



WiFi Rain Level Sensor

SKU: RANWIE01

Version: 1.1.0



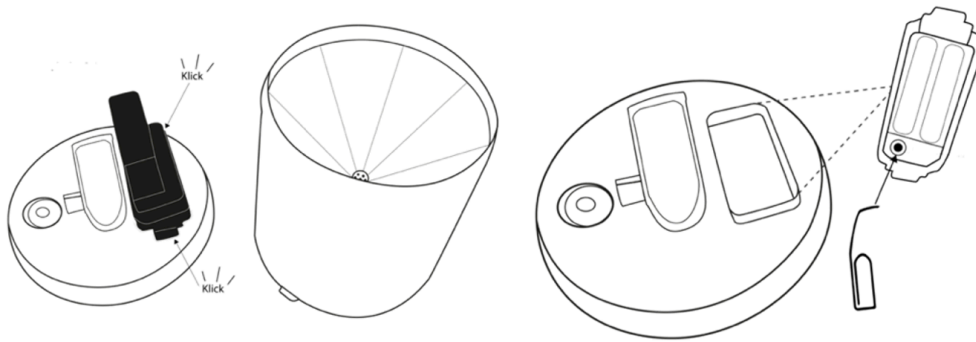
Product Description

This rain sensor measures the amount of rain at its location in milliliters using a tipping bucket mechanism and transmits the quantity within a 15-minute interval with an accuracy of 0.5 mm of water column, along with the temperature. In the case of heavy rain exceeding 15 l/h, a heavy rain alarm is triggered promptly. Both the heavy rain threshold and the measurement interval are configurable.

The device communicates via WLAN, either to the Aqua-Scope Cloud and thus to an app on your mobile phone or PC, or through MQTT to a server of your choice, or as a JSON object to a Smart Home Gateway.

The device is powered by two AAA batteries. The provided VARTA batteries allow for an approximate runtime of about 2 years. A low battery level is reported wirelessly, allowing for battery replacement before the device shuts down.

Installation and Mounting



Open the sensor by twisting the cover counterclockwise against the base of the sensor. Remove the electronic block, which is secured on both sides by a small clip (Figure 1 and 2). On the inside of the electronic block you find the battery compartment, the single button and the red/green LEDs right next to the button.

Choose a suitable location for the rain sensor that provides an unobstructed view of the sky, where no obstacles will affect the rainfall measurement and where there is sufficient Wi-Fi coverage. You can easily test the latter with your mobile phone. Securely mount the sensor on an elevated surface such as a mast or wall. Ensure that the sensor is level to ensure accurate measurements. The viewing glass at the bottom of the base will assist you with this.

Connecting to WLAN Network

After inserting the two batteries or connecting the external power supply, the LED on the button blinks red/green, indicating the factory state.

You can **only connect the sensor to a Wi-Fi of your choice in the factory state**. The factory state can be restored by waiting for the first beep sound when inserting the batteries or connecting the power supply, then pressing and holding the button for 4 seconds (counting four red blinks helps). If the LED flashes red three times quickly, please release the button.

In the factory state, there is a 120-second window for connecting the device to Wi-Fi when using batteries. After that, the sensor enters sleep mode to conserve battery power. You can wake up the device in this state by pressing the button, and the LEDs will blink red/green again for 120 seconds, indicating readiness for Wi-Fi integration. In the case of external power, the factory state, indicated by red/green blinking, is maintained continuously.

Three different methods are available for communication via Wi-Fi:

1. **Conveniently through the Aqua-Scope App:** Please refer to the installation and usage description of the app in the "Device Usage" section.
- 2.



Nicht sicher 192.168.4.1/#

WiFi Connection

Select your Wifi-Network
CPAP

WIFI (WPA) Password

Your Account Email
cp@aqua-scope.com

[Advanced Settings](#)

Save

Through the built-in web server: In the factory state, the device acts as an open Wi-Fi access point with the SSID 'Scope'. Connect your mobile device or PC to this SSID and open the page <http://192.168.4.1> in a web browser. Now enter the SSID and WPA key of the home Wi-Fi. If you want to control your device later via the Aqua-Scope App, you need an Aqua-Scope account, and you must provide this email address so that the device can be associated with your account. Additional settings for communication options of the device can be made under "Advanced Options" (MQTT, JSON, Bluetooth, local web server). The ["Aqua-Scope Developers Manual"](#) provides more information. The 'Save' button saves and activates the values. If they were correct, the red/green blinking stops. Otherwise, the process must be repeated with the correct SSID and WPA key.

