smart vatten®
VERTO

ELECTRICAL DESIGN GUIDELINES

24/05/2024

1 SMARTVATTEN VERTO ELECTRICAL DESIGN GUIDELINES

1.1 Space-specific water metering

The Smartvatten Verto system, a wireless system for metering hot and cold domestic water, is installed according to the HVAC and electrical designs. The system comprises of

- space-specific flow sensors
- household units and unit displays
- a remotely readable collection unit.

Flow sensors (1–4 sensors / household unit) are installed in each household, and household units are installed near the sensors. The household units are numbered at the factory in accordance with the household numbering on the site.

The same sensor (V-15U) works on both hot and cold water lines.

The Smartvatten Verto objects are in the MagiCad product database.

1.2 Installing the collection unit

Always install the collection unit before the household units.

The collection unit needs a 230V electrical socket (can be freely placed in the property).

If the collection unit is read remotely via a Ethernet connection (TCP/IP), a data socket for an RJ45 network cable is required.

The electrical contractor must ensure that the cables are suitable for the building/apartment and meet the regulations for fire safety and electrical installations.

1. Install the collection unit in the main electrical cabinet or other suitable location. Make sure that it is in the range of the radio network and mobile network.
2. Do not install the collection unit side by side with strong current cables.
3. Connect the collection unit into a protective earthed fixed socket-outlet with a power source that is included in the device delivery.
4. Fix the collection unit with screws.
5. After installation, connect a voltage to the collection unit.

Two versions of the collection unit are available:

- EVG-SA HVAC no. 4466916, product no. WU0001, EVG-SA gateway SIM card (GSM)
- EVG-EA HVAC no. 4466917, product no. WU0002 , EVG-EA gateway Ethernet

1.3 Installing the household unit

The household units EVH-RB are powered by a battery pack with a service life of approx. 15 years. The battery pack is replaceable, and the replacement may only be done by a maintenance provider authorised by Smartvatten. The battery pack is supplied by Smartvatten. Do not use any other type of battery pack in the equipment.

The household unit EVH-R230 is equipped with a 230 V internal power source that is connected to the mains supply. In case of power outages, the EVH-R230 has emergency batteries.

The electrical contractor must ensure that the cables are suitable for the building/apartment and meet the regulations for fire safety and electrical installations.

1. Make sure to install the household unit in the household whose number is shown on the household unit casing.
2. Do not install the household units in a position where their cable connections face upward. Other installation positions are acceptable.

3. Install the household units near the flow sensors in each household in compliance with electrical and fire safety regulations and in a manner that makes it easy to access and service the device. If service hatches are needed, their size must be at least 500 x 500 mm.
4. The flow sensors have a 1 m connecting cable. If necessary, replace the cable with a 10 m connecting cable.
5. The sensors in the household (1 to 4 sensors per household) are connected to one household unit. If more than 4 flow sensors are needed in a household, connect the extra flow sensors to a separate household unit.

Two versions of the household unit are available:

- Battery powered EVH-RB HVAC no. 4466914, product no. WU0005
- Mains power EVH-R230 HVAC no. 4466915, product no. WU0003

1.4 Connecting the flow sensors to the household unit

1. Install the flow sensor cables based on the information on the casing label (hot/cold water).
2. Install the cables in the order shown in Figure 1.

