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USER GUIDE

RG13

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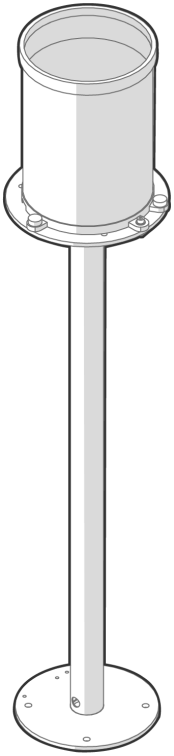
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M211724EN-E

User guide

Rain gauge

RG13 and RG13H



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1. About this document

1.1 Version information

Table 1 Document versions

Document code	Date	Description
M211724EN-E	January 2020	Changed wiring information.
M211724EN-D	September 2016	Specifications changed.

1.2 Documentation conventions

WARNING! Warning alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.

CAUTION! Caution warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.

Note highlights important information on using the product.

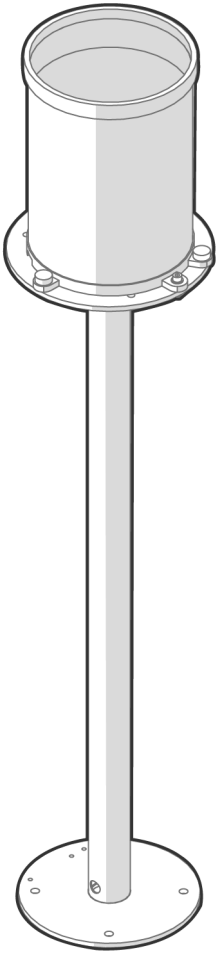
Tip gives information for using the product more efficiently.

Lists tools needed to perform the task.

Indicates that you need to take some notes during the task.

2. Product overview

2.1 Vaisala Rain Gauge RG13(H)



RG13(H) uses a pulse-based tipping-bucket mechanism to produce a contact closure every time it receives a predetermined quantity of rainfall: 0.1 mm (0.004 in) or 0.2 mm (0.008 in).

The body and funnel of the gauge are aluminum alloy. The septum ring at the top gives an aperture of exactly 400 cm^2 (62 in^2).

The tipping-bucket mechanism is mounted inside the body on a cast aluminum-alloy base that has fixing slots, 3 leveling screws, and a spirit level. The mechanism consists of a divided bucket pivoted at its center. Rain collects in the upper half. When this is full, the mechanism tilts and discharges the collected water, so that the other half of the bucket can start filling.

A siphon device is fitted to the base of the funnel to control the rate of flow into the buckets. By ensuring a constant flow rate into the tipping bucket, calibration is made easier and accuracy improved.

The heating turns on when the temperature drops below +4 °C (+39 °F).



Figure 1 RG13H with heating option

2.2 Expander unit

With the optional expander unit, you can increase the opening to 1000 cm^2 (155 in^2). The expander unit is made of aluminum and coated for optimal operation.



Figure 2 RG13 with expander unit

2.3 Safety

This product has been tested for safety. Note the following precautions:

WARNING! Only licensed experts may install electrical components. They must adhere to local and state legislation and regulations.

2.3.1 ESD Protection

Electrostatic Discharge (ESD) can damage electronic circuits. Vaisala products are adequately protected against ESD for their intended use. However, it is possible to damage the product by delivering electrostatic discharges when touching, removing, or inserting any objects in the equipment housing.

To avoid delivering high static voltages to the product:

- Handle ESD-sensitive components on a properly grounded and protected ESD workbench or by grounding yourself to the equipment chassis with a wrist strap and a resistive connection cord.
- If you are unable to take either precaution, touch a conductive part of the equipment chassis with your other hand before touching ESD-sensitive components.
- Hold component boards by the edges and avoid touching component contacts.

3. Selecting location

Finding a suitable site for the rain gauge is important for getting representative ambient measurements. Select a site which represents the general area of interest.

The opening of the gauge must be in a horizontal plane, open to the sky, and above the level of in-splashing and snow accumulation. In general, objects should not be closer to the gauge than a distance four times their height above the gauge orifice.

