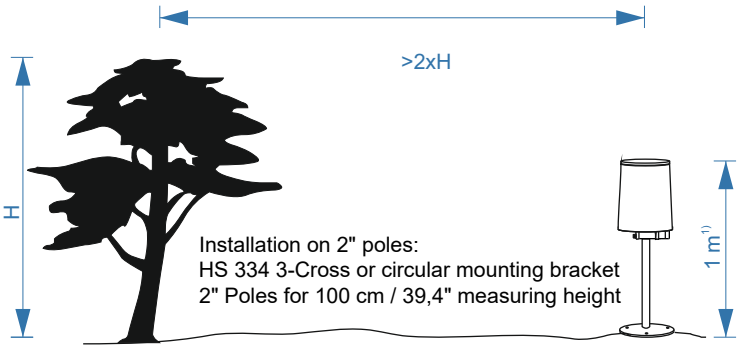
RAINBAL SELF-EMPTYING WEIGHING PRECIPITATION SENSOR

Package contents

- ➔ RainBal-Series Precipitation gauge
- ➔ FAT - Calibration and Test Certificate
- ➔ Installation Guide

Available Version

- ➔RainBal 200 and 314 with SDI-12/RS485/Pulse Output
- ➔RainBal-H 2 and 3 with Heater, SDI-12/RS485/Pulse Output

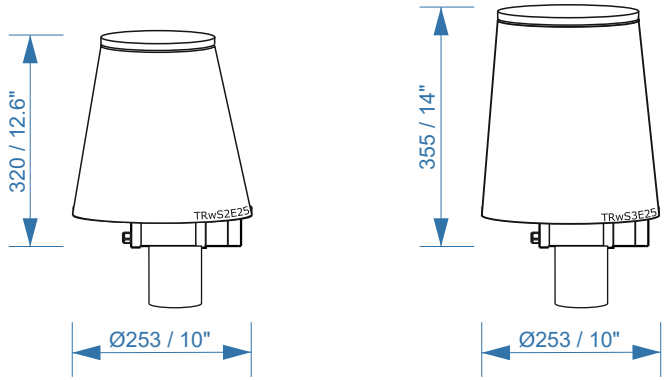


[1)] For the correct height consult your local regulations

Range of the RainBal series rain gauges

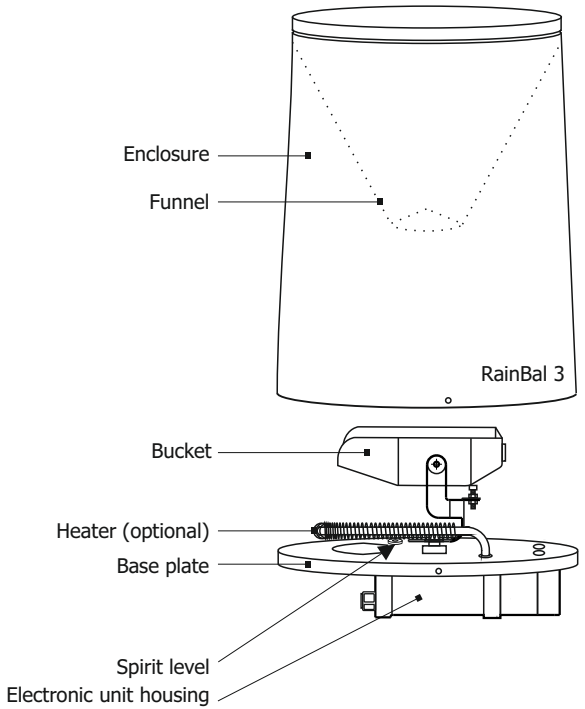
RainBal 2
Collecting area: 200cm²
Ø160mm / 6.3"

RainBal 3
Collecting area: 314cm²
Ø200mm / 7.9"



Drawing with 2" pole adapter circular, also available TB334 mounting bracket for 2" pole mounting and leveling.

Main parts



Factory Settings

- ➔SDI-12, Pulse output metric units
- ➔User level change of settings by IOS/Android APP (pulse output-imperial units, RS485 modes ...)
- ➔SDI-12 and RS485 cannot be operated simultaneously

Mounting

Precipitation site

- ➔Site selection and final instrument assembly
- ➔Selection criterias for precipitation site according to, national weather services guide line or specific agency guide line.
- ➔Recommended installation heights are 1,0 or 1,5 m.
- ➔Detach the pipe house from the instrument and remove the bucket from the 2 point mounting assembly of the weighing system at the middle of the instrument carrier.

Mounting with HS 334 Mounting bracket

Use the mounting bracket from the HS 2" pole set withs its 3 screws for instrument assembling and leveling by its internal level bubble. Use the different 2 sets of screws for the both types of the instuments to achieve a total height of 360 mm and measuring height of 100 or 150 cm.

