

Motor Servo for Angled Seat Valves for WiFi

SKU: KFRWIE01

Version: 1.0.0



- 1. Product Description
- 2. Parts of the Motor
- 3. Installation of the motor
 - 3.1. Mounting the motor on the valve
 - 3.2. Detecting the endpositions of the valve
 - 3.3. Make an adapter if no adapter fits
 - 3.4. Valves from Wilhelm Ewe GmbH and Co. KG
- 4. External wired Flood Sensor
- 5. Manually Operating the motor
- 6. LEDs
- 7. Connection to Wi-Fi Network
- 8. Scope of Delivery - motor
- 9. Technical Data - motor
- 10. Support and Contact
- 11. Declaration of Conformity
- 12. Disposal Guidelines



1. Product Description

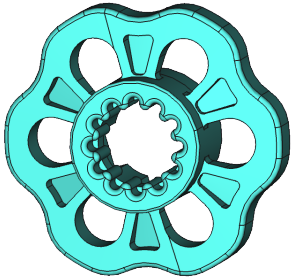
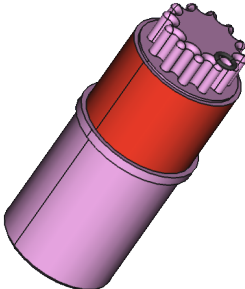
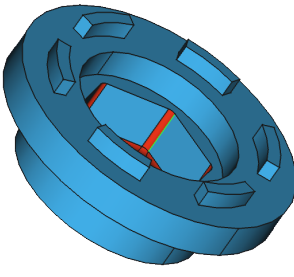
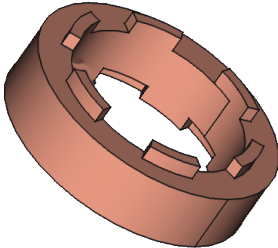
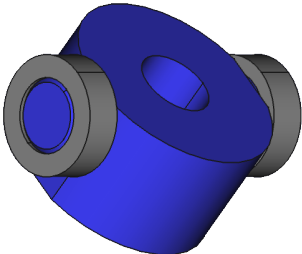
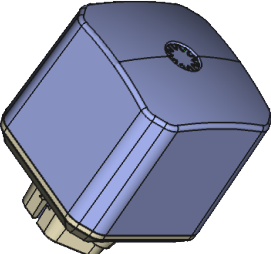
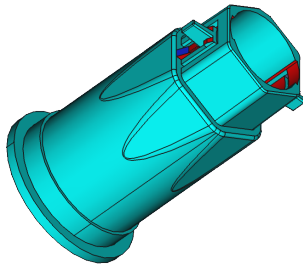
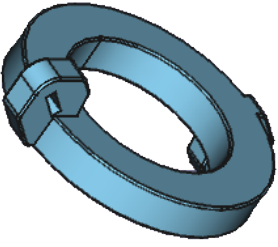
The motor drive for angle seat valves (KFR valves) allows retrofitting of existing and already installed shut-off valves into radio-controlled intelligent devices without interrupting the water supply or cutting into the water pipe. The motor is powered by a 12V power supply and is completely water- and dirt-protected up to the power supply. Various adapter rings and a sophisticated connection system enable the motor's use on all modern angle seat valves from DN15 to DN32. Thanks to an additional water sensor that plugs directly into the device, the motor can be used for leakage protection without further configuration.

The servo motor is water-protected and can be used in damp, dirty, and outdoor environments. In the open state, the motor automatically performs valve maintenance once a week (closing/opening by 1/8 turn to remove dirt and lime). A wired leakage sensor can be connected directly to the device. If water is detected, the valve shuts off.

The device is controlled via Wi-Fi, with several options available:

1. Conveniently via the Aqua-Scope app
2. Via the IoT protocol MQTT. A third-party MQTT broker is required for this. More information can be found in the developer manual.
3. Via direct integration into a smart home system using so-called JSON webhooks. More information can be found in the developer manual.

2. Parts of the Motor

			
Handwheel (H)	Inner Coupling (K)	Adapter (Ax)	Distance Rings (D1,D2)
			
Ball Bearing Seat (Ws)	Motor (M)	Main Body (G)	Bracket (N)



