QUERY®WATER QW20C

SUPPLEMENT TO THE QW20 USER MANUAL
- **Antiviral modification**

QUERY®WATER – QW20C

ADAPTATION USER GUIDE FOR „C" SERIES

CONTENT:

1. INTRODUCTION

An integral part of this C-series adaptation manual is the QW20 Atmospheric Water Generator user's manual, which is referenced herein. If you do not have it, you can download it on our website www.querywater.cz. The contents of the user manual cover all the main points about the device and its operation, such as water generation, cooling and heating, safety notes, safety precautions, a description of the device's function, operating characteristics, operation, service, maintenance and recycling.

As this C-Series adaptation guide has been created for a completely new way of using the device, any comments and suggestions are welcome at info@ecooneworld.com. Thank you for your understanding.

The QW20 is adapted for other possible uses. The first of these includes antibacterial air disinfection using the new HEPA H-14 filter and the addition of a germicidal UV-C lamp into the air tunnel in the device. The UV-C lamp is also equipped with an electronic timer on the back of the device, which allows manual start-up, as well as timing of its operation for night hours when no one is present around the device. This improved unit allows you to clean the ambient air in the room. Another improvement is the integrated CO2 detector, which monitors the environment and the quality of breathable air. It has three status optical indications as well as an audible alarm in case of a dangerous CO2 concentration. The detector is also located at the back of the device. Another innovation is the spraying of the internal parts of the device using a special TiO2 nano spray, which prevents the deposition of biological materials inside the device and helps to self-clean it. The spray is non-toxic and made only from natural materials. Lastly, it is necessary to mention the possibility of taking biological samples from the unit itself. This can be done with a smear from the whole surface of the HEPA H-14 filter in the back of the device without the need to disassemble it, or from the entire HEPA filter after removing it from the device. Additional control samples can be issued, for example, by smearing from the condenser in the device, or by taking the clean water generated by the device itself. Of course, the device can also be used for the production of drinking water, but we do not recommend it in areas contaminated with the COVID-19 virus and to keep the unit in use only to the new usage described in the C-series user guide add-on.

2. STARTING THE UNIT

The device is completely ready for start-up and operation in a zone with possible occurrence of bacteria or pathogens for the purpose of sampling (see "3. Already performed interventions by the manufacturer"). It can be summarized in the following steps and principles:

a) Unpacking the device (keep the packaging for transport)
b) Plug in the device (if was transported or it was in a horizontal position, can be run after 24 hours)
c) Do not connect the device to an additional water source (store the connection set, for example, in the space behind the filters)
d) Do not turn on the cooling and heating switches (no need for sampling, the water will be at room temperature)

The device is now started and working independently. No special attention is required until:
a) error messages appear on the display (if so, follow the QW20 manual)
b) the upper tank is full (necessary dispensing of water from the upper tank to release the capacity)
c) there is not enough moisture at the location. There can be several reasons:
   1. The ventilation system does not sufficiently humidify the treated air - adjust the ventilation system
   2. The room is intensely air-conditioned - set the air-conditioning
   3. The device is used in the wrong place - move it
   4. Natural ventilation is not ensured - open windows, doors, ventilation grilles and other penetrations
   5. Other, not listed here - contact us

3. HANDLING

1. **Complete drainage of the device**
   Before preparing the device for transport, make sure that you have followed the procedure for complete draining (see "13. Complete draining", in the user manual). We recommend disposing of the water drained from the device as hazardous waste if contamination by bacteria or pathogens is detected. Do not remove the water filters and let them filled with water. If the device is idle for more than a week, discard the filters.
2. **Disinfection of the device**
   We always recommend completely disinfection of the device. Basic disinfection means cleaning the casing of the device with a suitable antibacterial disinfection, gentle on plastic and metal parts. Complete disinfection means disinfection of equipment, including internal parts, using ozone. For example, place the device in a room that is directly intended for surface ozone disinfection.
3. **Packaging**
   Always pack the device in the original transport cardboard box with an inner foam lining, or use a transport box intended for frequent transport (can be ordered from the manufacturer). If a cardboard box you no longer own it or it has been destroyed by frequent use, we recommend wrapping it in cardboard or bubble wrap, wrapping it in food foil and marking the top of the appliance on the packaging.

