



Pipe Clip

SKU: CLPWIE01

Version: 1.1



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1. Pipe-Clip



The Smart-Pipe-Clip is a compact, clip-like clamp that can be easily attached to any water pipe with a diameter between 15 and 32 mm. The device offers three functions:

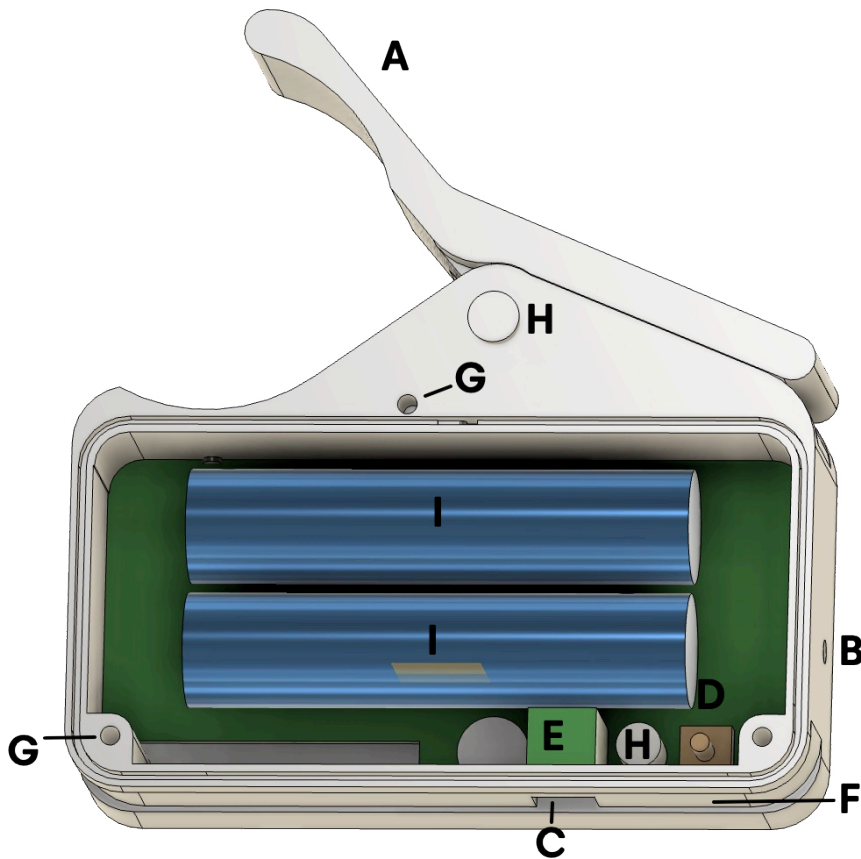
- Detection and warning of frost risk
- Estimation and display of water consumption
- Detection of water leaks

The device is powered by two AAA batteries and transmits the collected data and any alarms via Wi-Fi to the preferred app or smart home platform. Alternatively, it can be operated with an external 3V power supply.

In addition to Wi-Fi, the claw can also communicate via LoRa or LoRaWAN. Normally, communication with the user takes place via Wi-Fi. In case of an alarm, a previously paired Aqua-Scope shut-off motor (for ball valves or angle seat valves) can be directly controlled by the device via LoRa. This allows a response to water leaks even if the communication network is unavailable. Since the monitoring of the water pipe, as well as the pairing and control of the motor, occurs without the need for a wireless connection, such a system can also function completely offline without an internet connection.

With a special button sequence, the sensor can be switched to LoRaWAN mode, allowing it to transmit data over the standardized LoRaWAN wide-area network as a Class A device. This mode requires LoRaWAN network coverage at the installation site.

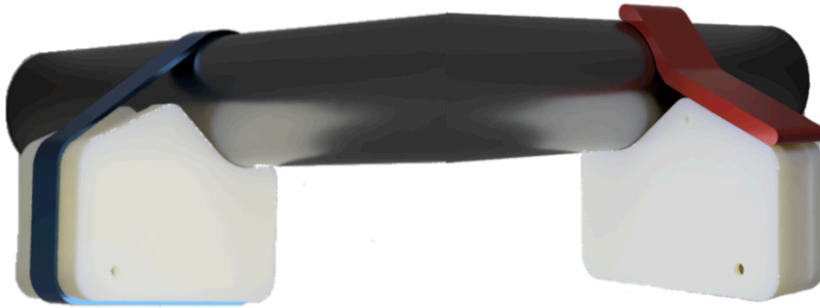
2. Sensor Structure



The illustration below shows the sensor:

- **A:** Movable flap for attachment to the water pipe
- **B:** Air temperature sensor
- **C:** Breakable opening for connecting power supply cables
- **D:** Button to connect and test
- **E:** Screw Terminal to connect external power supply
- **F:** Notch in the housing for guiding a cable tie
- **G:** screws for closing the battery compartment
- **H:** Axle pin for the flap, removable

3. Installation



The sensor can be installed in two different ways:

- **Clamp attachment:** The sensor is simply clipped onto a water pipe using the flap. It can be removed or repositioned just as easily.
- **Cable tie attachment:** Using the provided cable tie, the sensor can be securely and tamper-proof attached to the water pipe. To do this, the pin (E), which acts as the axis for the clamp, must be removed. It can be pulled out easily by hand or with pliers. The clamp and spring are then removed. The housing includes a notch (D) that helps hold the cable tie in place.

In both mounting methods, the sensor should be placed approximately 30–50 cm away from the outer wall or the point where water first enters the house. The clamp should be installed so that the side with the button opening faces the interior of the room.

4. Establishing a Wireless Connection

4.1. Communication via WLAN

After the device is powered on, the LED should slowly blink red/green, indicating the factory default state. The device can only connect to a selected WLAN while in its factory default state. There is a button sequence for resetting to factory settings, which is described in the section "Button Operation".

To communicate via WLAN, the device needs the following information:

- The name of the WLAN (technically, the SSID) to which it should connect.
- The network key (technically, WPA2 key), which secures communication over WLAN. You can usually find this key—an alphanumeric code of at least 8 characters—on the bottom of your WLAN router.
- Your email address as the Aqua-Scope user ID. This ensures that you can



access the device's data via the server—e.g., using the free Aqua-Scope app.

In the factory default state, the sensor creates its own WLAN with the identifier "Scope".

1. Connect your smartphone or PC (no password required!) to this WLAN network.
2. Open a browser on your PC or phone and go to the webpage: **http://scope.local**. A webpage will appear showing a list of available WLAN networks at the device's location and input fields for the WLAN password and your email address, which will also become your Aqua-Scope account name.
3. Select the desired WLAN from the list, enter the corresponding WLAN key and your email address into the form. (Advanced MQTT connection settings can also be configured here—these can be adjusted later via the Aqua-Scope app.)
4. You will then be redirected to the Aqua-Scope app **https://app.aqua-scope.com** where you can either log in with an existing account or create a new Aqua-Scope account. In both cases, the app will provide access to the motor, including control and configuration options.

Only after successfully connecting should you install the device at its final location, and then check whether it reconnects to the WLAN. If it does not, there is likely insufficient WLAN coverage at the installation site, and you will need to install a WLAN repeater. Please note that in a WLAN network with multiple repeaters (WLAN meshing), it may take a while for the device to connect to the optimal repeater.

Wenn Sie das Gerät direkt bei Aqua-Scope im Online Shop erworben haben, dann nutzen Sie die dort verwendete Email-Adresse und den öffentlichen Geräteschlüssel (Dev EUI) auf der Webseite <https://aqua-scope.com/lora> und erhalten auf eben diese Email eine Nachricht mit allen drei Schlüsseln. Der öffentlichen Schlüssel befindet sich sowohl direkt dem Gerät als auch normals auf der Verpackung als 16 stellige Nummer als auch als QR Code zum scannen.

Wenn das Gerät bei einem Händler erworben wurde, dann wird dieser Händler die drei Schlüssel zur Verfügung stellen. Wenn er das nicht tut, dann wenden Sie sich bitte per Mail an support@aqua-scope.com.

Direkt an Einlegen der Batterien oder Anstecken einer Stromversorgung wird das Gerät versuchen, sich mit dem LoRaWAN-Netz zu verbinden, in dem die drei Schlüssel hinterlegt wurden. Dabei blinken die LEDs. Nach ca. 25 Sekunden ist dieser 'JOIN' genannte Prozess entweder erfolgreich oder wurde abgebrochen. In diesem Falle geht das Gerät sofort in den Schlafzustand.

Verliert der Sensor irgendwann aus welchen Gründen auch immer die Verbindung zum Server, dann erfolgt automatisch ein Neustart der Verbindung. Dieser Prozess heisst 'Rejoin' und wird immer wiederholt, wenn das Gerät eine Nachricht ins



LoRaWAN-Funknetz senden möchte.