In areas of homogeneous dense vegetation, the height of the vegetation should be kept below the gauge opening level by regular clipping. Sites on a slope or on the roof of a building should be avoided. Also hard flat surfaces such as concrete should be avoided to prevent excessive splashing.

4. Installation

The rain gauge is delivered with the optional stand and installation equipment as shown in the following figure.

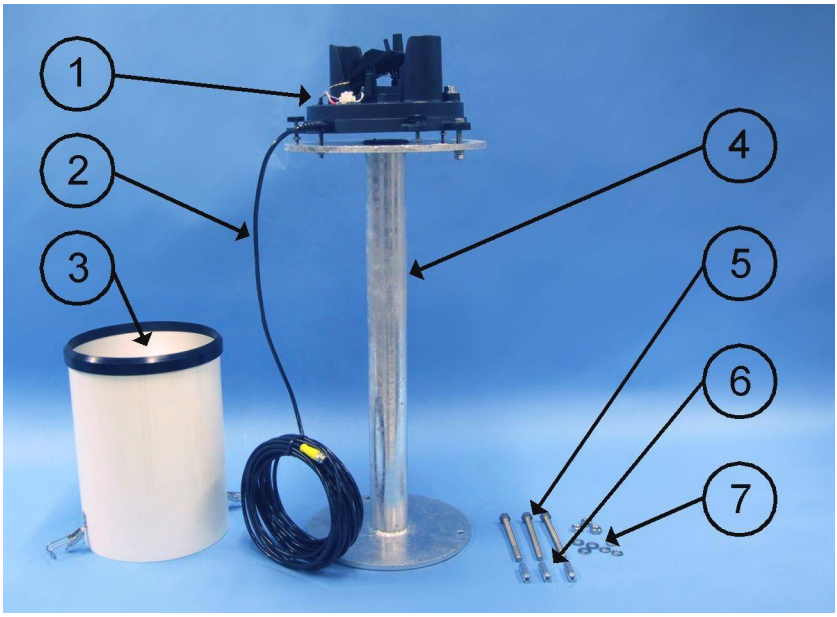


Figure 3 Rain gauge with installation equipment

1 Sensor base
2 Sensor cable
3 Outer tube
4 Stand
5 Mounting bolts for the stand
6 Wedge bolts
7 Nuts and washers for mounting bolts

4.1 Connecting RG13(H)

1. Loosen the 2 locks that secure the outer tube to the base and lift off the outer tube.

2. Connect the output signal cable through the grommet and into the terminal block located on the base. Seal it with a silicone rubber compound.