4. TRANSPORTING

We recommend moving the device to the remote locations using a two-wheeled hand truck, for handling we recommend moving in two people, so that the load distribution on the person is even. Always move the device completely drained!
Always transport the device with extreme care against scratches or other damage in a vertical position. During transport, make sure that the box is carefully and properly secured with lashing ropes so that the load is not damaged by sliding or falling to the side. Attention! The device contains a glass germicidal tube containing mercury, handle the device with the utmost care!
   1. It is best to transport the device in a vertical position; in extreme cases, transport is also possible in a horizontal position, but care must be taken.
   2. Do not tilt the device more than 20° while moving it on the ground.

5. TEST MATERIAL INFO AND CREATION

1. **Test material**
   The test material means the deposition of dirt on the air HEPA filter, the deposition on the exchanger where the condensation of air humidity occurs, the water condensate itself and the water condensate filtered through water filtration. Thus, up to 4 different types of test material are possible. The first three are possible collect the next day for testing (swab from the HEPA filter, taking condensate water, swab from the exchanger). The fourth is the collection of filtered water.

2. **Creation**
   The test material is formed immediately after switching on the device, but it depends on the required amount, so it is first necessary to determine how much test material is needed for a given test (sample detection and identification methodology can be used) and then track exactly when the required amount is created. The observed time then determines the average period during which samples can be taken. This is due to the different locations of the device in places where the minimum requirements for the formation of water condensate may not be met (see "5. Working properties" in the user manual). The formation of filtered water can take several days. If the upper tank is filled, the device stops generating water condensate and switches to recirculation mode (see "6. Components" in the user manual) the display of the water level in the upper tank is shown on the display. For sampling, we recommend keeping the water level at 3/4.
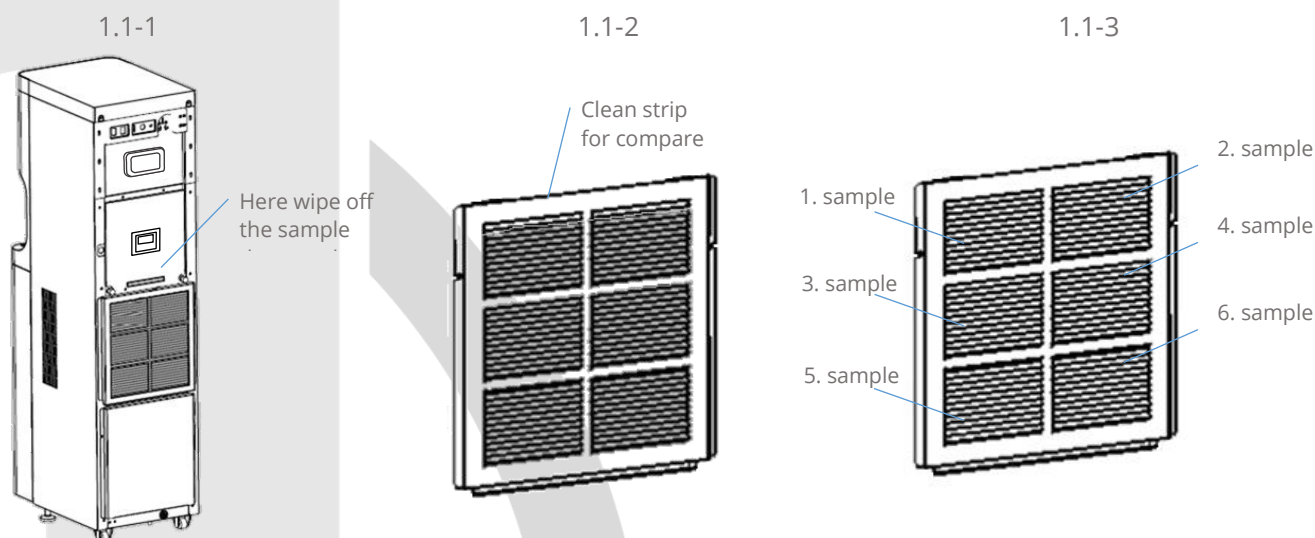
6. SAMPLES

Warning and safety!
Procedures for regular sampling of test material must always comply with health and safety regulations and principles for the handling of hazardous biological material. The samples are then used for microbiological evaluation and testing. Always handle it in accordance with applicable directives, regulations and laws.

