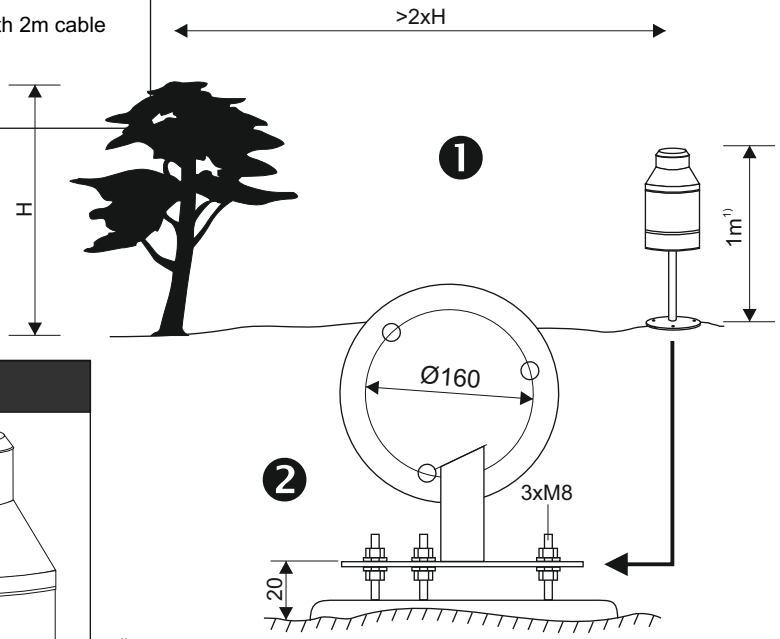
TOTAL RAIN WEIGHING SENSORS TRWSx1x

Most recent revision August 2, 2016

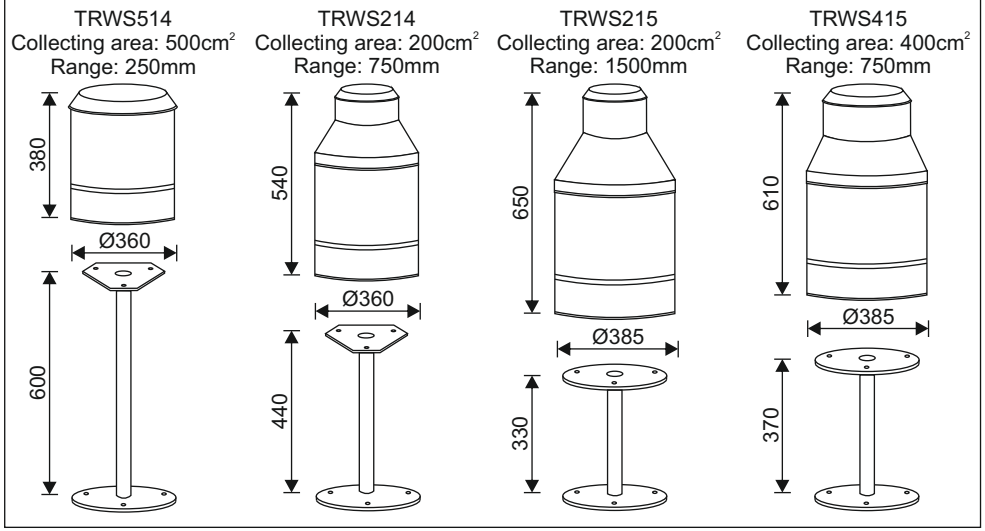
Package contents

- ➔TRWS rain gauge, complete, with 2m cable
- ➔Stand
- ➔Calibration and test certificate
- ➔This guide

