

Technical Note

Improving Weather Station Grounding AWS310, AWS310-SITE, AWS430, FOC201, RME111

Improving Weather Station Grounding

You can improve the grounding of Vaisala weather stations to make the weather station less susceptible to damages caused by lightning.

While visiting the site, check also that the enclosure and sensor cables have been grounded according to the instructions.

For more detailed information on grounding, see *Grounding and Lightning Protection in Vaisala Outdoor Installations Technical Reference*.

More Information

- ▶ [Improving Grounding of Stainless Steel Flanges \(page 2\)](#)
- ▶ [Improving Grounding of Rubber Flanges \(page 5\)](#)
- ▶ [Checking Weather Station Grounding \(page 6\)](#)



Improving Grounding of Stainless Steel Flanges



- Serrated lock washer A8.4 DIN6798 (8 pcs)
- Torque wrench (1 ... 5 Nm)

- ▶ 1. Loosen the screws (4 pcs) that hold the flange at the bottom of the enclosure until you can remove the counter ribs inside the enclosure .



2. Push the screws back to place and insert the serrated lock washers on the screws.



3. Insert the counter ribs on the screws.



4. Tighten all the screws lightly one by one.



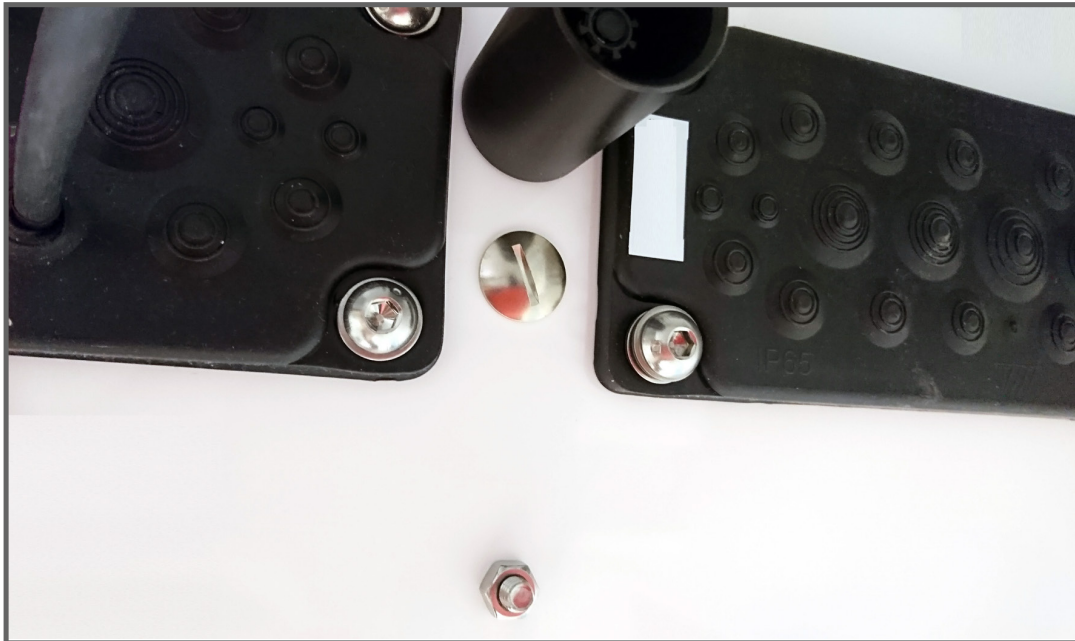
5. Tighten all the screws to 4 Nm.
6. Repeat the procedure on the second flange of the enclosure.

Improving Grounding of Rubber Flanges



Torque wrench (1 ... 5 Nm)

- ▶ 1. Check that the screws with which the rubber flange is attached to the bottom of the enclosure are tightened to 2.6 ...3.0 Nm.