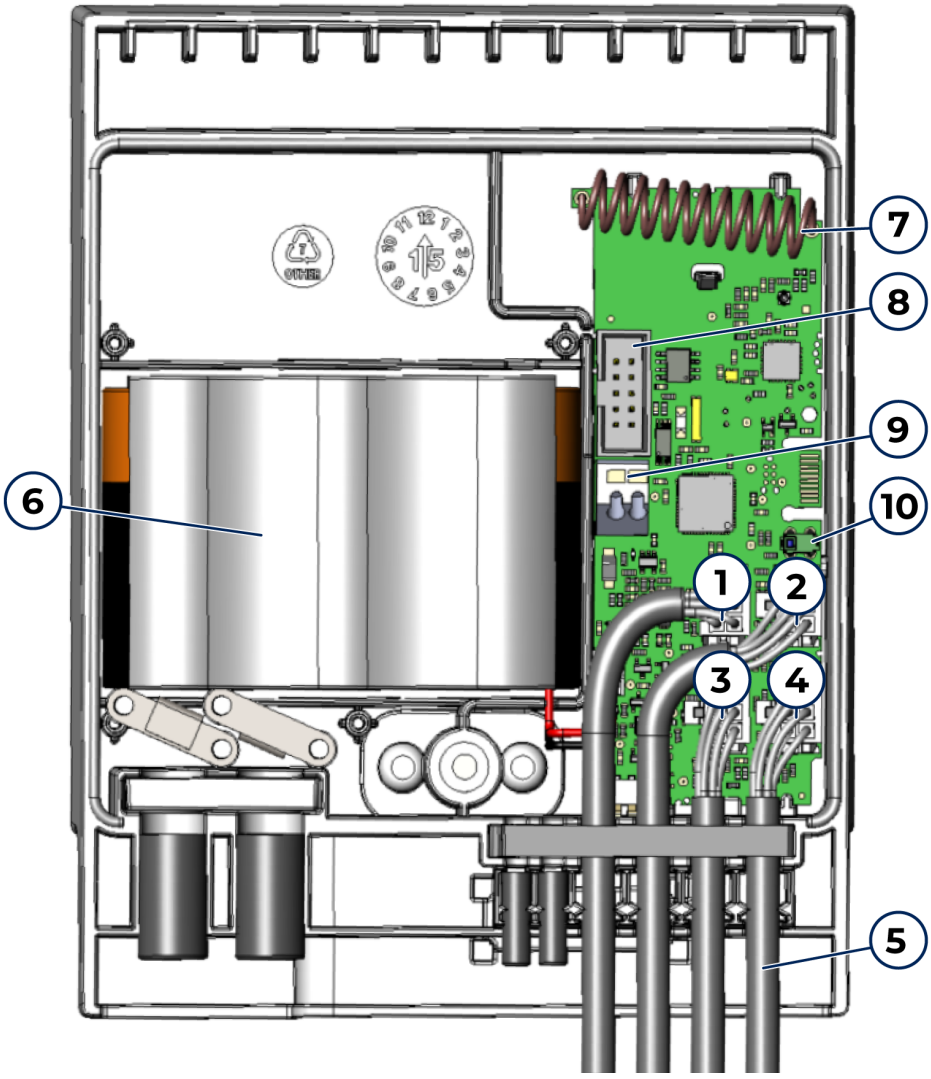

Figure 1. Installing cables to the household unit EVH-RB

1	Flow sensor cable connection	6	Battery pack
2	Flow sensor cable connection	7	Antenna
3	Flow sensor cable connection	8	Connector for additional element
4	Flow sensor cable connection	9	Connector for DC power source
5	Flow sensor cables	10	Cover switch

3. Connect both ends of the sensor cable before powering up the household unit.
4. With the EVH-R230 household unit, first install the flow sensor cables as with the battery powered household unit EVH-RB.
5. After this, install the cables.

