

# Tipping Bucket Rain Gauge

## HD2013

### ○ WATER, SNOW OR ICE...WE MEASURE IT ALL

Versions with heating to measure  
all kind of precipitation

### ○ ACCURATE AND RELIABLE SYSTEM

Individual calibration  
Internal leveling device for perfect horizontal  
positioning

### ○ SMART DESIGN - LONG STABILITY PERFORMANCE

Corrosion resistance materials  
Rugged design

### ○ DATA WHERE YOU NEED IT

**Direct cloud visualization** when combined with  
our loggers. Or with **local database** if preferred.

### ○ WMO COMPLIANT

Developed and designed  
according to **WMO guidelines**



### Main Applications

Meteorology  
Early warning systems  
Agriculture  
Agrometeorology  
Hydrology

## 400 cm<sup>2</sup> tipping bucket rain gauge: according to recommendations of WMO

**Reliability, accuracy** and **durability**. That is the basic thought behind the design of the HD2013. Completely constructed of corrosion resistant materials, the HD2013 rain gauge is built to withstand even extreme conditions. To guarantee a wide range of use, depending on the environment where the rain gauge is placed, there is a choice between heated or non-heated version.

The principle of a tipping bucket rain gauge is simple: depending on the quantity of rainfall, the tipping bucket mechanism fills and empties. Every tipping action operates a reed contact: in this way counting the quantity of the rainfall. This means that the tipping bucket has one enormous advantage: it needs no power supply to operate. Power supply is only a necessity when circumstances demand heating because of low environmental temperatures.

Reading the number of counts, in other words reading the rainfall, can be done locally by using a local (battery operated) datalogger. But it is also possible to communicate directly the results through one of our dataloggers of the HD33 series. The built-in 4G/3G/GPRS modem makes it easy to upload the data directly to one of our cloud applications or to your own secured server.

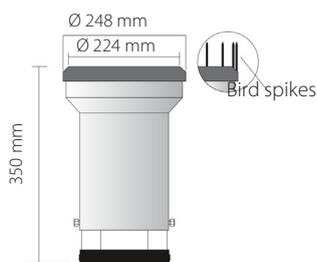
When ordering, the rain gauge is completely setup to be used. Easy to install, adjustable feet and leveling device integrated. Bird spikes and accesories for raised mounting available.

## Technical Specification

Principle	Tipping Bucket
Type of precipitation	Liquid, mixed*, solid*
Collector area	400 cm <sup>2</sup>
Contact output	Voltage free
Analog output (optional)	4...20 mA or 0...10 V
Digital output (optional)	SDI-12
Power supply	12 or 24 Vdc for version with heating 7...30 Vdc for 4...20 mA or SDI-12 output 13...30 Vdc for 0...10 V output
Consumption	165 W heating ≈26 mA for I <sub>out</sub> @ 18 Vdc ≈4 mA for V <sub>out</sub> @ 18 Vdc ≈100 μA for SDI-12 @ 18 Vdc
Resolution	0.1 – 0.2 or 0.5 mm/tip
Accuracy	± 2 % (using correction curves - see graphs)
Maximum rainfall rate	600 mm/h (0.2 res. version) 1000 mm/h (0.5 res. version)
Operating temperature range	0 °C ...+70 °C -20 °C ...+70 °C*
Heating intervention temperature*	+4 °C
Protection Degree	IP64
Minimum section of the wires of the connecting cable	0.5 mm <sup>2</sup> 2.5 mm <sup>2</sup> *

\*Specifications refer to the version with heating system HD2013R

### Dimensions



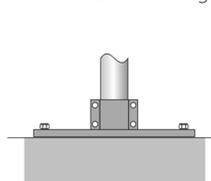
Raised above ground

Ground installation

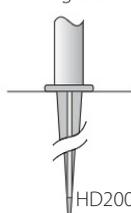
### Installation modes

Flat base for floor fixing

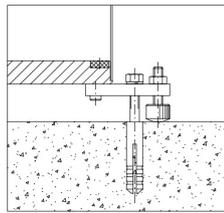
Base with ground tip



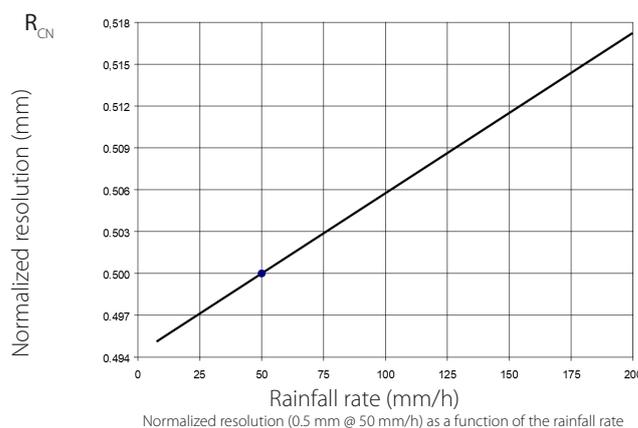
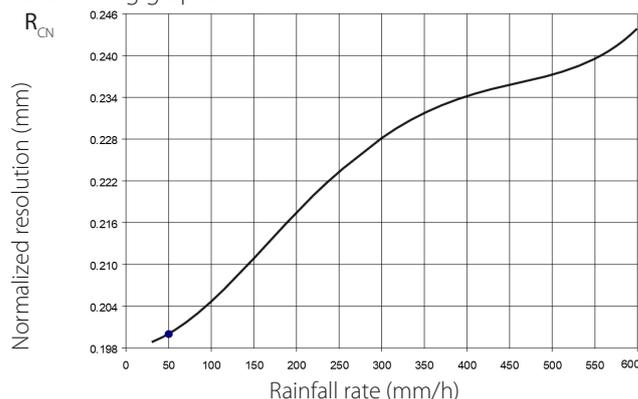
HD2003.78



HD2003.75



If the amount of rain is calculated using the correction curve as a function of the rainfall rate, the error is typically less than ± 2% in the interval 0...200 mm/h. If the HD2013-DB data logger is used, the measurement can be automatically corrected according to the following graphs.



## Ordering Codes

HD2013



**Blank\*** = Operating temperature 0...+70°C  
**R\*** = Operating temperature -20...+70 °C  
**UA** = Additional option contact output and analog output at choice between 4...20 mA or 0...10 Vdc  
**UD** = Additional option contact output and SDI-12 digital output for HD2013

\* Resolution 0.1, 0.2 or 0.5 mm to be defined when placing the order.

### Accessories

HD2013.18 Bird spikes (eight spikes Ø 3 mm, height 60 mm)

HD2013.5K Kit for the installation of the rain gauge raised 500 mm off the ground and the levelling

HD2013.5K.1 Kit for the installation of the rain gauge raised 1 m off the ground and the levelling

HD2003.75 Flange with tip for the ground

HD2003.78 Flat base for floor fixing

HD2013-DB Rain indicator data logger with LCD display; reads and stores up to 32,255 pulses.

HD33... series 4G / 3G / GPRS data logger series for remote communication / Cloud

**Delta OHM**

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In order to ensure the quality of our instruments, we may have to develop our products. We may make changes or corrections at any time. Check on our website to make sure your documentation is up to date.

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