2. Tighten the screws if needed.

Checking Weather Station Grounding

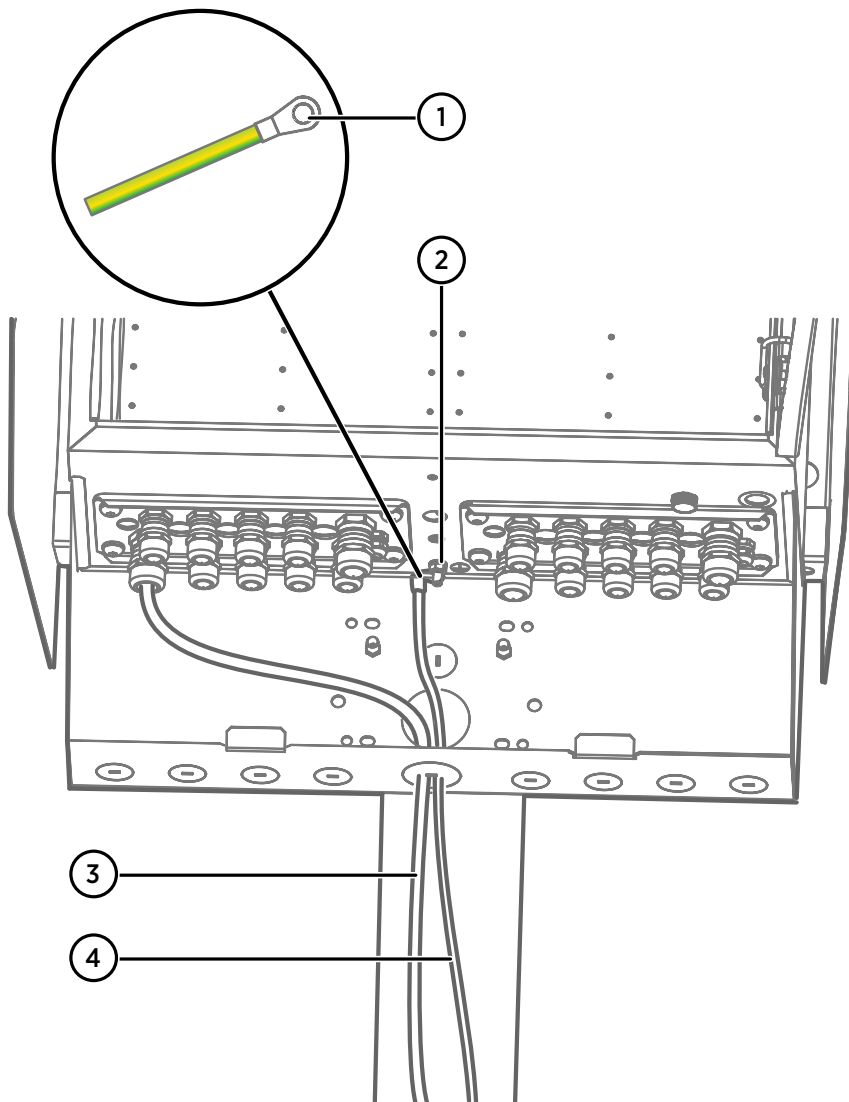
While visiting the site, check also that the enclosure and the sensor cables are properly grounded.

More Information

- ▶ [Checking Enclosure Grounding \(page 6\)](#)
- ▶ [Checking Sensor Cabling and Grounding \(page 8\)](#)