3. Installation of the motor

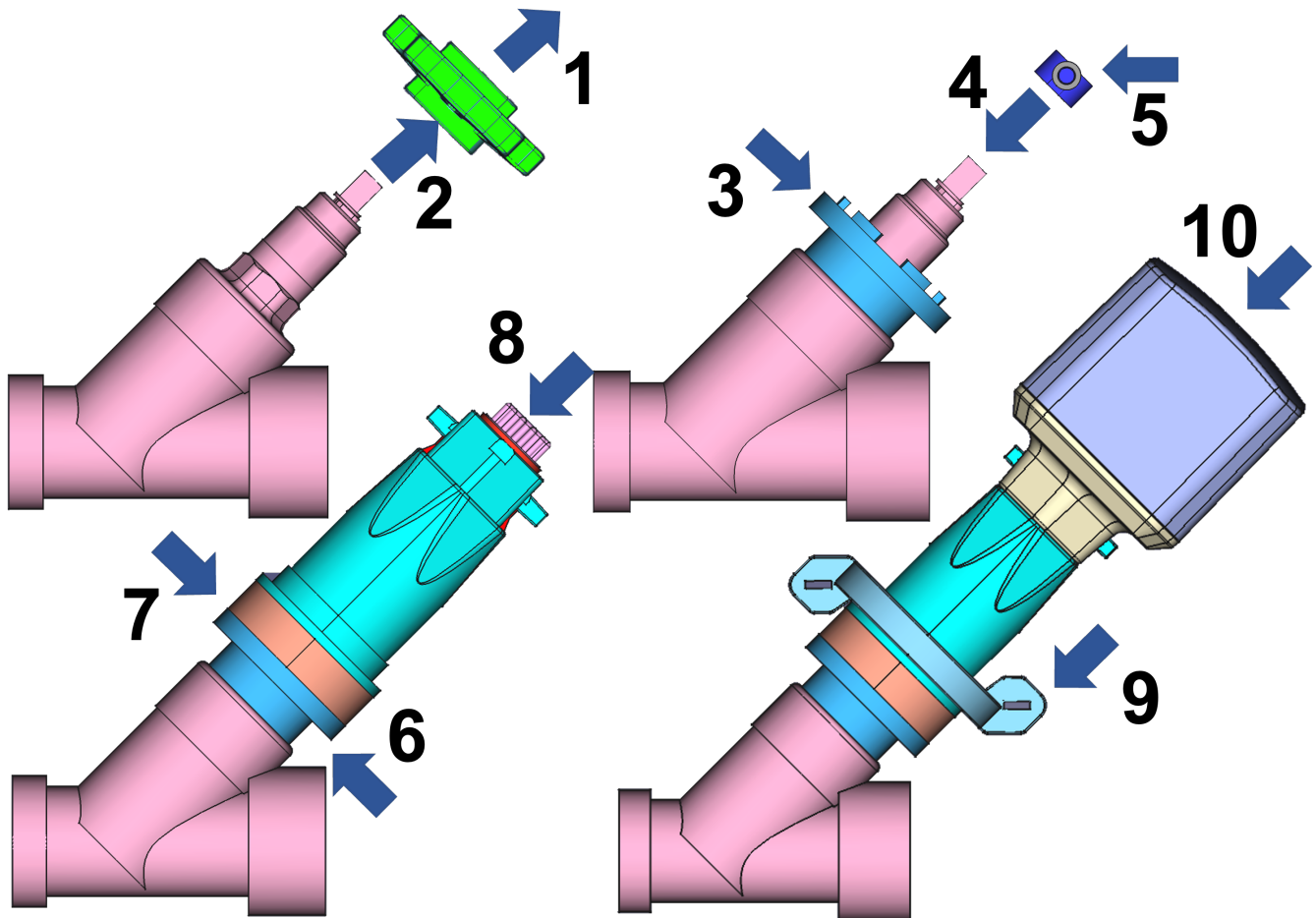
3.1. Mounting the motor on the valve

The motorized actuator can be used with all commercially available angle seat valves. However, due to the variety of mechanics, certain adaptations must be made. For installation, leave the valve open or rotate it to the open position. Plumbers recommend that the valve is fully opened first and then lightly closed by turning it clockwise approximately 2 turns.