1. **Wipe off the sample from air HEPA filter**
   a) This step does not require unplugging the device from the wall socket
   b) The sample can be conveniently removed from the front of the filter, which is exposed to the outside environment (Figure 1.1-1)
   c) The upper part of the filter (clean strip along the upper part of the filter and approx. 1 cm wide), which is not in the air flow into the device, is used for visual check of filter pollution (Figure 1.1-2)
   d) The place of the sample can be marked with a marker directly on the filter or on 6 areas for each sample, which is marked on the filter, from the upper left surface to the lower right (Figure 1.1-3)
   e) The frequency of replacement or collection of the filter as a sample is set by the test laboratory

1.1-1   1.1-2   1.1-3

Here wipe off the sample

Clean strip for compare

1. sample
2. sample
3. sample
4. sample
5. sample
6. sample

2. **Wipe off the sample deposit from condenser**
   a) This step does not require unplugging the device from the wall socket
   b) Loosen the filter holder including the air filter from above by tilting it outside, the upper side have two screws (Figure 2.1-2)
   c) Wipe off the sample from the coating on the exchanger (Figure 2.1-2)
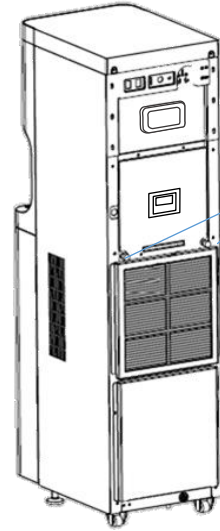   d) Attach by the underside the filter holder including the air filter and close it (figure 2.1-3)

2.1-1

2.1-2

2.1-3
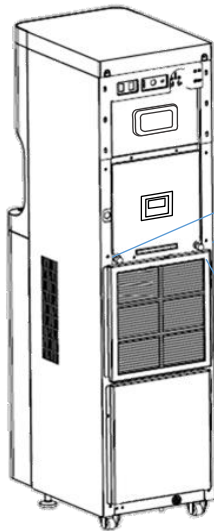
Remove two screws and tilt the filter with holder to remove
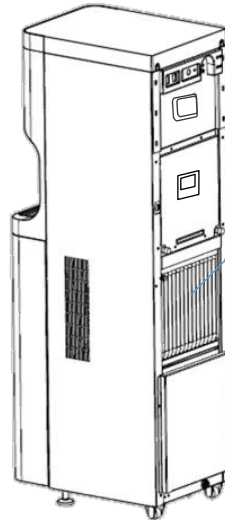
Here wipe off the sample

Close back filter in the filter holder

3. **Condensate collection from the lower tank**
   a) Disconnect the device from the wall socket (Figure 3.1-1)
   b) Grasp the sides to release the back cover by tilting it towards you, the upper side is equipped with two screws (Figure 3.1-2)
   c) Grasp the handle of the lower tank and slowly pull it towards you; do not disconnect the tube and connector (note: the LED connector of the UV lamp let disconnected)
   d) Take a sample of condensed water for testing, pour into a prepared container by pipette, syringe or tilt the tank (Figure 3.1-3)
   e) Leave or dispose the remaining water condensate as hazardous waste
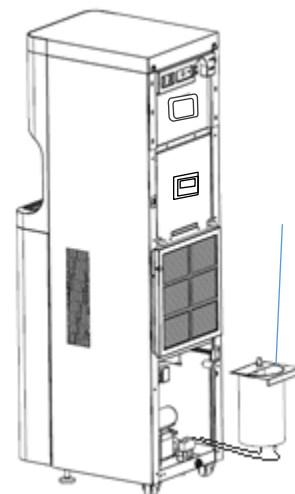   f) Carefully insert the lower tank and close the rear cover

3.1-1

3.1-2

3.1-3
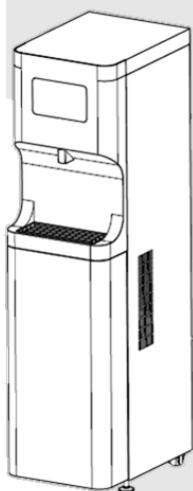
Disconnect device from wall socket
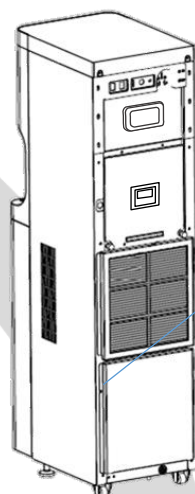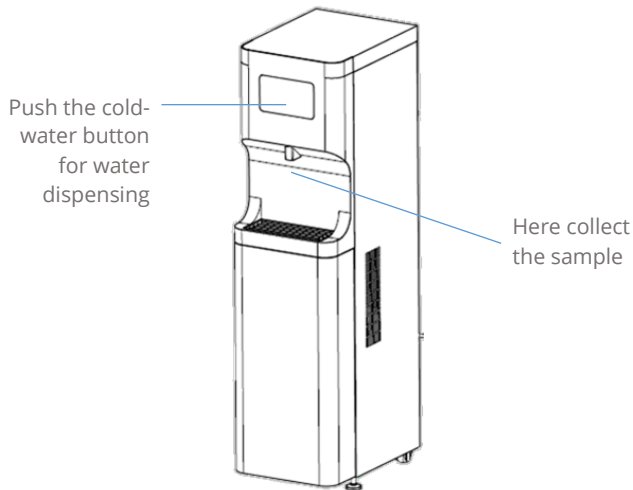
Remove back cover
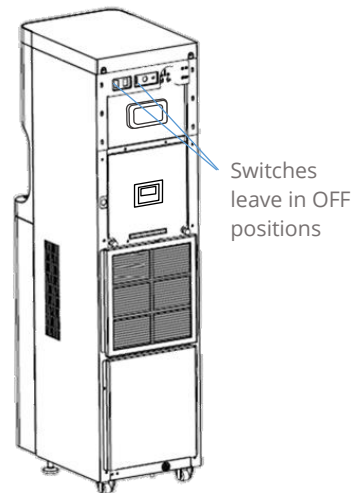
Grasp the tank and take the sample