Durch Drücken des Tasters am Gerät wird immer eine LoRaWAN-Kommunikation ausgeführt, die wie oben erklärt auch zum 'Rejoin' führen kann. Hier ist die Duty-Cycle-Regelung bei LoRaWAN zu beachten. Zu schnelles Senden von Nachrichten oder Rejoins hintereinander wird von LoRaWAN-Funknetz eventuell ignoriert.

4.2. Communication via LoRaWAN

When LoRaWAN communication is enabled, the sensor attempts to register itself in a LoRaWAN wireless network.

The device must be registered with a LoRaWAN network operator covering its location using three keys: **Dev EUI, Join EUI, and Join Key.**

This can be done with a community network such as The Things Network (TTN)] any commercially operated LoRaWAN network.

Obtaining Device Keys

If purchased directly from Aqua-Scope: Use the email address from your Aqua-Scope online shop order and the public device key (Dev EUI) on the Aqua-Scope LoRa website <https://aqua-scope.com/lora>. You will receive an email with all three keys. The Dev EUI is printed on the device, on the packaging as a 16-digit number, and as a QR code for scanning.

If purchased from a retailer: The retailer should provide the three keys. If not, please contact support@aqua-scope.com.

Connection Process

As soon as batteries are inserted or an external power supply is connected, the device attempts to connect to the LoRaWAN network using the stored keys. The LEDs will blink during this process. After approximately 25 seconds, the JOIN process will either be successful, or the device will enter sleep mode.

Reconnecting to LoRaWAN

If the sensor loses connection to the server for any reason, it will automatically attempt to reconnect (a process called 'Rejoin'). This happens whenever the device tries to send a message to the LoRaWAN network. Pressing the ****button** on the device** will also initiate a LoRaWAN communication attempt, which may trigger a



****Rejoin****. However, due to ****LoRaWAN duty cycle regulations****, sending messages or Rejoin attempts too frequently may be ****ignored by the network****.

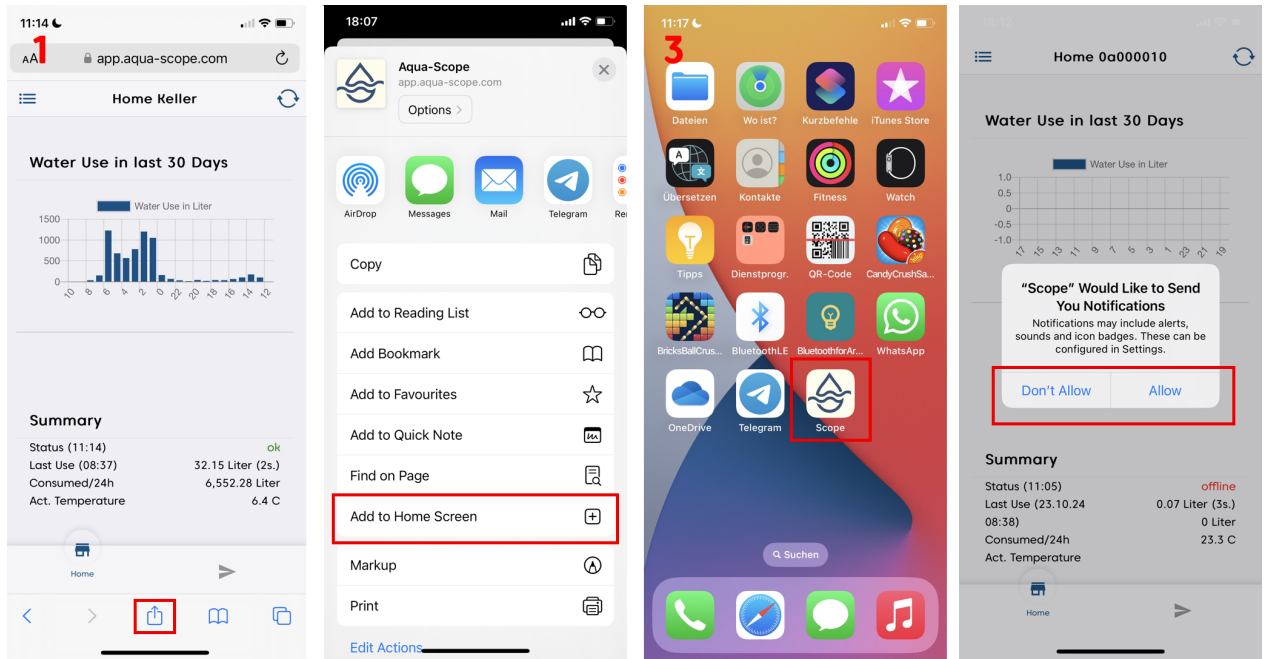
For more details on the sensor's LoRaWAN behavior and payload format, refer to the 'Aqua-Scope Developers Manual'. For general information on LoRaWAN and LoRa, visit Wikipedia.