1. Remove the center screw from the hand wheel. Some manufacturers do not use the typical green handwheel. However, the metal stem is always hidden under the plastic. Keep the screw for future use.
2. Remove the handwheel.
3. Select one of the 4 adapters (A1...A4) for wrench size M17, M22, M27, or M30 that fits snugly on the bottom of the valve bonnet (hexagonal or rectangular shape). If none of the supplied adapters fit the valve, please take a picture, and send it to support@aqua-scope.com. This helps us to develop and manufacture adapters for valves we don't know yet. In the meantime, there is a solution to the problem. See section 'Make an adapter if no adapter fits' below for instructions.
4. Select the correct ball bearing seat (W1 ... W3) and place it on the stem. If your stem is larger than the 8x8 mm required by the largest bearing seat, the KFR cannot be used on your valve. If your stem is even smaller than the smallest ball bearing seat of 6x6 mm, you can solve the problem in the same way as for the adapter. See instructions below.
5. Tighten the ball bearing seat with the screw from step 1.
6. Depending on the size of the valve bonnet and stem, you may need additional distance rings (D1, D2) on top of the adapter ring. If the inner coupling (K) cannot be pushed all the way into the main body (G) without sitting on the valve body, or if the main body cannot be connected to the adapter ring already installed, a distance ring (D1 or D2) must be placed between the adapter ring (Ax) and the main body (G). This is usually the case with rising stem valves. The spacers are 12 or 24 mm, and they can be combined. Use the spare handwheel to open and close the valve for verification.
7. Place the housing on top of the adapter or distance ring.
8. Place the inner coupling in the housing. It must pass over the ball bearings in both the open and closed positions. The housing is clear to check this. If it does not fit, use other distance rings in step 6. Please use the spare handwheel to open and close the valve to check.
9. The bracket is required to hold the entire assembly in place if the valve is not installed in an upright position. It is recommended that the bracket be used in any case. Tighten around the pipe using the two zip ties provided. You can remove the zip ties at any time.



10. Finally, place the motor on top of the housing. You may need to turn the inner coupling a little if the motor does not fit right away.



3.2. Detecting the endpositions of the valve

Each time the motor is disconnected from power, it will determine its current position. It briefly moves in the 'Close' direction. If this is not possible, the motor defines the current position as the 'Open' position. The next 'Close' command will fully close the valve. On the following 'Open' command, the motor will move to the previously defined 'Open' position. This allows you to set the 'Open' position of the valve yourself by only opening the valve as far as necessary and then reconnecting the power, making this self-chosen position the 'Open' position.

If the motor detects a closed valve when power is connected, it will open to the valve's full-open position on the next opening command and then close it back by two turns, as currently recommended by plumbing professionals. The factory setting allows a maximum of 10 turns between 'Open' and 'Close.' This value can be adjusted if necessary via configuration parameter 9.

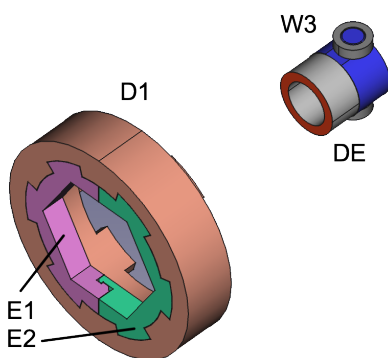
3.3. Make an adapter if no adapter fits



The product is supplied with a portion of epoxy. This is a two-part mixture. Mix the two components by kneading until the mass has a similar color. Select an adapter ring that just fits over the base structure of the valve bonnet and fill the gaps with the prepared epoxy. Allow the epoxy to cure. Note that the epoxy will adhere to the metal body. If you do not want the epoxy to stick, coat the metal body with some oil to allow easy removal of the epoxy filled adapter.

In the same way, you can put epoxy in one of the bearing seats if your stem is smaller than the is smaller than the 6x6mm of the smallest seat. Make sure the stem is positioned right in the centre of the ball bearing seat.

3.4. Valves from Wilhelm Ewe GmbH and Co. KG



This company's valves have a very special design. You must insert the split ring (E1+E2) into the 24 mm distance ring (D1) instead of using one of the adapters A1 ... A4. No further distance ring is needed but a small ring DE must be placed below the ball bearing seat to hold down the large fat chamber.

4. External wired Flood Sensor

The unit allows an optional wired flood sensor to be attached. There is a connector on the power cord next to the motor. Remove the blue protective pad and plug in the sensor. Please use some force to push the connector to ensure a waterproof connection. If the sensor head detects water, a flood alarm will sound, the valve will close, and the alarm will be indicated by a buzzer and LEDs. Once the sensor head is free of water, you can clear the alarm by pressing the button for 2 seconds. It is also possible to clear the alarm with a wireless LORA command. In both cases, an Alarm Clear report is sent uplink to the LORA network.

5. Manually Operating the motor

You can open or close the valve by briefly pressing the button. If you press the button while the motor is running, the motor stops moving and will reverse direction with next push.

The unit must be calibrated to recognize the end positions of the valve. Once these



end positions are known, the motor will stop softly at that position and not "slam into the wall" to protect the mechanics and ensure long life and reliable operation. After power up, the unit will make some short movements to determine if the last position was open or close. The first open or close operation is used to perform calibration for both end points. No special user interaction is required for calibration.

6. LEDs

The unit has a two-color LED with the following meaning

- Green slow blinking: Valve is open
- Red slow blinking: Valve is closed
- Red/green flashing: Motor is running
- Red flashing: flood alarm
- Red triple flash: motor blocked
- Yellow blinking: try connecting to wireless network

7. Connection to Wi-Fi Network



The Wi-Fi connection of the Aqua-Scope retrofit motor is established through the Wi-Fi module, which is screwed between the power supply coupling of the motor. Communication between the Wi-Fi module and the main device also takes place via this power supply. Minimal operation of the Wi-Fi module is done through the central button on the main device, but the Wi-Fi module has its own LED to indicate the operating status.