1. **Collection of the filtered water as a test sample**
   a) This step does not require unplugging the device from the wall socket
   b) Hold the filtered water sample container under the nozzle of the device dispenser or place it on the drip tray (Figure 4.1-1)
   c) To dispense water, press and hold the cold-water button
   d) Please note, that hot and cold water are only available when the heating and cooling switches are turned to the "ON" position, DO NOT turn them on for sampling unless otherwise decided by the test laboratory (Figure 4.1-2).

4.1-1

Push the cold-water button for water dispensing

Here collect the sample

4.1-2

Switches leave in OFF positions

7. CHANGES ALREADY MADE BY THE MANUFACTURER

The device, as assembled, is designed to eliminate bacteria and pathogens in the water and in the air.

8. POSSIBLE ADJUSTMENTS BY END USER

This is risky and we do not recommend doing it without consultation, if you use any procedure other than those described in these sections, the warranty on the device and its components expires. As manufacturers, we are obliged to inform about this, in times of exceptional situation and crisis situation due to a pandemic or epidemic. We know that such situations can occur due to the severity of the condition. In this case, contact us before working on the device and follow the instructions below:

1. **Maximization of dehumidification for condensate formation**
   If condensate test material does not form due to the sub-limit values in the air for condensed water formation, the temperature and humidity sensor on the back of the device can be disconnected. However, this step will cause the maximum possible dehumidification of the place where the device will be located. Therefore, this step is possible only and if it allows the hygiene, or another decision. This step is not common and is an informative use only, within crisis and marginal situations. If this step occurs, we recommend verifying that the supply of humid air is ensured in the given place by ventilation fan or natural ventilation through windows or doors and other passages enabling the supply of humid air.

   a) Disconnect the device from the wall socket (Figure 5.1-1)
   b) Using a screwdriver, remove the four screws from the rear top cover and remove it (Figure 5.1-2)
   c) Disconnect the temperature and humidity sensor connector from the processor board (see "17. Wiring Diagram" in the user manual); (Figure 5.1-3)
   d) Use a screwdriver to tighten the four screws on the rear top cover
   e) Connect the device to the wall socket
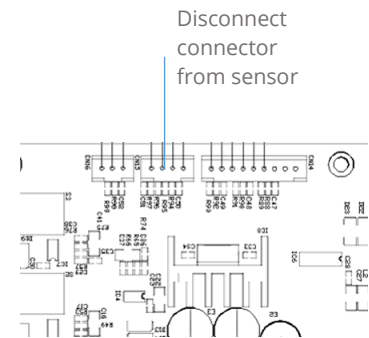   f) By disconnecting the sensor, the display shows "error E1 / E2" and making of water "AWG" is started

5.1-1

Disconnect device from the wall socket

5.1-2

Remove screws and remove cover

5.1-3

Disconnect connector from sensor
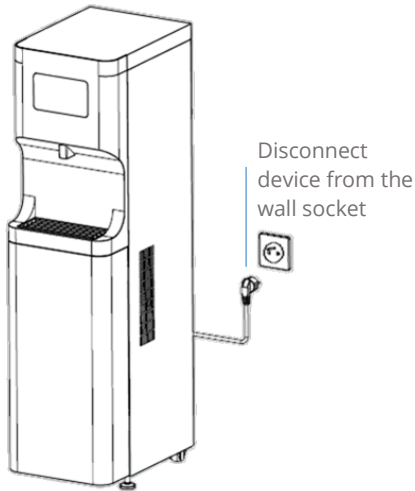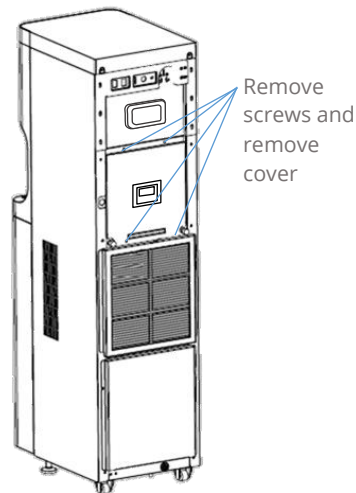
9. PROBLEM SOLVING

