

# Self-Emptying Weighing Rain Gauge

Meteorology

App included

## General Description

KISTERS' RainBal is a rain gauge that combines the highly accurate **weighing principle** with a **self-emptying bucket mechanism**. Equipped with a load cell, purpose built electronics and dedicated firmware, the rain gauge reliably delivers **accurate high-resolution real-time data**.

RainBal combines the advantages of weighing rain gauges and tipping bucket rain gauges while avoiding their disadvantages (like clogging, intensity and resolution issues of tipping bucket rain gauges, and overflowing or manual drain-off issues and massive weight and dimension of totalizer weighing gauges). Regarding the bucket orifice different versions are available (200 and 314 cm<sup>2</sup>).

RainBal meets the requirements of the WMO guidelines. Via serial interfaces and via the RainBal app (see flipside) one-minute intensity and cumulative rain are available.

RainBal is designed for **easy installation and low-maintenance**: large aperture to provide inflow, load cell and simple mechanical design. The advanced high-resolution load cell turns the Rainbal into a balance determining rain mass rather than volume achieving a higher accuracy. Due to its **low power consumption** RainBal is ideal for remote stations powered by battery or a small solar panel.

RainBal achieves **very high levels of accuracy** by means of correcting the data to eliminate the influence of wind vibration, particles, unrealistic weight variations, evaporation, and temperature fluctuation.

Low power consumption, low maintenance and high accuracy in a self-emptying device provide **reduced operational costs, less staff deployment in the field, better data and high data availability**.

In addition to our KISTERS data loggers, RainBal is compatible with other data loggers and ideal for setup and expansion of rainfall measurement networks.

## Applications

- Automatic Weather Stations - Synoptic/ Climatology
- Flood Warning Systems
- Urban and Municipalities
- Water Utilities and Boards

## Features


- Extreme rain intensity measuring range of 2000 mm/h according WMO guideline No 8
- Low power consumption of typical 1,2 mA@12 VDC suitable for self contained rain monitoring station
- Low maintenance for remote and unattended sites
- Reliable and highly accurate rain sensor with embedded load cell technology
- Self-emptying, no bucket overflow, fast emptying time of 500 ms
- Drift-free and life-time calibrated
- High MTBF, low total costs of ownership
- SDI-12 and RS485 interface with standardized protocols
- Optional heater
- Bluetooth communication
- App for smart phones (IOS and Android)
- Metric and imperial units



## Technical Specifications

Type	RainBal 200	RainBal 314
Orifice Area / Diameter / Height	200 cm <sup>2</sup> / Ø 160 mm / H 320 mm (0.22 sqft / Ø 6.3 in / H 12.6 in)	314 cm <sup>2</sup> / Ø 200 mm / H 355 mm (0.34 sqft / Ø 7.87 in / H 14 in)
Weight	4.6 kg (10.14 lbs)	5.2 kg (11.46 lbs)
Range of Precipitation	Unlimited	
Intensity	2000 mm/h	
Accuracy of Amount	±0.025 mm or ±1 %	±0.016 mm or ±1 %
Accuracy of Intensity	±1.5 mm/h or ±1 %	
Threshold of Amount	0.025 mm/40 min	0.016 mm/40 min
Threshold of Intensity	0.025 mm/min	0.016 mm/min
Resolution	Amount: 0.001 mm; Intensity: 0.1 mm/h	
Measuring Element	Strain-gauge bridge (hermetically sealed and temperature compensated)	
Power Supply	– 5 to 30 VDC (max 40 mW, typ 1.2 mA@12 VDC) – Heating (optional): 10-28 VDC, 5-35 Watt	
Pulse Output by Relay Contact	1 / 0.1 / 0.01 mm (1 / 0.1 / 0.01 / 0.001 inch)	
Serial Output	SDI-12 by default / RS 485 selectable	
Output Parameters	Intensity, cumulative precipitation, weight (metric and imperial units)	
Connector and Cable	M12 8-pin; M12 4-pin (for optional heater); 10 m PUR cable	
Pole Mount	Diameter: 50-60 mm (2"); by TB 334 mounting bracket (see below)	
Operating Measuring Temperature Range	0 to 70 °C (32 to 158 °F) (with heating: -20 to 70 °C / -4 to 158 °F)	
Operating Deployment Temperature Range	-40 to 70 °C (-40 to 158 °F)	
Operating Humidity Range	0 to 100 %	
Degree of Protection	IP65	

## Versions and Accessories

**App** (for Android and iOS):  

 The app 'HS Precibal' enables streamlined set-up, viewing of measured data, real time diagnostics and the performance of service tasks all right from within the app. It gives immediate confirmation that RainBal is fully operational. Bluetooth enabled, the app is extremely helpful in challenging weather conditions: No need to plug in cables or reach up poles to remove the enclosure. Download: KISTERS' website or Apple / Google Play store.

### Versions and Accessories:

- **Heater** versions RainBal 200-H / 314-H (operating temperature range -20 to 70 °C)
- **M12 cables**: 10 m / 8-pol (sensor) and 4-pol (heater)
- **Mounting Bracket (HS 334)**
- **2" poles** for 1 m measuring height
- **Portable Field Calibration Device (FCD)**:  
 The FCD effectively enables field technicians to run functional tests and calibrations of any given rain gauge in the field avoiding dismantling of TBRG's, reducing TBRG downtime and thereby saving time and money.

### – Bird Guard

### – SDI 12-USB converter



### iRIS dataloggers and data modems:

- Robust housing
- IP over one or two channels  
 of your choice: xG / GPRS, satellite, IoT
- I/O: analog, digital, SDI-12, Modbus
- iLink software
- Telemetry or cloud app

[Please ask for details.](#)

Reseller

**KISTERS Australia** | sales@kisters.com.au | kisters.com.au  
**KISTERS Europe** | hydromet.sales@kisters.eu | kisters.eu  
**KISTERS New Zealand** | sales@kisters.co.nz | kisters.co.nz  
**KISTERS North America** | kna@kisters.net | kisters.net

 **KISTERS**