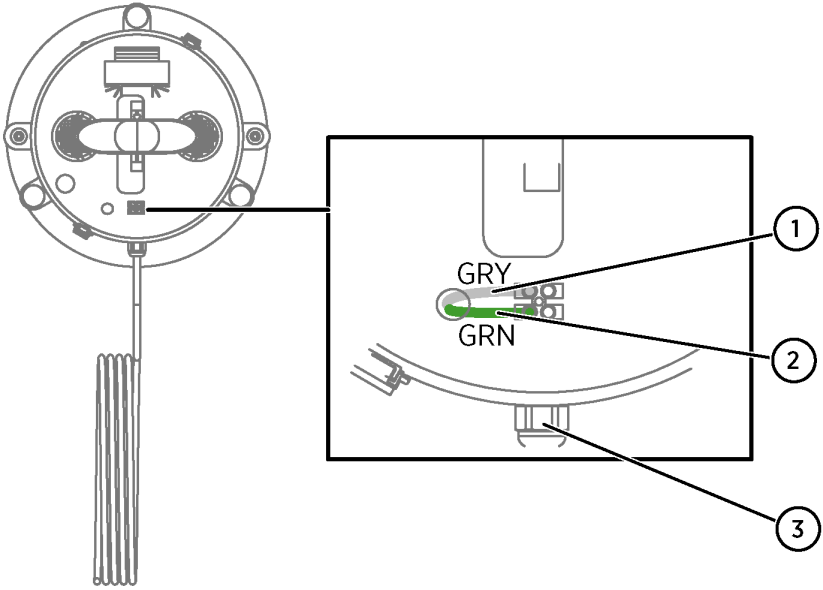


Figure 4 Wiring RG13

1 Gray wire
2 Green wire
4 Grommet

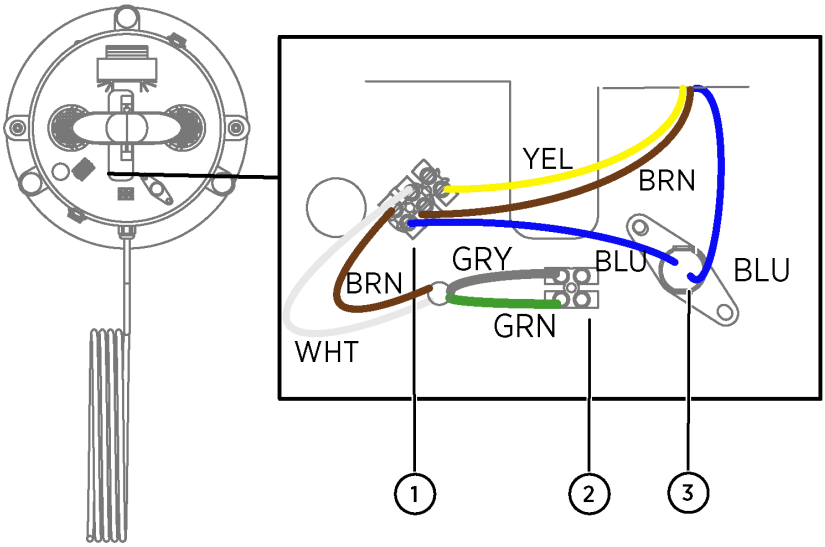


Figure 5 Wiring RG13H

1 Connector block for the heater
2 Connector block for the signal cable
3 Thermostat switch

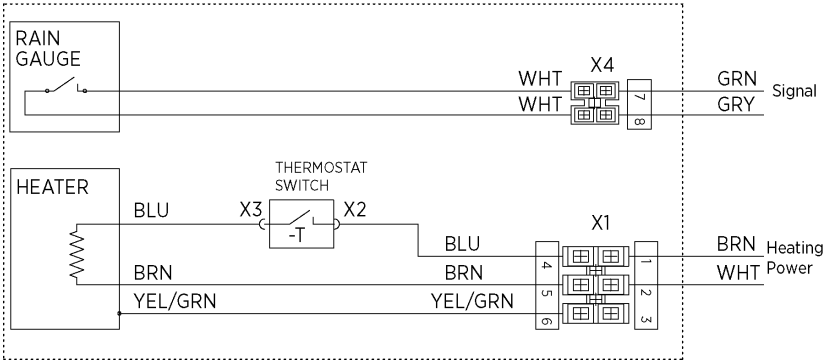


Figure 6 Basic wiring diagram for RG13H

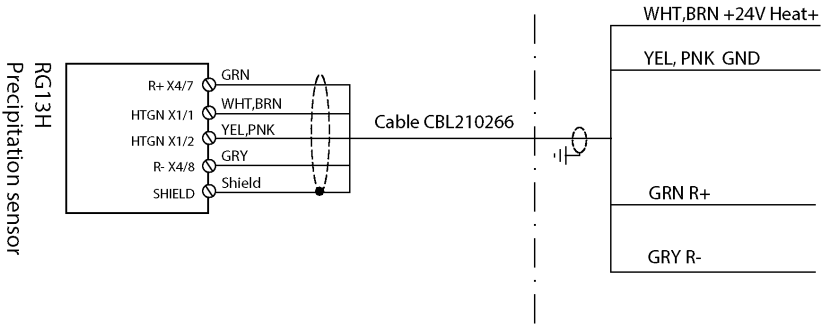
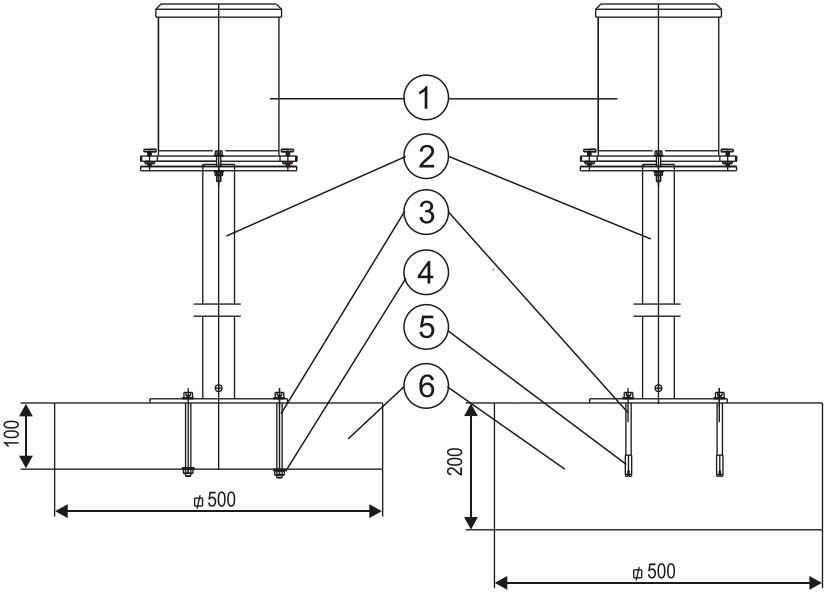