You will solve problems arising from normal operation without intervention in the device (see "15. Solving other problems" in the user manual), problems arising after intervention by the user in the device are on the user.

Extensive use of the QW20C device, including UV-C disinfection and sterilization of the surface or liquids in the device and air outside it:

- disinfection and sterilization in healthcare, household, workplace, food industry, industry, gastronomy, transport, production, research, science, education, pharmacy, hospitality, warehouses, transport, clubs, breeding, crop production, agriculture, sports, etc.

- disinfection and sterilization of common areas, offices, workplaces, waiting rooms, offices, sales areas, canteens, classrooms, cloakrooms, relaxation rooms, toilets / toilets, kitchens, sports halls, swimming pools, saunas, halls and halls, corridors, archives, churches, and other spaces...

- The QW20C can also operate in the original mode, so-called for the production of drinking water from air humidity. Modifications to model C have no effect on drinking water production. On the contrary, the modifications serve to make the generated water even better, if the device is not used in an environment with the presence of COVID-19.

10. UV GERMICIDE LAMP WITH ELECTRONIC TIMER

ATTENTION!!
UV-C radiation is carcinogenic and causes conjunctivitis or skin burns. When working under UV-C
it is necessary to protect the skin with for example rubber gloves and eyesight with glasses made of clear glass with a UV-C filter. When handling the device when the rear parts (including the filter) are exposed, the device and the UV lamp must not be under live voltage, therefore always make sure that the device is unplugged from the wall socket. It could injure people, animals and plants!!!

The UV-C germicidal lamp is a set of UV-C fluorescent lamp with an electronic ballast and is intended for sterilization and disinfection of air and surfaces only.

It is very effective against: Covid-19, bacteria, viruses, parasites, algae, mites and other pathogens etc.

1. **Description of the lamp**
   - UV-C fluorescent lamp 14W, type: GPH287T5L / 4, radiation angle 365°, UV-C tube length: 407 mm
   - Supply voltage: 230 V / 50 Hz
   - UV-C radiation at a wavelength of 253.7 nm
   - Lifetime - 12000 hours

2. **Room capacity:**
   >20 m³
   - 15 minut, 20-40 m³
   - 30 minut, 40-60 m³
   - 1 hodina, >60 m³

3. **Description of the UV-C radiation**

It is the hardest UV radiation – its wavelength is less than 280 nm. This radiation is one of the two ways of ozone formation - when it hits a diatomic oxygen molecule, this radiation gives it energy to generate ozone, which is absorbed by this reaction. In other words, oxygen gas is a significant inhibitor of the impact of UV-C radiation on the earth's surface. UV-C radiation has been shown to be harmful (carcinogenic) to living organisms. Unlike UV-B, which can penetrate only a few layers of cells, UV-C penetration through the tissues and tissues of living organisms is relatively greater. This UV radiation is already becoming ionizing. Shortwave ultraviolet radiation is used to effectively sterilize the air and surface. Germicidal UV-C radiation destruct or damage RNA, DNA, proteins, enzymes, macromolecules and biopolymers, the consequence of UV-C radiation is the impossibility of replication of genetic information, the impossibility of reproduction and thus their destruction. It also reliably destroys the vast majority of bacteria, microorganisms, viruses, bacilli, streptococci, protozoa, spores, fungi, yeasts, algae. This is a photochemical disinfection / sterilization process that does not produce any toxic products or chemical products that would affect the environment.

Warning and safety!

It is very unlikely that breaking the light source will have any effect on your health. If the source breaks, ventilate the room for 30 minutes and remove the broken parts, ideally using gloves. Put them in a closed plastic bag and take it to a local collection point for recycling. Do not use a vacuum cleaner.