5. Wireless Usage

5.1. Wireless Access

When the device is connected to the local Wi-Fi, its functions can be used through various communication methods (even parallel):

1. **Mobile Phone App:** You may not find the Aqua-Scope app in the app store of your mobile phone. We use what's known as a PWA (Progressive Web App). For more information, see Progressive Web App on Wikipedia. To access it, open the system browser (Chrome on Android or Safari on iOS) and go to <https://app.aqua-scope.com>. This will allow you to use almost all of the app's functions in your regular browser.
 - On Android, you will shortly be prompted to install the app as a native app on your device. Please confirm this prompt, and a native app will be installed on your screen.
 - On iOS, a shortcut to the website must be added to the home screen. To do this, select the icon marked in Image 1 in Safari to open the shortcut dialog. Then select the "Add to Home Screen" option (Image 2). A standard app icon will now appear on your home screen (Image 3). You may need to log out and log back in within the app so that iOS prompts you to allow push notifications (Image 4).



2. **MQTT Server:** If configured accordingly, the sensor's status information will be sent to the specified MQTT server. The MQTT service must be enabled, and your own MQTT server/port/login credentials must be entered into the device. Further details can be found in the Aqua-Scope Developers Manual.
3. **Own 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.

5.2. Basic Functions

The sensor regularly transmits the following data via wireless communication:

- Device uptime in hours
- Room temperature in degrees Celsius
- Battery status (voltage and consumed battery capacity)
- Estimated water consumption in liters

If a leak, unusually long water usage, or another alarm condition is detected, an immediate alert is sent wirelessly.

Types of Alerts:

- **Low Temperature Alert:** The sensor has a configurable lower temperature threshold. If the measured temperature drops below this threshold, an alert is triggered. The alert is cleared once the temperature rises above the threshold again.
- **High Temperature Alert:** The sensor has a configurable upper temperature



threshold. If the measured temperature exceeds this threshold, an alert is triggered and will be cleared once the temperature falls below the threshold.

- **Leakage / Dripping Alert:** This alert is sent if a dripping faucet or a small leak is detected. The alert is automatically cleared once the water flow stops.
- **Excessive Water Usage Alert:** If water is running for an unusually long time, an alert is sent. This could indicate a major leak. The alert is cleared once the water flow stops.
- **Low Battery Alert:** The sensor is powered by two AAA batteries. When more than 80% of the battery capacity is depleted, an alert is sent wirelessly.

5.3. Button Control and LED Signals

At the bottom of the sensor housing, there is a small hole (B) behind which a button is located. This button can be pressed using a paperclip, screwdriver, or matchstick. Next to it, there are LED indicators inside the housing.

Button Functions

- **Factory Mode (Red/Green Blinking):** A short press switches between WPS mode and normal mode. (More details in the Wireless Network section.)
- **Normal Operating Mode:** A short press sends a status update via wireless communication. The button press is acknowledged with a short beep and the green LED lights up.
- **Long Press (>5 Seconds):** Activates the one-button menu. The red or green LED blinks multiple times to indicate the menu status.

One-Button Menu

This menu allows the execution of specific commands. The LED and beeps indicate the current command selection. Initially, Command 1 is active (1 beep and 1 LED blink). A short press moves to the next command (e.g., 2 beeps and 2 LED blinks for Command 2). When the maximum command is reached, the next press cycles back to Command 1. Each command toggles a parameter between active (green LED) and inactive (red LED). A long press executes the selected command (indicated by three blinks in yellow). If no action is taken, the menu exits automatically after a few seconds.

Available Commands

1: Reset to factory settings: This command is always displayed in "red" and, when executed, resets all changed parameter values to the factory settings. WAN SSID and WLAN key will also be deleted.

2: LoRaWAN versus WLAN: Switches between LoRaWAN (red) and WLAN mode



(green). When LoRaWAN is enabled, the sensor cannot directly control an Aqua-Scope motor via radio. Direct motor control and LoRaWAN operation are mutually exclusive. By default, LoRaWAN is disabled, WLAN is active, and direct control is therefore active.

3: ESP always active: This is for testing purposes and is disabled by default. The battery will drain very quickly if this option is enabled.

