



HD2013.3 – PRECIPITATION DETECTOR

HD2013.3 is a compact precipitation detector designed to identify the presence of rain or snow. Its capacitive sensing element changes capacitance according to the portion of the surface wetted by precipitation, providing both an ON/OFF indication and the percentage of dry sensor surface.

An integrated heater evaporates residual water, helps prevent false indications caused by fog or dew and melts snow at low temperatures. An internal ambient temperature sensor allows the detector to distinguish between rain and snow.

All versions feature an RS485 output with MODBUS-RTU or proprietary protocol. Depending on the model, current, voltage and voltage-free contact outputs are also available for easy integration into monitoring and control systems.

RELIABLE RAIN AND SNOW DETECTION

The external circular dome acts as a windshield around the sensitive element, reducing the risk of false indications caused by wind.

The integrated heater keeps the sensing surface dry between precipitation events. In automatic mode, the heater regulates the temperature of the sensor base in relation to the ambient temperature, supporting reliable operation across the entire -40...+60 °C operating range.

The detector distinguishes between rain and snow according to a configurable reference temperature measured by the internal NTC sensor.

AUTOMATIC RESPONSE COMPENSATION

An automatic calibration algorithm compensates for variations in the sensor response caused by temperature changes, ageing and dirt deposited on the sensitive surface.

The calibration interval and the maximum correction applied during each calibration cycle can be configured through the RS485 interface.

FLEXIBLE SYSTEM INTEGRATION

All HD2013.3 models include a non-isolated RS485 output supporting MODBUS-RTU and the Senseca proprietary protocol.

Depending on the version, the following additional outputs are available:

- configurable 0/4...20 mA current output;
- configurable 0...1 or 0...10 V voltage output;
- voltage-free normally open contact.

The precipitation detection threshold, hysteresis, sensitivity and activation and deactivation delays can be configured to adapt the detector response to the application.

KEY FEATURES

- Capacitive rain and snow detection
- ON/OFF precipitation indication
- Percentage of dry sensitive surface
- Integrated ambient temperature sensor
- Automatic rain/snow discrimination
- Integrated, automatically controlled heater
- Reduced false indications caused by fog and dew
- Automatic compensation for temperature, ageing and dirt
- Configurable sensitivity, threshold, hysteresis and delays
- RS485 with MODBUS-RTU or proprietary protocol
- Optional analog and voltage-free contact outputs
- IP68 protection
- Mounting bracket for Ø30...50 mm mast included
- Optional bird spikes

CONFIGURATION AND MEASUREMENT

The detector determines whether precipitation is in progress by measuring the percentage of dry sensitive surface:

- 100% = sensitive surface completely dry;
- 0% = sensitive surface completely wet.

When the dry-surface percentage falls below the configured threshold, the detector indicates that precipitation is in progress. The indication ends when the measured value rises above the threshold plus the configured hysteresis and the selected delay time has elapsed.

The measurement resolution can be configured to 1% or 0.1%. Detection sensitivity and the reference temperature used to distinguish rain from snow are also configurable.

Configuration and measurement values can be accessed through the RS485 interface using either MODBUS-RTU or the proprietary protocol.

Instrument technical specifications	
Precipitation sensor	
Type	Capacitive, with integrated heater
Dimensions	6.6 cm ²
Angle	30°
Sensitive area	0.05 cm ² min.
Temperature sensor	NTC 10KΩ @ 25 °C
Measuring range	
Precipitation detection	ON / OFF (precipitation in progress / no precipitation)
Temperature	-40...+60 °C
Resolution	
Precipitation detection	Configurable 1 % (default) or 0.1 % of dry sensitive surface of the sensor
Temperature	0.1 °C
Output	RS485 not isolated, with MODBUS-RTU or proprietary protocol Analog 0/4...20 mA (R _{Lmax} = 500 Ω) – Only HD2013.3 Analog 0...10 V (R _{Lmin} = 10 kΩ) – Only HD2013.3AV Voltage-free normally open contact, max. 200 mA @ 30 Vdc resistive load – Only HD2013.3 and HD2013.3AV
Power supply	12...30 Vdc (HD2013.3 e HD2013.3S) 15...30 Vdc (HD2013.3AV)
Consumption	With heating OFF: 18 mA @24 Vdc With heating ON: 230 mA max @24 Vdc The indicated consumption does not include the consumption due to the analog output
Connection	8-pole circular connector
Operating conditions	-40...+60 °C / 0...100 %RH
Storage temperature	-40...+60 °C
Dimensions	Ø 70 x 70 mm (only the instrument without mounting bracket)
Weight	450 g approx.
Protection degree	IP 68
Housing material	Technopolymer ASA

ORDERING CODES

AVAILABLE VERSIONS

Model	RS485	0/4...20 mA	0...10 V	0...1 V	Contact
HD2013.3	✓	✓	—	—	✓
HD2013.3AV	✓	—	✓	—	✓
HD2013.3AV1	✓	—	—	✓	✓
HD2013.3S	✓	—	—	—	—

Each detector is supplied with:

- mounting bracket for Ø30...50 mm mast;
- free 8-pole watertight female connector, if an optional cable is not ordered.

Connection cable and optional accessories must be ordered separately.

Accessories	
HD2013.2D	Bird spikes: 6 spikes, Ø3 mm and 60 mm high. Must be requested when ordering the detector.
CP2013.2.5	Cable with 8-pole watertight connector on one end and free wires on the other, length 5 m.
CP2013.2.10	Cable with 8-pole watertight connector on one end and free wires on the other, length 10 m.

INSTALLATION

The supplied mounting bracket can be installed on a horizontal or vertical mast with a diameter of 30...50 mm.

The detector should be positioned away from buildings, trees and other objects that could obstruct precipitation. The space above the sensing surface must remain completely unobstructed.

Optional bird spikes can be installed to prevent birds from resting on the detector. They must be requested when ordering the instrument.



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