11. ELECTRONIC TIMER FOR UV-C LAMP

1. **Description of the device**
   - Type: EFP700ET
   - Used for automatic switching of the germicidal UV-C lamp by an automatically set timer or manually (ON / OFF).
   - Location on the back of the device
   - The timer is not waterproof, do not wash it, but only clean it with a dry cloth
   - Includes two 1.5 V button batteries in case of power failure and backup of values
   - 20 programs per day, 15 different weekly settings
   - Time reading in the range from 1 minute to 99 hours 59 minutes
   - Random program function
   - Display change with the ON / OFF mode or clock mode
   - Sumer time (DST)

2. Description of the controls

| Button	Function
R	Press to reset the device if any problem persists
⏻	Manual on / off button, change power status, clear and reset settings during programming
PROG	Press to set or scroll through programs
RND	Random timing settings
CD	Press to turn off the time countdown
⏱/⏻	Change the display of ON / OFF mode and clock mode
+	Button to increase the value of the parameter; press to set daylight saving time
-	Button for decreasing the parameter value
⊙	Clock setting button

3. Timer operation

Clock setting
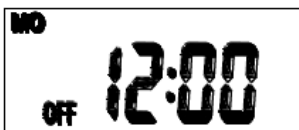
a) Press the ⊙ button to open the time setting and the day will start flashing on the LCD display.
b) Press + or - to set the date. Press ⊙ to confirm and the hour digits start flashing on the display.
c) Press + or - to set the hour. Press ⊙ to confirm and the minute digits start flashing on the display.
d) Press + or - to set the minutes. Press ⊙ to confirm and the time setting mode ends.

Program setting
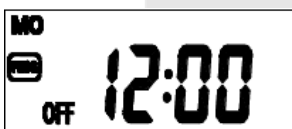
If the PROG button is pressed in the clock mode, the timer settings open, in which you can set up to 20 on and off per day. Depending on your needs, you can set the on and off to 15 different configurations according to the days of the week when the settings are to be applied (see on the top of next page).

1) Every day (MO TU WE TH FR SA SU)	9) Monday, Wednesday, Friday (MO WE FR)
2) Only Monday (MO)	10) Tuesday, Thursday, Saturday (TU TH SA)
3) Only Tuesday (TU)	11) Weekend (SA SU)
4) Only Wednesday (WE)	12) Monday, Tuesday, Wednesday (MO TU WE)
5) Only Thursday (TH)	13) Thursday, Friday, Saturday (TH FR SA)
6) Only Friday (FR)	14) Working days (MO TU WE TH FR)
7) Only Saturday (SA)	15) Working days + Saturday (MO TU WE TH FR SA)
8) Only Sunday (SU)	

Programming procedure

Setting the switch on time in the program 1
If the PROG button is pressed, "1 ON" will flash on the display and you can proceed to the following setting:
   a) DAYS OF WEEK - press the PROG button. The options for marking the day (or days) of the week will start flashing on the display (see 1 - 15 above). Press the + or - button to select a combination of days, or just one specific day.
   b) HOUR - Press PROG button again and the hour will start flashing on the display. Press the + or - button and select the hour. The display is in 24-hour time format.
   c) MINUTE - Press PROG button again and the minute will start flashing on the display. Press the + or - button and set the minute. You now have the switch-on time set in program 1. Repeat the above procedure and set the switch-off time in program 1 or other programs.

Notices:
   - If no button is pressed for more than 10 seconds during programming, the timer setting mode ends automatically. You can also end the setting manually by pressing the 🕓 button.
   - For faster adjustment, press the corresponding button (+ or -) a little longer.
   - If you are in PROG mode, other modes do not work.
   - During setup, you can use any of the 4 small buttons in the corner to clear or resume the current program settings.
   - When the timer is running based on the setting made, you will see the logo 🅿🆁🅾🅶 on the LCD.

Random program settings
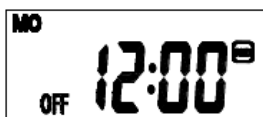
1. In clock mode, press the RND button to open the random timing function. The logo appears on the LCD display and your timer is set to turn on and off at a random time.

2. This feature allows you to turn it on and off randomly from 6:00 PM to 6:00 AM the next day. The switch-off takes place in 26 to 42 minutes and the switch-on is performed randomly in the range of 10 - 26 minutes.

Notices:
   - If you are in RND mode, the other modes do not work.
   - The random program is repeated every day.

Time countdown

a) In clock mode, press the CD button to open the countdown setting and the minutes will flash on the display. To increase or decrease the setting value, press the + or - button.
b) Press the CD button again and the clock setting will flash on the display. To increase or decrease the setting value, press the + or - button.
c) To end the timer setting and start the function, press the CD button again. The logo **CTD** will flash on the display. After the set time has elapsed, your device will turn off and the logo **CTD** disappears from the LCD.
d) To pause the countdown, press the CD button and the logo **CTD** stops flashing until you press CD again.