3. Through Bluetooth:

(1) Connect with BLE Device

Connect

(2) Provide Wi-Fi Credentials

SSID of Wi-Fi-Network

WPA Password of Wi-Fi-Network

Aqua-Scope Account Email

(3) Write Data into Device

Submit

In the factory state, the Bluetooth interface on the device is active and can be used for initial configuration. This is possible through all Serial Bluetooth applications. However, it is more convenient to use a PC/Android mobile phone with Bluetooth capabilities. Open the webpage <https://ble.aqua-scope.com> in the Chrome browser, connect to the Bluetooth device 'AQS-XXXXXX' (XX is the device ID), and enter the SSID and WPA key via the form on the webpage. More information is also available in the ["Aqua-Scope Developers Manual"](#).



Device Operation

Remote Access

When the monitor is connected to the local WLAN, its functions can be accessed through various communication channels (even simultaneously):

1. **Mobile Phone App:** The Aqua-Scope App is not found in the app store of your mobile phone. We use a Progressive Web App (PWA), more information at [wikipedia.org/wiki/Progressive_web_app](https://www.wikipedia.org/wiki/Progressive_web_app). Open the website <https://app.aqua-scope.com> in the system browser (Chrome@Android or Safari@IOS). You can use almost all app functions in the regular browser. Android will offer to install the app as a real app on the device after a short time. On IOS, a shortcut of the website must be set on the desktop to receive push notifications if allowed.
2. **MQTT Server:** If configured, the sensor's status information is sent to the configured MQTT server. The MQTT service must be active, and your own MQTT server/port/login must be set in the device. More information can be found in the [Aqua-Scope Developers Manual](#).
3. **Custom Web Service:** Most smart home gateways allow the receipt and display of sensor data through plugins. More information can be found in the [Aqua-Scope Developers Manual](#).

Sensor Data



The sensor measures rain in millimeters of water column every 15 minutes. When it rains, the rain amount is reported via Wi-Fi. Otherwise, a status report with rain amount=0 and other data is sent every 6 hours. If the sensor detects heavy rain (threshold > 15 liters/hour), an alarm message is sent immediately. If the measured rain falls below the threshold for heavy rain, this is also reported.

Device Specific Alarms and Parameters

If you want to use the device within a machine-2-machine environment (MQTT, JSON Web Services) the Aqua-Scope Developers Manual will provide you with all the required information that apply to all Aqua_Scope devices. Here you find the missing device-specific information complementing the description within the Aqua-Scope Developers Manual.

Configuration Parameters

The device has a set of configuration parameters that can be changed using downstream commands. Details on the format are available in the 'Aqua-Scope Developer Manual'. Beside the general configuration commands mentioned in the developer manual (1,3,11,16,19,27,28,29,30,31) the following device-specific configuration parameters are available:

- Parameter 10: **Heavy Rain Threshold**, set in l/h, Default is 15



Alarm Types

The following device-specific alarm types are supported by this device (For the general format of alarm message and general alarm types please refer to the 'Aqua-Scope Developer manual'):

- **Type = 4** (mask = 0x008): Heavy Rain indicated

Scope of Delivery

- Main Device
- Mounting Screws
- 2 * AAA Batteries

Technical Data

- Processor:
 - Main: ESP32-WROOM_32E (Xtensa Dual Core 32 Bit, 240 MHz, 520 KB RAM)
 - Sub: Xtensa 16 bit Ultra Low Power RISC
- Wireless Connection: WIFI ESP Built-in 2.4 GHz 802.11 b/g/n
- Measurements:
 - Rain:
 - Min amount of rainfall: 0.5 mm or 0.5 l/m³
 - Metering Interval: 15 minutes
 - Temperature:
 - Precision: +/- 3 Degree
 - Range: - 20 °C ... 50 °C
 - Heartbeat: every 6 hours unless there is rain
 - Threshold for Heavy Rain Alarm: ab 25 l/h
- User Interface: 3 colored LED, single button
- Power Supply:
 - 2 * AAA Battery
 - Voltage: 2.2 ... 3.6 V
- Environmental Conditions:
 - Shipment and Storage: -65 °C ... 125 °C
 - Operation: - 20 °C ... 50 °C
 - Rel. Humidity: 0...90 %
- Protection: IP 55
- Size of device: 132x132x139 mm
- Size of packaging: 140x140x150 mm
- Weight: 219 gr.



Support and Contact

Should you encounter any problem, please give us the opportunity to address it before returning this product. Please check our website www.aqua-scope.com and particularly the support section for answers and help. You can also send a message to info@aqua-scope.com.

While the information in this manual has been compiled with great care, it may not be deemed an assurance of product characteristics. Aqua-Scope shall be liable only to the degree specified in the terms of sale and delivery. The reproduction and distribution of the documentation and software supplied with this product and the use of its contents is subject to written authorization from Aqua-Scope. We reserve the right to make any alterations that arise as the result of technical development.

- Phone: +372 (0) 6248002
- eMail: info@aqua-scope.com
- Web: www.aqua-scope.com

Declaration of Conformity



Aqua-Scope Technology OÜ, Sakala 7-2, 10141 Tallinn, Republic of Estonia, declares that this radio emitting device works on the following frequencies:

Български С настоящото Aqua-Scope Technology OÜ декларира, че този тип радиосъоръжение RANWIE01 е в съответствие с Директива 2014/53/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: www.aqua-scope.com/ce.