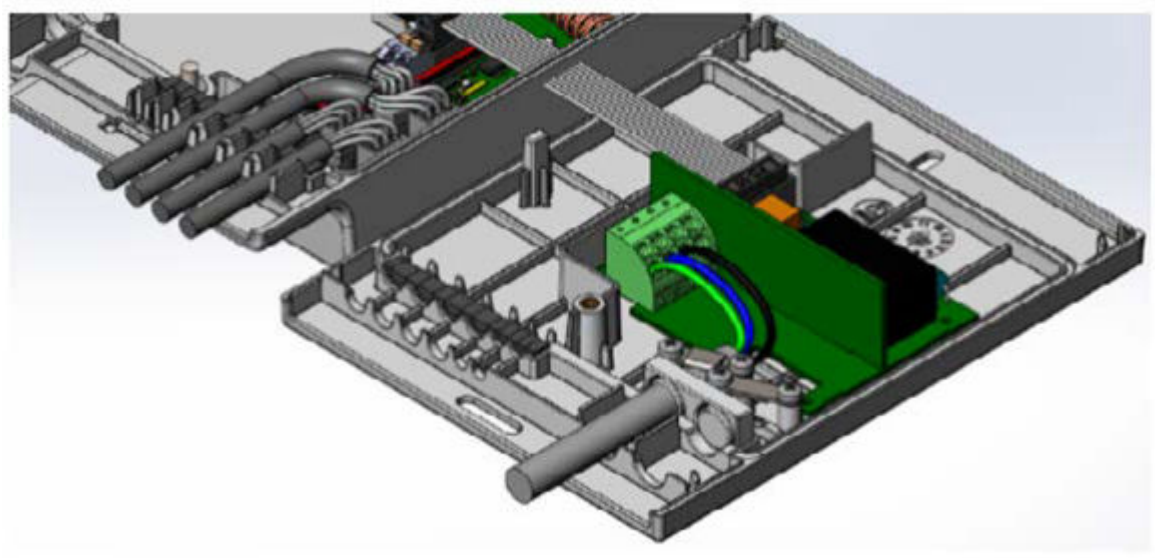

Figure 2. Installing cables to the 230 V household unit EVH-R230

1.5 Naming the household units

1. Name the household units according to the household numbers on the site (e.g. A01, A02, A03, B04, B05, etc.).
2. Provide Smartvatten with the household numbers when placing the order.

1.6 Data transmission between the household units and the collection unit

Transmission of data between the household units and the collection unit is accomplished via a wireless LoRa radio connection.

1.7 Installing the unit display

1.7.1 Installing the unit display EVN-RB

1. Place the unit display in a dry space using the wall mount that is included in the delivery.
2. Install the wall mount in the entryway or hallway. The recommended installation height is 160 cm.
3. The unit display also features household temperature and humidity measuring. Take this into account when determining the installation location.

4. The unit display and the household unit are usually delivered pre-paired, and they must be installed in the space indicated on the casing label. Otherwise, inform Smartvatten of the serial number of the unit display. For the EVN-RB unit display, the pairing is done in the cloud service.
5. Install the unit display to the wall mount.

EVN-RB HVAC no. 4466934

1.7.2 Installing the unit display EVN-RC

1. Place the unit display in a dry space using the wall mount that is included in the delivery.
2. Install the wall mount in the entryway or hallway. The recommended installation height is 160 cm.
3. The unit display also features household temperature and humidity measuring. Take this into account when determining the installation location.
4. The unit display and the household unit are usually delivered pre-paired, and they must be installed in the space indicated on the casing label. Otherwise, inform Smartvatten of the serial number of the unit display. For the EVN-RC unit display, the pairing is done in the cloud service.
5. Connect the EVN-RC unit display to the 5–12 V DC power supply with a USB-C connector.
    1. For surface mounting, you can separately order the white, plug-mounted power adapter WU00064, and a 2 m long USB-C cable.
    2. For box mounting, you can separately order the power adapter WU00062, which comes with a grommet and strain relief.

More detailed electrical design instructions and examples can be found on our home pages.

3. Measure the length of the cord as shown in the figure.

4. Fasten the strain relief and the grommet of the power adapter firmly on the back of the wall mount.

6. Install the unit display to the wall mount.

EVN-RC HVAC no. 4466933

1.8 The collection unit and the property's main water meters

The metering data is transmitted securely from the collection unit to the VertoLive cloud service by means of mobile network or a broadband connection.

1. Connect 1–4 main water meters equipped with impulse transmitters to the collection unit. As cabling, use a shielded twisted pair cable.

   These water meters must be located in the same building with the collection unit.
2. Do not install weak current cables and strong current cables side by side.
3. To avoid impurities that could adversely affect water metering, install a water filter of the same size as the pipe inside the building's water supply pipes.

“IN BETTER WATER EFFICIENCY, EVERY DROP COUNTS.

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