Notices:
1. Countdown: from 1 minute (minimum) to 99 hours 59 minutes (maximum).
2. When you are in CD mode, other modes not working.
3. When the countdown is complete, logo **CTD** disappears from the display and the status light goes OFF. You can press the button (or one of the 4 small buttons in the corner) and end the countdown manually and return to the clock display mode.

ON / OFF mode and mode change

To change the manual ON / OFF mode and the clock mode, press the ⏱/⏻ button. By default, the timer is in clock mode. When you press the ⏱/⏻ button once, the timer changes to manual ON / OFF mode and, depending on the current status, ON or OFF appears on the display. The clock is not displayed. Press the button (or one of the 4 small buttons in the corner so that switching ON and OFF manually. When you press the ⏱/⏻ button again, the timer returns to the clock mode. To return to the timer mode, press the PROG button, and for use the random function mode, press the RND button.
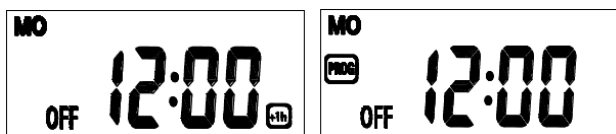
Clock mode

Timer mode
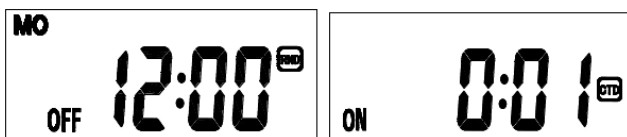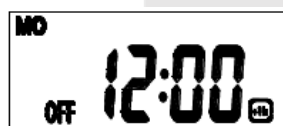

Random function mode

Time countdown

Notice: The figure above shows all available modes.

In the mode of manual switching on and off by the main button (cover), the display looks like this:

Summer time setting (DST)

- To turn daylight saving time ON or OFF, press the + button in clock mode.
- When daylight saving time is active, the symbol appears on the display **+1h**.
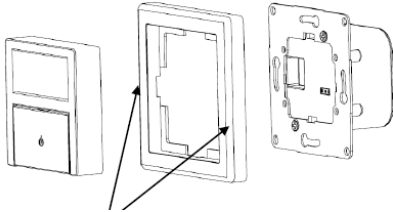
Device reset

In the event of a timer failure, or to clear all settings, press and hold the **R** button and the timer will restore the original factory settings. The display will look like this:
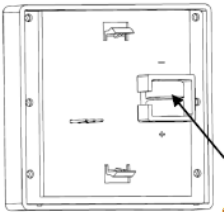

Battery removal and replacement

- **If nothing appears on the display, replace the batteries.**

a) Grasp the frame and pull out the entire front of the timer.

b) Replace both 1.5 V coin cell batteries (observe polarity).
c) Push the timer back into the body of the device.

Safety regulations, maintenance and cleaning

For safety and CE registration reasons, do not tamper the timer. Let have any repairs carried out by a specialist technician. Do not expose this product to excessive moisture, immersion in water, vibration, shock or direct sunlight. This product and its accessories are not children's toys and do not belong in the hands of small children! Do not leave the packaging material lying around. Plastic films pose a danger to children as they could swallow them. If you do not know the advice or how to use this product and you do not find the necessary information in the manual, contact our technical team or seek the advice of a qualified professional. Use only a soft, slightly damp cloth to clean the case. Do not use any scouring agents or chemical solvents (paint and varnish thinners) as these may damage the display and the timer housing.

Batteries use

Do not leave the batteries lying down. There is a risk that children or pets could swallow them! If batteries are swallowed, contact a doctor or emergency immediately! Batteries could not fall into the hands of small children! Leaking or otherwise damaged batteries can cause skin burns. In this case, use suitable protective gloves! Leaking batteries can also damage surrounding materials.

Be careful not to short-circuit, dispose of in fire or charge the batteries! In such cases, there is a risk of explosion! Discharged batteries are special waste and do not belong in the household waste and must be handled in such a way as not to damage the environment! For these purposes (for their disposal), special collection containers are used in stores with electrical appliances or in collection raw materials!