Figure 7 Wiring diagram for AWS-integrated RG13H

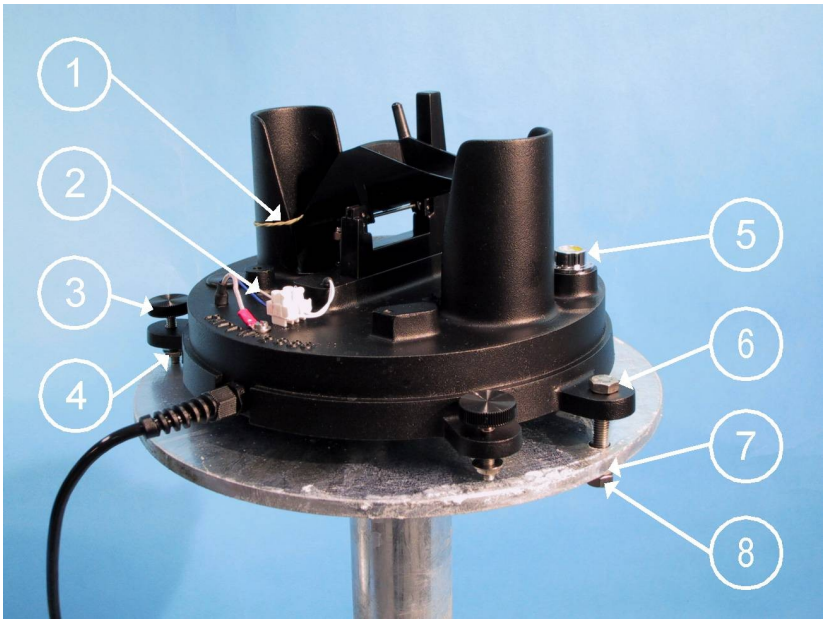
4.2 Mounting RG13

1. Attach the stand to a foundation with the provided bolts. Do one of the following:
   a. If you have a thin concrete pad, secure the bolts with the nuts.
   b. If you have a thick concrete pad, install the wedge bolts and then the bolts.



1 RG13
2 Stand
3 Bolt
4 Nut
5 Wedge bolt
6 Foundation

2. Place the base onto the stand and level it with the 3 leveling screws. For leveling use the spirit level. Finally, secure the locknuts.



1 Rubber band
2 Base
3 Leveling screw
4 Lock nut
5 Spirit level
6 Bolt
7 Washer
8 Nut

3. Secure the base through the 2 holding lugs with the provided bolts, washers, and nuts.
4. Carefully remove the rubber band, that is fitted for transit purposes, and check that the bucket does pivot.
5. Replace the outer tube and secure it with the locks.
6. Lead the signal/power cable to the enclosure and connect.

5. RG13(H) maintenance

To ensure accurate operation, keep the sensor clean. Clean the sensor at least every 6 months. When leaves are falling and there is a lot of debris in circulation, check the sensor more often.

To avoid erroneous measurements, avoid tipping the cup assembly when the gauge is connected to the weather station and the station is operating.