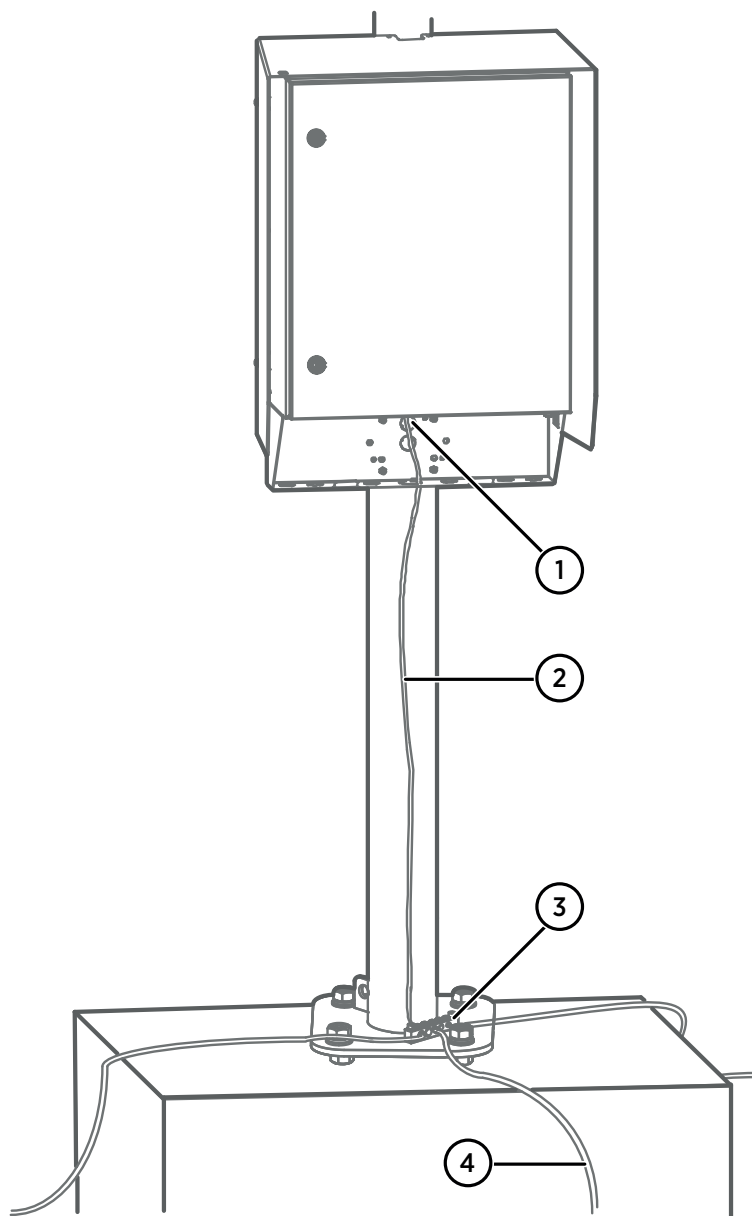
Checking Enclosure Grounding

- ▶ 1. Check that the enclosure grounding cable is connected to the system grounding point.



- 1 Cable lug with hole \varnothing 6.2 mm (0.24 in)
- 2 System grounding point
- 3 AC (mains) cable
- 4 Enclosure grounding cable

2. Check that the other end of the enclosure grounding cable is connected to a grounded location such as grounding connector.

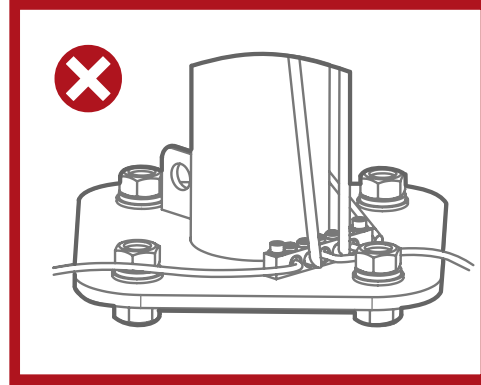
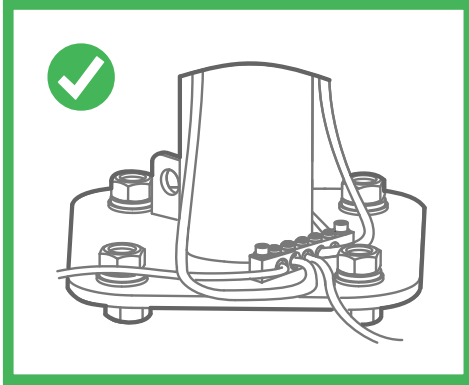


- 1 System grounding point
- 2 Enclosure grounding cable
- 3 Grounding connector
- 4 Grounding cables

3. Check that the grounding cables have not been pulled too tight.



CAUTION! Keep the curve of the down conductor smooth with a minimum radius of the bent cable 20 cm (8 in) and never over 90° angles.



Checking Sensor Cabling and Grounding



If you need to shorten sensor cables, you need:

- Cable cutters
- Cable stripper
- Crimping tool
- Pipette (rubber flange only)
- Ferrules
- Shrinkable tubes or electrical tape



WARNING! Make sure that you prepare or connect only de-energized wires.




CAUTION! To avoid strain on the connector, make sure you connect the cable properly. Too much strain may cause the cable to fall off, damage the cable or connector, or make the cable or connector susceptible to water leakage.



CAUTION! Do not damage or change the wiring. Incorrect wiring can cause damage and prevent or limit operation.

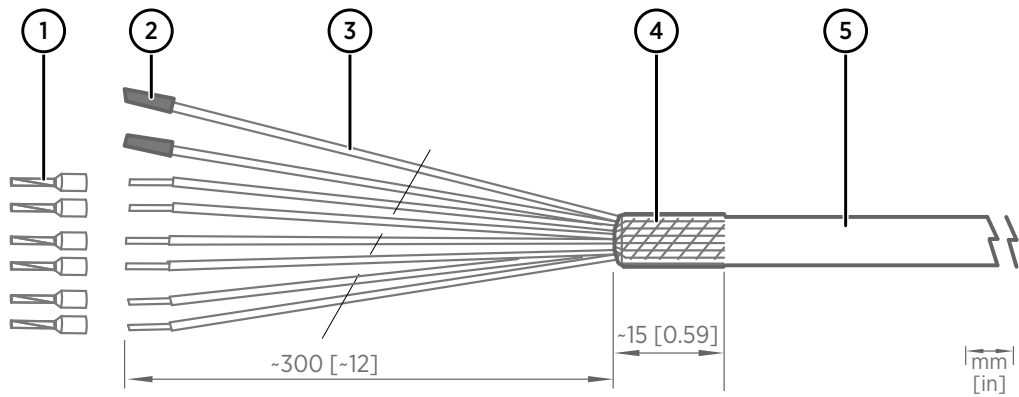
- ▶ 1. Check that the sensor cables have been cut to a suitable length. The cables must not be looped.



