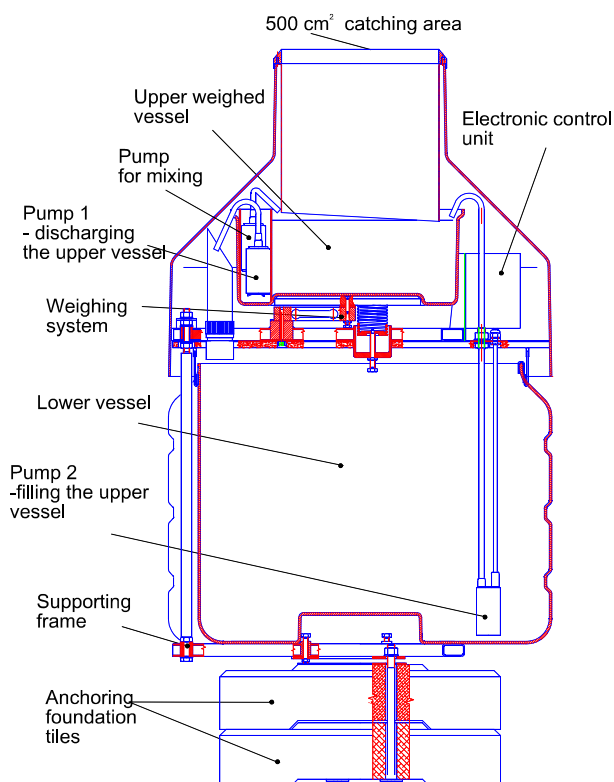


The MRW500 is a rain gauge with weighing principle of measuring precipitation, with a catching area of 500 cm² and a resolution of 0.1 mm of precipitation. It is designed for measuring liquid and solid precipitation. The basic element for measuring is a strain gauge connected to the control electronics, which continuously evaluate the measurements and control other parts of the rain gauge.

The principle of measuring and construction of the rain gauge eliminates the shortcomings of the simpler and very widespread rain gauges with a tipping bucket. Particularly concerning solid precipitation, the weight rain gauge catches the precipitation and evaluates it without a pause necessary for its melting. Another plus is that the accuracy of the weight rain gauge is not dependent on the intensity of precipitation, whilst the accuracy of the rain gauge with tipping bucket changes with growing intensity.

Basic Features

- two outputs – date output and pulse output (simulation of a rain gauge with tipping bucket)
- it consists from upper weighed vessel and accumulated lower vessel; the transfer of liquids between vessels is provided automatically by pumps
- the upper vessel for catching of precipitation contains non-freezing liquid and layer of the oil for prevention of evaporation
- the solution of precipitation water and non-freezing liquid in upper vessel is mixed by pump according to amount of precipitation and to outside temperature
- the space close below upper weighed vessel is gently warmed (tempered) against dew



- the collar of catching aperture is intensive heated for a short term according to outside temperature and to history of precipitation – so-called the “shock heating”
- integrated hardware and software rain detectors helps with monitoring of precipitation process and with solving of non-standard situations
- suitable construction of lower vessel supports evaporation of accumulated water from this vessel, thereby enabled the partial regeneration of non-freezing liquid solution. The interval for necessary discharge of lower vessel is prolonged by it.
- the control electronics of rain gauge enables to connect of others sensors (e.g. temperature and wind speed sensors) for measuring data correction, especially regarding solid precipitation

Technical Parameters of the MRW500 Rain Gauge:	
Catching area	500 cm ²
Outputs: Data Pulses – simulation of the tipping bucket system	RS232 duplex, transmission speed 19200 Bd, 8 bit data, 1 start bit, without parity Performed with a switching semiconductor – character of a floating contact with insulation against the rain gauge potential – 1000 VAC. 0.1 mm of precipitation/ 1 pulse pulse duration 150 ms max. blocking voltage 100 VAC/VDC max. current 0.1 A
Accuracy	Data output: ± 0.1 mm of precipitation in the whole range - 30°C .. + 60°C Pulse output : to + 0.1 mm of precipitation in the whole range – 30°C .. + 60°C
Resolution	Resolution according to used converter 0.002 mm Actual real resolution guaranteed 0.1 mm in the whole range - 30°C .. + 60°C
Voltage for	Electronics and pumps 12 V DC Hardware rain detector 24 V AC Heating 46 V AC
Power consumption	Electronics 1 W One pump (only one pump can be in operation in one moment) 20 W “Shock” heating 105 W Tempering 100 W Rain detector 10 W
Usable volume of the lower vessel*	90 l (total 1000 mm of precipitation with the given catching area represents the volume of 50 l)
Utilised non-freezing liquid	Based on non-toxic propylene glycol, does not contain nitrites, phosphates, and amines. Biodegradable. Dilution: 1:2 -15°C 1:1,5 -20°C 1:1 -32°C Initial fill - c. 16 - 20 l according to the climate conditions at the installation site (*)
Oil for prevention of evaporation	LUKOSIOL M100 methyl-silicone oil. Based on polydimethyl siloxane liquid. Physiologically inert. Initial fill 0.4 l
Operational temperature	-30 °C ... + 60 °C
Dimensions (height x diameter)	1000 x 620 mm
Weight	c. 30 kg

* The user must choose whether he prefers the rain gauge capacity (the larger volume of the lower vessel usable for precipitation total lowers the used amount of non-freezing liquid) or the opposite – whether at the site of installation there are very great freezes over long periods of time and it is necessary to use the maximum amount of non-freezing liquid.