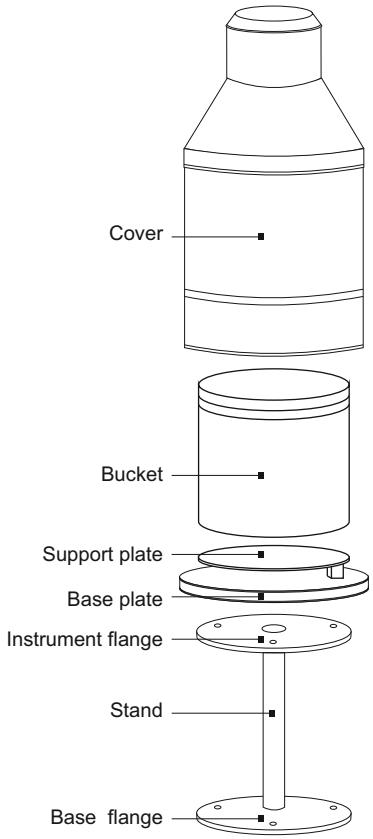


1) If required by local conditions, the orifice may be positioned in a height up to 2 meters above the surrounding terrain (special stand is necessary)

Choice of the TRWS rain gauges



Main parts



Mounting

➔Find a proper place for the rain gauge. It should be open but not too windy. The distance from the gauge to any obstruction should be at least twice the height of the obstruction. The orifice should be 1 meter above the surrounding terrain. ❶

➔Prepare a concrete base and attach three M8 bolts to it (e.g. use wall plugs and hanger bolts). ❷

➔Screw three M8 nuts onto the bolts and place the lower flange of the stand on them. Note: the lower flange is always round but the upper one is hexagonal by some TRWS models.

➔Make the upper (instrument) flange of the stand horizontal using a spirit level in two directions perpendicular to each other. Fix the stand using another 3 nuts and washers. Do not tighten the nuts yet.

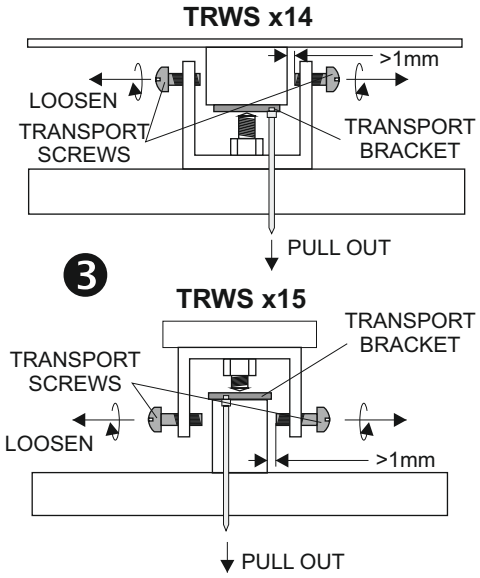
➔Detach the stainless steel/laminate cover from the rain gauge base plate loosing three screws at the bottom edge of the cover. Remove the bucket from the base plate.

➔Attach the base plate to the stand using three M8 screws. Check the horizontal position of the support plate with a spirit level and adjust the position using the lower flange nuts if necessary. Now tighten the nuts thoroughly.

➔The rain gauge is fitted with two transport screws and a transport bracket to prevent damage of the strain gauge during transport. ❸ **Loosen both screws** so that there is a space of at least 1 millimeter between the tip of the screw and the body of the gauge and **remove the transport bracket**.

➔Put back the bucket and the cover. Mind the right position of the cover: the male part of the heating connector has to be plugged into the female one located at the base plate of the rain gauge. Fix the cover tightening 3 screws around the lower edge.

➔Use your finger to check if the rain gauge has been assembled correctly: **there must not be any contact between the bucket and the cover!**



MPS systém s.r.o., Pri vinohradoch 326, 831 06 Bratislava, SLOVAKIA ++421 2 44 88 94 86 info@mps-system.sk support@mps-system.sk www.mps-system.sk