Finalization of installation works:

Assemble the bucket and pipe house and tighten the two fixing screws onto the instrument carrier. Cannect mandatory sensor cable M12 SAC-8pol_90° and heater cable M12 SAC-4pol_90°

⊘ **Caution: Disconnect M12 heater sensor cable SOC-4pol always when opening, maintaining or calibrating the sensor. Do not produce your own sensor cables!**

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Serial interface

Serial interfaces can be selected either SDI-12 or RS485 by IOS/Android APP plus pulse output. Pulse Output can be used for redandant and simulatneous monitoring or for HS Field Calibration device to be connected to the HS counter.

Sensor connection cables and assignments

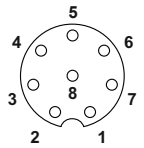
All non-heated RainBal are equipped with a M12 8pol connector (male) and the heated RainBal-H with additional M12 4pol connector (male).
Connection towards data-logger and power supply to be applied with corresponding accessories sensor cables SOC-8P-M12 and SOC-4P-M12.

⊘ ***Caution: unproper or false connection can demage the instrument. All interface lines and power lines are reverse protected but false connection of power lines to the interface lines can damage the instrument.***

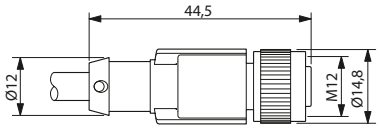
Illustration and drawings below does show the sensor cables only.
Shield to be connected to PE inside the corresponding control cabinet by both end grounding.

Sensor cable M12 SAC-8pol

Pin assignment

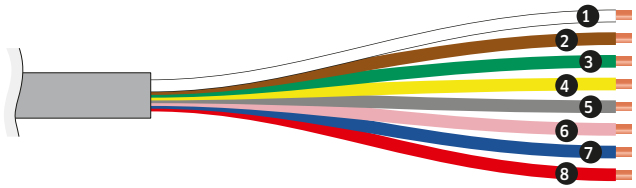


Dimensioned drawing



M12 x 1 socket, straight, shielded

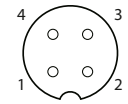
Connection diagram



WH	Power VCC +	
BN	Power GND -	
GN	SDI12-GND	
YE	SDI12-DATA	
GY	RS485A	
PK	RS485B	
BU	PULSE OUTPUT	
RD	PULSE OUTPUT	

Heater cable M12 SAC-4pol

Pin assignment



Connection diagram

BN	Heater Power -
WH	Heater Power +
BK	Heater Power -
BU	Heater Power +

SDI-12 procol and commands for metric and imperial units

Start **basic** measurement: 0M! (Metric unitsM! to M4! Imperial units by M5! to M9!)
→ sensor address (**default address is '0'**)

Response: 00003<CR><LF>
→ 3 measurements available immediately

Send data: 0D0!

Response:

0+0.134+7995.146+21.246<CR><LF>
→ total amount of precipitation (21.246mm)
→ total weight (7795.146g)
→ amount of precipitation since previous reading (0.134mm)
→ sensor address (default '0')

HyQuest ASCII protocol (RS-485)

Factory-set communication parameters: 9600,8,N,1

Data request (**basic** message): <ENQ>0<CR>
→ sensor address (**default address is '0'**)

Response:

<SOH>0<STX>134<TAB>7995146<TAB>21246<ETX><CR><LF>
→ total amount of precipitation (21.246mm)
→ total weight (7795.146g)
→ amount of precipitation since previous reading (0.134mm)
→ sensor address (default '0')

MODBUS RTU/ASCII (RS485)

Factory-set communication parameters: 9600,8,E,1
Factory-set device address: 48
Function code: 04 (read input registers)
Some important register addresses: 290 = amount of precipitation [mm]
292 = weight of the bucket content [g]
294 = temperature [°C]

All registers are of type float, read two consecutive registers to get a value.

HS Application

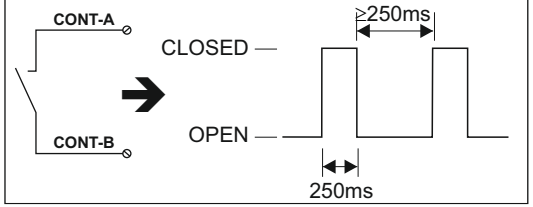
Default password: S/N of the instrument left-padded with zeroes to 6 characters.

for Android **for iOS**

Specifications

Operating voltage	5 ... 30 VDC
Power consumption	max 40 mW, typical 4 mA@5VDC; 1.2 mA@12 VDC; 0.5 mA@24 VDC
Heating voltage/power	VAC/DC / cca 0.4 ... 1.15 A (cca 4 ... 35 W)
Interfaces	SDI-12 V1.4, RS-485 2W, Bluetooth LE
Pulse output	(relay contact): 0.01/0.1/1.0 mm or 0.001/0.01/0.1/1.0 inch
Optional sensor cables	M12 SAC-8pol (Sensor) and M12 SAC-4pol (Heater)
Dimensions (RainBal 2/3)	Ø253x320 / Ø253x355
Weight (RainBal 2/3)	4.6 / 5.2
Operating measuring temperature range	0 to +70°C; -10 to +70°C with heater@24 VDC
Operating deployment temperature range	-40 to +70 °C
IP grade	IP 65

Pulse output



Metric or imperial pulse factors selectable by iOS/Android App