4: WLAN: Enables or disables the vibration sensor (only on hardware versions with a vibration sensor).

5: Calibration: Repeats the initial calibration. Do not use when the sensor is mounted on a water pipe.

6. Battery Replacement and External Power Supply

The device is powered by two AAA batteries. The device is activated by pulling out the paper strip. To replace the batteries: Unscrew the three screws (F). Remove the battery cover (G). Replace the two AAA batteries inside.

External Power Supply

Beneath the battery cover, there is a two-wire screw terminal labeled for "+" and "-". A 3V DC power adapter (not included) can be connected here. To route the power cable, a small 3x5 mm opening at the bottom of the sensor must be broken open. If an external power source is used, batteries can remain installed as a backup power supply. Important: Breaking open the cable entry hole reduces the IP-44 rating, meaning the device will no longer be waterproof.

7. Package Contents

The package includes:

- Main device
- 2x AAA batteries (pre-installed)
- User manual
- Cable tie

8. Technical Specifications

- Supported Water Pipes
 - Compatible with all material types (copper, steel, PEX, PE, etc.)
 - Pipe outer diameter: 15 - 32 mm
- Communication:
 - Wi-Fi 2.4 GHz, 802.11 b/g
 - Bluetooth Low Energy
 - LoRaWAN
 - LoRa point-to-point for controlling Aqua-Scope actuators
- Power Supply:



- 2× AAA standard alkaline or lithium batteries
- External power supply: 3 V DC, minimum 500 mA
- Power consumption:
 - Standby power: 0.4 mAh/day
 - LoRaWAN communication: 8 mAs per transmission
 - Wi-Fi communication: 300 mAs per transmission
 - Estimations:
 - LoRaWAN (4 transmissions/day, 1000 mAh effective capacity): 75 months
 - Wi-Fi (4 transmissions/day, 1000 mAh effective capacity): 45 months
 - Wi-Fi (24 transmissions/day, 1000 mAh effective capacity): 12 months
- Protection Rating: IP44
- Dimensions: 65 × 20 × 45 mm
- Weight: 57 g (including batteries)

9. 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

10. 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 CLPWIE01 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 CLPWIE01 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 CLPWIE01 er i overensstemmelse med direktiv 2014/53/EU. EUoverensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: www.aqua-scope.com/ce.

Deutsch Hiermit erkläre Aqua-Scope Technology OÜ, dass der Funkanlagentyp CLPWIE01 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 CLPWIE01 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 CLPWIE01 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 CLPWIE01 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 OÜ, δηλώνει ότι ο ραδιοεξοπλισμός CLPWIE01 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 OÜ, déclare que l'équipement radioélectrique du type CLPWIE01 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 OÜ ovime izjavljuje da je radijska oprema tipa CLPWIE01 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 OÜ, dichiara che il tipo di apparecchiatura radio CLPWIE01 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 OÜ deklarē, ka radioiekārta CLPWIE01 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 OÜ, patvirtinu, kad radijo įrenginių tipas CLPWIE01 atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo internet adresu: www.aqua-scope.com/ce

Magyar Aqua-Scope Technology OÜ igazolja, hogy a CLPWIE01 típus rádiberendezés megfelel a 2014/53/EU irányelvnek. Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: www.aqua-scope.com/ce

Malti B'dan, Aqua-Scope Technology OÜ, niddikjara li dan it-tip ta' tagħmir tar-radju CLPWIE01 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 OÜ, dat het type radioapparatuur CLPWIE01



conform is met Richtlijn 2014/53/EU. De volledige tekst van de EUconformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: www.aqua-scope.com/ce

Polski Aqua-Scope Technology OÜ niniejszym oświadcza, że typ urządzenia radiowego CLPWIE01 jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności I UE jest dostępny pod następującym adresem internetowym: www.aqua-scope.com/ce

Português O(a) abaixo assinado(a) Aqua-Scope Technology OÜ declara que o presente tipo de equipamento de rádio CLPWIE01 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 OÜ declară că tipul de echipamente CLPWIE01 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 OÜ potrjuje, da je tip radijske opreme CLPWIE01 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 OÜ týmto vyhlasuje, že rádiové zariadenie typu CLPWIE01 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

Soumi Aqua-Scope Technology OÜ vakuuttaa, että radiolaitetyyppi CLPWIE01 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 CLPWIE01 verensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EUförsäkran om verensstämmelse finns på följande webbadress: www.aqua-scope.com/ce

11. 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.