![Recycling symbols] **Save the environment!**

Recycling

Electronic and electrical products must not be disposed of with household waste. Dispose of waste at the end of the product's service life in accordance with applicable legal regulations. Can also be disposed of together with the QW20.
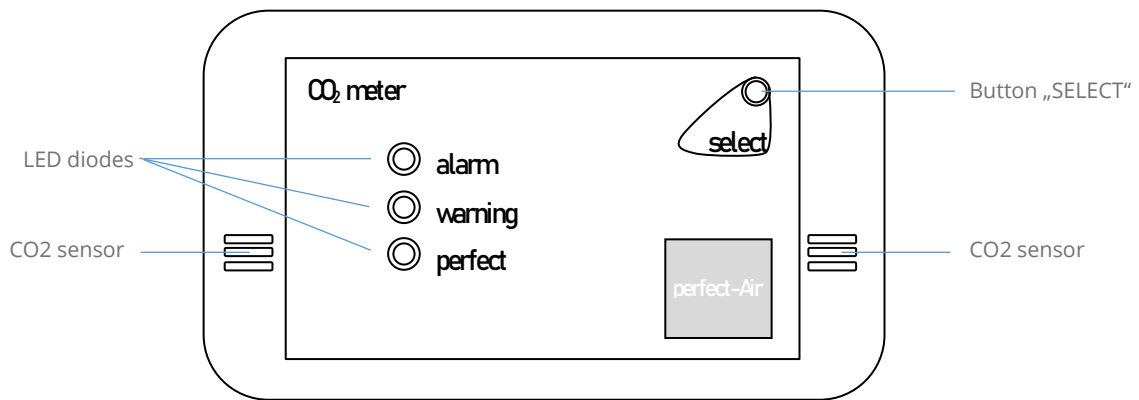
Technical data

Operating voltage:	230 V / 50 Hz, 8 A
Resistive load:	Max. 1800 W
Timer setting interval:	1 minute
Backup batteries:	2 x LR44, 1,5 V

12. INTEGRATED CO2 METER

1. **Description and use**

   It is for measuring CO2 and to reduce the risk of infection by aerosols with a content of viruses or bacteria.

Measurement range: CO2 400-5000 ppm (carbon dioxide units)

a) If the orange LED flashes - the device is warming up (warm-up time is 5 minutes).
b) After heating, the diode lights up permanently according to the current CO2 concentration in the vicinity of the meter (see table), the device also constantly measures and evaluates.

Amount CO2 in the air	LED indication	CO2 health status
400 – 799 ppm	Green	Safe level, does not affect the body
800 – 1499 ppm	Orange	May affect attenuated organisms, **ventilate the room**
1500 - 1999 ppm	Red	There is a risk of infection, it affect a healthy organism, **immediately ventilate the room thoroughly**
> 2000 ppm	Red + sound alert*	**ATTENTION!** High levels of CO2 affect the body, **leave the room immediately and ventilate properly!**

*) The audible signal can be switched OFF outside the warm-up time by holding down the "SELECT" button for 5 seconds.

2. **Recalibration in the case of problems**
   a) Place the QW20C in a location with a minimum CO2 concentration of 400 - 450 ppm (an outdoor environment with green environment is optimal, which is sufficient for calibration). A second CO2 meter can be used to do this to check the CO2 concentration needed for calibration.
   b) Plug the device into an electric outlet.
   c) Hold down the "SELECT" button for 20 seconds.
   d) The LEDs flash - this indicates the calibration mode.
   e) Briefly press the "SELECT" button to confirm the calibration.
   f) The start of the calibration is signaled by an audible signal, and all three LEDs will start flashing gradually.
   g) After the calibration is completed, the instrument sets the calibrated value to 400 ppm, a signal sounds and the green LED lights up. This successfully completes the calibration and it is possible to switch off the device again and transfer it to the measured room.

Do not wash the meter with water cleaners, it is not waterproof. Leave the holes on the sides of the device free.

Save the environment!

Recycling

Electronic and electrical products must not be disposed of with household waste. Dispose of waste at the end of the product's service life in accordance with the applicable legal regulations, or as a whole with the QW20 unit.

13. PROTECTIVE TiO2 SPRAYING

The TiO2 is sprayed on the internal components of the unit, this is non-toxic, white and erasable. The inside of the unit is not intended for regular manual cleaning with water or chemical detergents. For example of unit disposal, this spray is environmentally degradable and no special care is required.

14. HEPA H-14 FILTER

The filter contained in the QW20C unit has been custom-made and corresponds in size or handling to the original HEPA H-13 filter contained in the original QW20 model. However, it has a class higher filtration efficiency. If the filter becomes dirty or clogged, dispose of it in ordinary mixed waste (it cannot be washed or blown out with air). If the unit is used to detect and wipe off samples for virus presence, dispose the filter as biological waste!

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