Čeština Tímto Aqua-Scope Technology OÜ prohlašuje, že typ rádiového zařízení RANWIE01 je v souladu se směrnicí 2014/53/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: www.aqua-scope.com/ce.

Dansk Hermed erklærer Aqua-Scope Technology OÜ, at radioudstyrstypen RANWIE01 er i overensstemmelse med direktiv 2014/53/EU. EUoverensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: www.aqua-scope.com/ce.

Deutsch Hiermit erklärt Aqua-Scope Technology OÜ, dass der Funkanlagentyp RANWIE01 der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: www.aqua-scope.com/ce.

Eesti Käesolevaga deklareerib Aqua-Scope Technology OÜ, et kesolev raadioseadme tüüp RANWIE01 vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni terviklik tekst on kättesaadav järgmisel internetiaadressil: www.aqua-scope.com/ce

English Hereby, Aqua-Scope Technology OÜ declares that the radio equipment type RANWIE01 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.aqua-scope.com/ce

Español Por la presente, Aqua-Scope Technology OÜ declara que el tipo de equipo radioeléctrico



RANWIE01 es conforme con la Directiva 2014/53/UE. El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: www.aqua-scope.com/ce

Ελληνικά Με την παρούσα ο/η Aqua-Scope Technology ΟÜ, δηλώνει ότι ο ραδιοεξοπλισμός RANWIE01 πληροί την οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: www.aqua-scope.com/ce

Français Le soussigné, Aqua-Scope Technology ΟÜ, déclare que l'équipement radioélectrique du type RANWIE01 est conforme la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible l'adresse internet suivante: www.aqua-scope.com/ce

Hrvatski Aqua-Scope Technology ΟÜ ovime izjavljuje da je radijska oprema tipa RANWIE01 u skladu s Direktivom 2014/53/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: www.aqua-scope.com/ce

Italiano Il fabbricante, Aqua-Scope Technology ΟÜ, dichiara che il tipo di apparecchiatura radio RANWIE01 conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione di conformità UE disponibile al seguente indirizzo Internet: www.aqua-scope.com/ce

Latviešu Ar šo Aqua-Scope Technology ΟÜ deklarē, ka radioiekārta RANWIE01 atbilst Direktīvai 2014/53/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: www.aqua-scope.com/ce Lietuvių AŠ, Aqua-Scope Technology ΟÜ, patvirtinu, kad radijo įrenginių tipas RANWIE01 atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo internet adresu: www.aqua-scope.com/ce

Magyar Aqua-Scope Technology ΟÜ igazolja, hogy a RANWIE01 típus rádiberendezés megfelel a 2014/53/EU irányelvnek. Az EUMegfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: www.aqua-scope.com/ce

Malti B'dan, Aqua-Scope Technology ΟÜ, niddikjara li dan it-tip ta' tagħmir tar-radju RANWIE01 huwa konformi mad-Direttiva 2014/53/UE. It-test kollu tad-dikjarazzjoni ta' konformit tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: www.aqua-scope.com/ce

Nederlands Hierbij verklaar ik, Aqua-Scope Technology ΟÜ, dat het type radioapparatuur RANWIE01 conform is met Richtlijn 2014/53/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: www.aqua-scope.com/ce

Polski Aqua-Scope Technology ΟÜ niniejszym oświadcza, że typ urządzenia radiowego RANWIE01 jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności z UE jest dostępny pod następującym adresem internetowym: www.aqua-scope.com/ce

Português O(a) abaixo assinado(a) Aqua-Scope Technology ΟÜ declara que o presente tipo de equipamento de rádio RANWIE01 está em conformidade com a Diretiva 2014/53/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: www.aqua-scope.com/ce

Română Prin prezenta Aqua-Scope Technology ΟÜ declară că tipul de echipamente RANWIE01 este în conformitate cu Directiva 2014/53/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: www.aqua-scope.com/ce

Slovensko Aqua-Scope Technology ΟÜ potrjuje, da je tip radijske opreme RANWIE01 skladen z irektivno 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: www.aqua-scope.com/ce

Slovensky Aqua-Scope Technology ΟÜ týmto vyhlasuje, že rádiové zariadenie typu RANWIE01 je v slade so smernicou 2014/53/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: www.aqua-scope.com/ce



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RANWIE01

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Soumi Aqua-Scope Technology OÜ vakuuttaa, että radiolaitetyyppi RANWIE01 on direktiivin 2014/53/EU mukainen. EUvaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: www.aqua-scope.com/ce

Svenska Härmed försäkrar Aqua-Scope Technology OÜ att denna typ av radioutrustning RANWIE01 verensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EUförsäkran om verensstämmelse finns på följande webbadress: www.aqua-scope.com/ce

Disposal Guidelines



Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging health and well-being.