PreciBal

Weighing Principle Precipitation Gauge

Meteorology

App included

General Description

KISTERS' PreciBal is an innovative **high-quality precipitation gauge** using the weighing principle for measuring liquid, solid and mixed precipitation within a wide temperature range. It **conforms to the most stringent requirements of the WMO**. PreciBal is a low power device even during cold winter times by using anti-freeze agent to decrease the freezing point of collected water. The optional heating is controlled by a combination of temperature settings and solid precipitation events to avoid snow capping and ice accretion at extreme environmental conditions.

PreciBal 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. The result is outstanding measuring performance in terms of accuracy, long term calibration for real-time precipitation monitoring at entire intensity range up to 3000 mm/h.

The compact design allows for easy installation. Due to its **low power consumption** PreciBal is ideal for remote stations powered by battery or a small solar panel. Two different versions regarding the bucket orifice (200 / 314 cm^2) and collecting size (1.500 / 1.000 mm) are available. **Processed precipitation data** (one-minute intensity, various cumulative precipitation data, weight, temperature) are available via serial interfaces and via the PreciBal app (see flipside).

PreciBal with its solid state design without any moving part measures liquid and solid precipitation by its factory life time calibrated and adjusted load cell at highest standards and performance on accuracy and reliability. **Low power consumption, low maintenance and high accuracy** ensure reduced operational costs, less staff deployment in the field, better data and high data availability.

In addition to KISTERS' data loggers (see flipside), PreciBal is compatible with other data loggers and ideal for deployment at new sites or expansion of precipitation monitoring networks.

Applications

- Precipitation and automatic weather stations
- Synoptical and climatological stations
- Hydrometeorological stations at remote sites without main grid (e.g. high mountain applications)
- Flood warning systems
- Weather radar calibration
- Mesonet and climate change
- Urban and municipalities

Features

- Linear characteristic at entire intensity range up to 3000 mm/h
- Extra low power consumption < 40 mW
- Long term maintenance schedule for emptying the bucket
- Sustainable design for long term calibration, high MTBF and low costs of ownership
- Hermetical sealed load cell for life time calibration

- Easy installation and field deployment by M12-8pol connector for sensor and M12-4pol connector for heater
- Bluetooth communication for monitoring, settings and firmware update via app
- Output signals: SDI-12, RS 485 (MODBUS-RTU/ASCII), Pulse Output
- Metric or imperial units

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Technical Specifications

Type	PreciBal 200	PreciBal 314
Dimensions and weight	∅ 385 mm, height 650 mm, weight 9.5 kg (∅ 15.16 in, height 25.59 in, weight 20.94 lbs)	∅ 385 mm, height 630 mm, weight 9.5 kg (∅ 15.16 in, height 24.80 in, weight 20.94 lbs)
Orifice Diameter and Area	∅ 160 mm, area 200 cm^2 (∅ 6.3 in, area 1290.32 square in)	∅ 200 mm, area 314 cm^2 (∅ 7.87 in, area 2025.8 square in)
Bucket Capacity	1.500 mm (59.06 in)	1000 mm (39.37 in)
Intensity	3000 mm/h (118.11 in/h)	
Accuracy of Amount	±0.025 mm (0.001 in) or ±1 %	0.016 mm (0.0006 in) or ±1 %
Accuracy of Intensity	±1.5 mm/h (±0.059 in/h) or ±1 %	
Threshold of Amount	0.025 mm (0.001 in)/40 min	0.016 mm (0.0006 in)/40 min
Threshold of Intensity	0.025 mm (0.001 in)/min	0.016 mm (0.0006 in)/min
Resolution	Amount: 0.001 mm; Intensity: 0.1 mm/h	
Measuring Element	Strain-gauge bridge	
Power Supply	– 5 to 30 VDC / max 40 mW, typ 1.2 mA@12 VDC – Heating: 10-28 VDC / 0.8-2.5 A / 8-75 W	
Pulse Output by Relay Contact	1 / 0.1 / 0.01 mm (1 / 0.1 / 0.01 / 0.001 inch), max 24 VDC/0,5 A	
Serial Output	SDI12 V1.4 / RS 485 MODBUS RTU/ASCII	
Output Parameters	Intensity, cumulative precipitation, weight (metric and imperial units)	
Connector	M12 8-pin; M12 4-pin (for optional heater)	
Installation	3 point triangular mount (option: 3 point to 2”/4” mounting bracket for direct pole mounting, see below)	
Measuring Temperature Range	– Unheated version: -40 to +70 °C (-40 to +158°F) (with antifreeze below +4 °C (39.2°F), without snow accumulation or ice accretion) – Heated version: -40 to +70 °C (-40 to +158°F) (by anti-freeze + with heating @ 24 VDC heater)	
Operating Deployment Conditions	Temperature: -40 to +70 °C (-40 to +158°F) / Humidity: 0 to 100 %	
Degree of Protection	Instrument: IP 65, Load Cell: IP 68	

Options & Accessories

PreciBal App (for Android and iOS): 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 PreciBal 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:

- **Versions**: PreciBal 200, 314 (unheated) / Precibal 200-RH, 314-RH (heated)
- **M12 cable**: 10 m / 8-pol (sensor) and 4-pol (heater)
- **Mounting Bracket** HS 334 (3 point to 2”) / HS 334-X (3 point to 4”)
- **Poles**:
  2” poles for 1 to 1.5 m measuring height;
  4” poles for 1 to 4 m measuring height
- **Portable Field Calibration Device (FCD)**: Effectively enables field technicians to run functional tests and calibrations of any given rain gauge in the field avoiding dismantling, reducing downtime
- **Bird Guard**
- **SDI 12-USB converter**
- **Wind Shield**
- **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 I sales@kisters.com.au I kisters.com.au
KISTERS Europe I hydromet.sales@kisters.eu I kisters.eu
KISTERS New Zealand I sales@kisters.co.nz I kisters.co.nz
KISTERS North America I kna@kisters.net I kisters.net

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