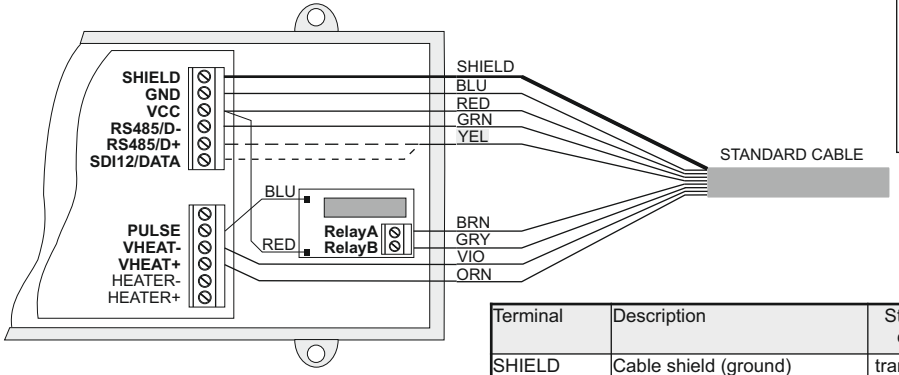
TOTAL RAIN WEIGHING SENSORS TRWSx1x

Selecting serial interface

A TRWS rain gauge is delivered with serial interface selected according to your order (RS485 or SDI12). If necessary you can select the other interface by yourself sending the corresponding command in the service mode (see the TRWS User Guide). **If you use the standard (8-wire) cable remember to reconnect the yellow wire to the corresponding terminal (RS485/D+ or SDI-12/DATA) as well.**

Note: *The pulse output functionality is not affected by selecting the serial interface.*

Wiring



Note: *Depending on pre-configured interface the yellow wire is connected either to RS485/D+ or to SDI-12/DATA.*

Terminal	Description	Standard colour
SHIELD	Cable shield (ground)	transparent
GND	Operating voltage, ground	blue
VCC	Operating voltage, positive	red
RS485/D-	RS485 data line, negative	green
RS485/D+	RS485 data line, positive	yellow
SDI12/DATA	SDI12 data line	yellow
RelayA RelayB	Contact output	brown grey
VHEAT-	Heating voltage, negative	violet
VHEAT+	Heating voltage, positive	orange

Specifications

Operating voltage	5..34V_{DC}
Operating power	45mW (3.7mA@12V)
Heating power	10..30V_{DC} (1A@12V, 2A@24V)
RS485	9600, 8 data bits, 1 stop bit, no parity
Pulse output	3.3V (inverted, pulse 250ms, space ≥250ms)
Dimensions (TRWS214 / 514 / 215 / 415)	Ø360x540 / Ø360x380 / Ø385x650 / Ø385x610mm
Weight (TRWS214 / 514 / 215 / 415)	8.0 / 8.0 / 9.5 / 9.5kg
Standard cable length	2m
Operating temperature	-40..+70şC
Operating humidity	0..100%

Using the RS485 interface

Data request (**basic** message): <ENQ>1<CR>
→ sensor address (**default address is '1'**)

Response:

<SOH>1<STX>134<TAB>7995146<TAB>21246<ETX><CR><LF>

- 21246 → accumulated precipitation sum (21.246mm)
- 7995146 → total weight (7795.146g)
- 134 → one-minute precipitation sum (0.134mm)
- 1 → sensor address (default '1')

(The content of the message is configurable.)

Zero the accumulated sum:

<ENQ>1CLRCV<CR>
→ sensor address

Response:

OK<CR><LF>

Using the SDI-12 interface

Data request (**basic** message): 1R0!
→ sensor address (**default address is '1'**)

Response:

1+0.134+7995.146+21.246<CR><LF>

- 21.246 → accumulated precipitation sum (21.246mm)
- 7995.146 → total weight (7795.146g)
- 0.134 → one-minute precipitation sum (0.134mm)
- 1 → sensor address (default '1')

Zero the accumulated sum:

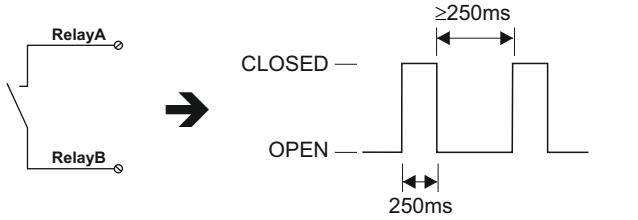
1XCLRCV!
→ sensor address

Response:

1<CR><LF>

Note: *Even though the 'M' and 'D' commands are implemented as well, it is strongly recommended to use the 'R' command to get data from the rain gauge.*

Using the pulse (contact) output



1 pulse = 0.01 or 0.1 or 1mm (selectable)

MPS systém s.r.o., Pri vinohradoch 326, 831 06 Bratislava, SLOVAKIA ++421 2 44 88 94 86 info@mps-system.sk support@mps-system.sk www.mps-system.sk