WARNING! A long cable between units (sensors, transmitters, power supplies, and displays) can cause a lethal lightning-induced current surge.

If the cables are too long:

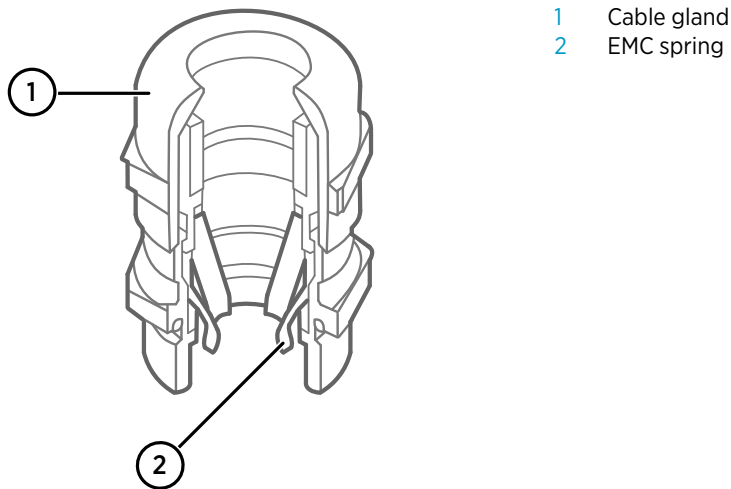
- a. Cut the cable to proper length.
- b. If the weather station has rubber flanges, insert the pipette through one of the feed-through rondels in the flange and pull the cable through.
If the weather station has stainless steel flanges, strip the cables first.
- c. Strip the cable to expose the wires.



- 1 Ferrule
- 2 Unused wires covered with a shrinkable tube or electrical tape
- 3 Wire
- 4 Cable shield folded over cable sheath
- 5 Cable

- d. Connect the cables again. For grounding instructions, see [step 2](#) or [step 3](#). For the wiring diagram, see the installation manual.

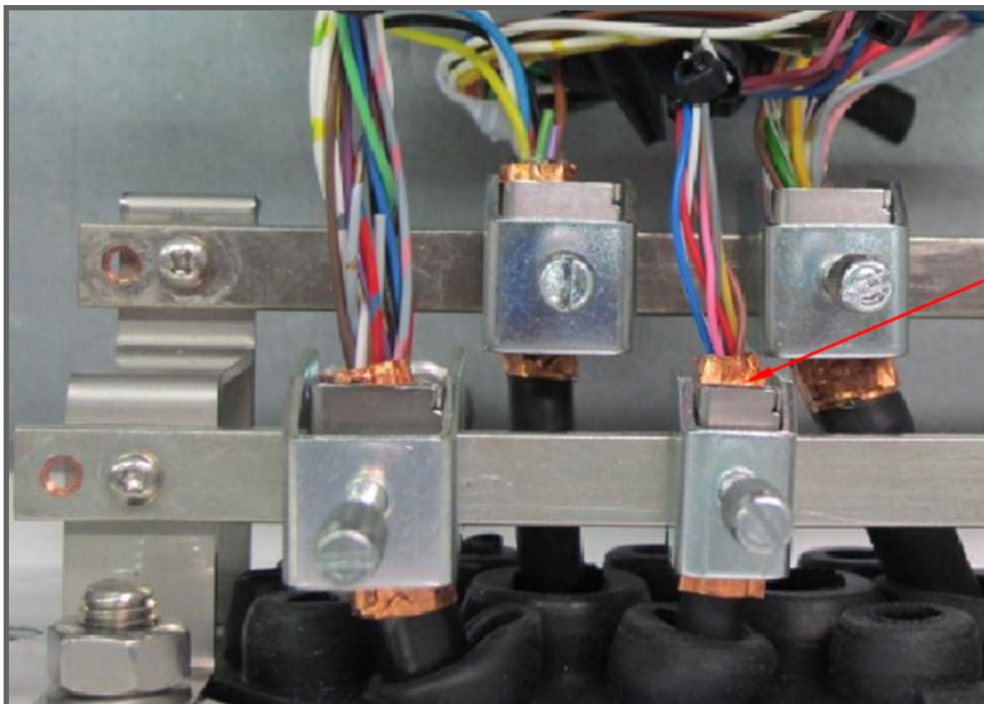
2. In weather stations with stainless steel flanges, check that the sensor cable shields have been grounded to the cable glands.
 - In cable glands with EMC springs, the cable shield must be firmly connected to the EMC spring.



- In cable glands without EMC springs, the cable shield must be grounded to the cable gland using a sealing insert.



3. In weather stations with rubber flanges, check that the sensor cable shields have been grounded to the grounding rail.



4. Check that all unused wires have been isolated with a shrinkable tube or electric tape.