Compact Rain Sensor

Meteorology | Agrimeteorology

General Description

KISTERS' innovative WeatherSens MPR101 rain sensor provides **precise and maintenance-free measurement of rain** by photoelectric technology. The compact sensor is designed without any moving parts and with embedded electronic for highspeed signal processing and calculation in order to provide **real-time rain data**.

The sensor provides drift-free measurements by differerential and ratiometric signal analysis and methods for compensation of long term and temperature induced errors. After that, the individual water content of each hydrometeor can be derived, aggregated and the gliding intensity and amount of rain is provided.

The measuring area of 50 cm² is large enough to provide representative data and to allow for comparison of computed data to traditional long term deployed catching rain gauges (such as manual check gauges, tipping bucket or weighing precipitation gauges with large catching areas from 100 cm² on).

The sensor has been tested and approved against following environmental conditions:

– High and low temperature ranges
– Humid weather (humidity and ingress protection)
– Windy and coastal environments (vibration and salt spray sustainability)

Applications

The compact device is designed for applications in hydrology, meteorology and other weather-dependent applications where durability, precision and operations in different moderate climatic conditions are required. For example:

– Weather stations
– Flood/severe precipitation warning systems
– Environmental monitoring
– Water resource management
– Infrastructure monitoring: Roads, airports, bridges, tunnels, photovoltaic farms
– Urban environment monitoring, smart cities, municipalities
– Agrimeteorology
– Building automation

Features

– Measures rainfall using photoelectricity principles
– Maintenance-free, no moving parts
– Output: 1 minute, hour, day and total cumulative rain
– No on-site calibration required
– Durable materials: aluminum alloy with teflon coating
– Low power consumption
– Low costs of installation and total costs of ownership
– Universal and selectable interfaces and protocols such as SDI-12 or RS 485
– Metric and imperial units

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Technical Specifications

Technology	Photoelectricity
Measurement Range (Liquid Precipitation)	400 mm/h
Accuracy	±0.2 mm or ±10 %
Resolution	0.1 mm
Material	Aluminum alloy with teflon coating
Dimensions and Weight	H 160 x ⌀ 160 mm (H 6.3" x ⌀ 6.3"), weight 1.3 kg (2.87 lbs)
Power Consumption	12 mA @ 12 V DC
IP Class	IP66
Interfaces	SDI-12 (default) / RS 485 (selectable)
Protocols	SDI-12 V1.3 (default) / RS 485 – MODBUS-RTU/ASCII, NMEA 0183
Operating Voltage	10 to 30 VDC
Environmental Conditions	– Operating deployment temperature range: –40 °C to +70 °C (–40 °F to +158 °F) (rain and hail) – Operating measuring range for rain: 0 °C to +70 °C (32 °F to +158 °F) – Humidity: 5 to 100 % RH
Connector and Cable	M12 connector 8-pin, Cable PUR 10 m

Accessories

M12 cable: 10 m / 8-pol (sensor)
Poles: with 2" or 50 mm outer diameter for 2 m or 3.5 m measuring height

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.

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