To ensure reliable and accurate measurements, Vaisala recommends you to carry out the following checks at each visit to the rain gauge.

1. Inspect the funnel and filter for any damage or blockage.
2. Remove any obstacles from the funnel, such as leaves, debris, dirt, and dust.
3. Clean the filter by removing the end cap from the filter tube.
4. Carefully remove the filter material once a year, and clean and replace the filter and the cap.
5. To ensure accurate operation, clean the spoon of dust and dirt once or twice a year.
6. Remove and clean any dirt from the bucket.
7. Check that the gauge is still level.
   The gauge can become tilted as a result of small ground movements, such as frost, or vandalism.
8. If the rain gauge is disconnected from the station or does not log data, check the balance arm of the bucket for stiffness.
   To perform the check, try to balance the bucket in its center position. If the bucket balances easily, examine the bucket closely for any dirt or wear on the pivot pin and bucket tubes.

6. Technical data

6.1 RG13(H) Specifications

Table 2 Measurement Performance

Property	Description/Value
Precipitation	Liquid
Accuracy	2 % at 1 l/h (0.26 gal/h)
Diameter of aperture	225 mm (8.86 in)
Area of aperture	400 cm^2 (62 in^2) With expander unit: 1000 cm^2 (155 in^2)
Rainfall capacity	Unlimited
Resolution	0.2 mm (0.008 in) (standard) 0.1 mm (0.004 in) (optional) 0.5 mm (0.02 in) (optional)
Closure time	< 100 ms (for 0.2 mm / 0.008 in of rain)

Table 3 Operating Environment

Property	Description/Value
Operating temperature	RG13: +1 ... +85 °C (+33.8 ... +185 °F) RG13H: −20 ... +85 °C (−4 ... +185 °F)
Storage temperature	−40 ... +85 °C (−40 ... +185 °F)
Heating (RG13H)	
Heating connection/disconnection at	+4 °C (+39 °F)
Heating power	RG13H: 33W / 48 VDC RG13J: 33W / 24 VDC

Table 4 Mechanical Specifications

Property	Description/Value
Dimensions (H × Ø)	338 × 248 mm (13.31 × 9.76 in)
Weight	2.6 kg (5.73 lb)
Material	

Property	Description/Value
Base, septum ring	Aluminum alloy LM25
Outer ring, funnel	Aluminum alloy sheet
Inlet/Outlet ports, pins	Stainless steel
Tipping mechanism	Injection moulded plastic
Transducer	Reed switch
Output	
Circuit	Contact closure
Connection	Screw terminal
Life (operations)	10^8 closures

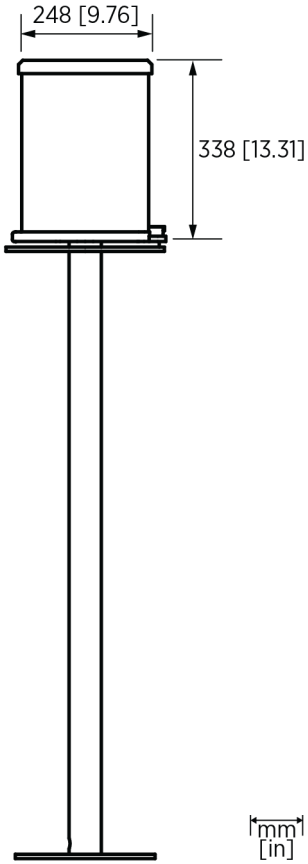


Figure 8 RG13(H) Dimensions

Warranty and Product Returns

For standard warranty terms and conditions, see www.vaisala.com/warranty.
Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.
If the product is faulty, these steps help to speed up the return process and avoid extra costs.

1. Read the warranty information.
2. Contact Vaisala technical support and request a Return Material Authorization (RMA) and shipping instructions.



Always request the RMA before returning any faulty material.
Provide the failure report as requested.

Technical Support



Contact Vaisala technical support at helpdesk@vaisala.com. Provide at least the following supporting information as applicable:

- Product name, model, and serial number
- Software/Firmware version
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see www.vaisala.com/support.

Recycling



Recycle all applicable material.



Follow the statutory regulations for disposing of the product and packaging.

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