To connect to Wi-Fi, the module must be in its factory default state. This is indicated by a red/green blinking LED on the module. The following operating options and LED signals exist:

- LED blinks red-green slowly: Device is in factory default state - can be connected to Wi-Fi.
- LED remains permanently red: No motor is connected to the module. Therefore, a Wi-Fi connection is not possible.



- Press the button on the motor for 5 seconds (5 * beep): The module resets to factory default state, and Wi-Fi connection data is deleted.
- Press and hold the button for 3 seconds in factory default state: WPS function is enabled/disabled. An active WPS function is indicated by fast red/green blinking of the LED on the module. For more information on WPS please refer to https://en.wikipedia.org/wiki/Wi-Fi_Protected_Setup

The connection to the internet is established in four steps:

1. In factory default state, the module creates its own Wi-Fi network with the identifier "Scope." Connect to this Wi-Fi network using a mobile phone or PC (no password required!).
2. Open the following webpage in the browser of the PC/phone: <http://scope.local>. A webpage will be displayed with a list of available Wi-Fi networks at the device's location, along with input fields for the Wi-Fi password and an email address, which will later be used as the Aqua-Scope account name.
3. In the form, select the desired Wi-Fi network, enter the corresponding Wi-Fi key, and provide your email address (advanced settings for MQTT connection can be configured—this can also be done later via the Aqua-Scope app).
4. You will 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 one. In both cases, the app then provides access to the motor with control and configuration options.

8. Scope of Delivery - motor

- Motor with power cable (150 cm) to waterproof coupling
- 4 * adapter rings to connect to the valve housing
- 3 different connectors for the stem
- One small Distancering and the Splitring for EWE Valve Design
- Holder plus 2 wrist bands
- Main sleeve plus internal coupler
- Two Distance rings
- External wired Flood Sensor
- External Power Supply with 150 cm cable to waterproof coupling
- Spare Hand Wheel
- Users Manual
- 57 gr Epoxy

9. Technical Data - motor

- SKU: KFRLWE01
- EAN: 4251295783 277



- Mechanical Performance:
 - Rotation Speed: 15 rpm
 - Travel Time (full open close): 40 s
 - Mechanical Power: 10,95 W
 - Gearbox: 1 to 704 ratio
 - Noise: < 50 dB
 - Vibration: < 10 dB
- Installation space:
 - Min. Space from Wall: Pipe center min 35 mm from wall
 - Min. Space vertically: 175 mm above pipe center
 - Min. Space vertically for installation: 220 mm above pipe center
 - Adapters: M17, M22, M27, M30
 - Supported Stem height (from bottom of bonnet): 58 mm - 135 mm, raising and non-raising spindles
 - Supported Stem connector: 6, 7, 8 mm square
 - Supports Pipes DN15 ... DN 32
- Controls and interfaces:
 - Tree Color LED (red, yellow, green)
 - Single button for local operation and alarm clearing
 - Jack to plug-in external water sensor pad for local loop operation
- Wireless Communication
 - WLAN IEEE 802.11b/g/n (2.4 GHz WIFI)
 - Aqua-Scope Cloud Protokoll
 - MQTT Client
 - JSON Webservice Client
 - Bluetooth 5 (LE): UART Profile
- Dimensions and Shipment:
 - Weight: 380 ... 420 gr (depends on adapters used)
 - Dimensions: 70 x (170 ... 195) mm
- Electrical data:
 - Voltage: 12 V DC
 - Max. Current: < 1000 mA
- Environmental Conditions and Trading
 - Shipment/Storage: -30 °C ... +70 °C
 - Operation: - 20 °C ... 60 °C
 - Outdoor Use: IP67 (to power supply coupling), Power Supply is IP20
 - UN Customs Tariff: 85011093900

10. 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

11. 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 er i overensstemmelse med direktiv 2014/53/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: www.aqua-scope.com/ce.

Deutsch Hiermit erklärt Aqua-Scope Technology OÜ, dass der Funkanlagentyp KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 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 OÜ, niddikjara li dan it-tip ta' tagħmir tar-radju KFRWIE01 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 KFRWIE01 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 oświadczam, że typ urządzenia radiowego KFRWIE01 jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodność 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 skladen z irektivom 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 KFRWIE01 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 KFRWIE01 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 KFRWIE01 verensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EUförsäkran om verensstämmelse finns på följande webbadress: www.aqua-scope.com/ce



12. 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.