

O-Box Operating Manual

O-Box - The fully automatic filling system with timer, reverse osmosis, filtration system, and pump support.

Distribution:

Manufacturer:

THE FLAME GmbH

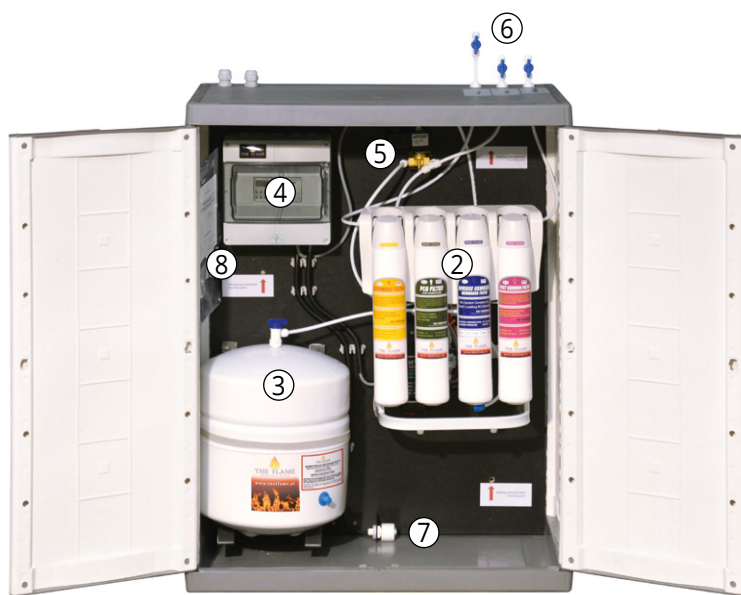
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THE FLAME 01-2021

Scope of Delivery O-Box

- ① O-Box housing with all connections ready for mounting.
- ② Reverse osmosis system with pump
- ③ Water tank / pressure vessel
- ④ Switch cabinet
- ⑤ 3/2 way solenoid valve (rinsing/burner filling)
- ⑥ Inlets and outlets (fresh water, waste water, osmosis water to the burners)
- ⑧ Float switch (emergency-off - overflow protection against possible leak in O-Box)
- ⑨ Tools for sensor replacement and filter change, adapters 1/2" and 3/4", connector for waste water, TDS channel meter (measures the degree of purity of the water), operating manual.



External dimensions O-Box: approx. W 68 cm, H 87 cm, D 40 cm



Please pay close attention to the notes!

Assembly Instructions O-Box

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- ① When choosing the position of the wall bracket for the O-Box, make sure to choose a stable base. The installation must be horizontal and with a minimum distance of 30 cm from the floor!



- ② 3 holes in the back wall of the O-Box are provided to mount the O-Box. Make sure to use appropriately dimensioned anchors and screws to mount the O-Box. Please purchase all necessary mounting hardware (screws, anchors, etc.) from the hardware store according to the mounting surface. The weight of the O-Box is approx. 35 kg.



Electrical Connection O-Box

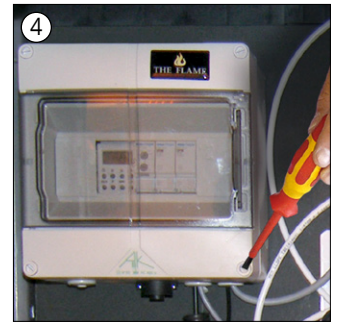
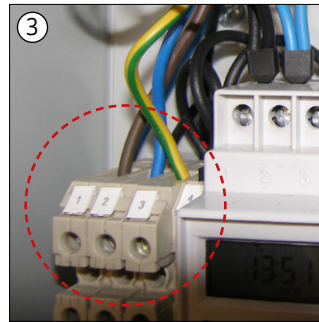
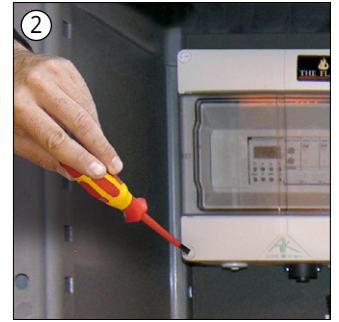
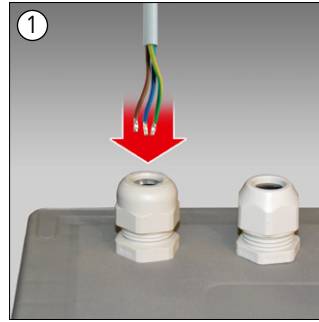
Electrical Connection Power Supply

The O-Box must be connected to the power supply using a 3-pin cable (3 x 1,5 mm²) on site.

Caution: Fuse C13A, 230 V.



- ① The 3-pin cable for the power supply must be threaded through the cable gland of the O-Box on the top left.
- ② Remove the cover from the switch cabinet and thread the 3-pin cable into the cabinet through the opening at the top of the cabinet.
- ③ Connect the 3-pin cable to the respective connectors (1=L, 2=N, 3=PE).
- ④ Screw the cover back on the switch cabinet.



Switch cabinet

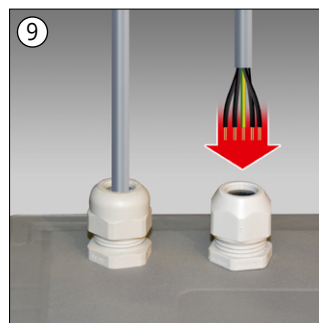
- ⑤ Timer - Use the timer to set the on/off times for one or more effect burner (see page 9 and 11).
- ⑥ T1 Time Relay - Regulates the duration of the flushing phase - Normal/Standard approx. 2 minutes.
- ⑦ K1 Contactor Float - Emergency-off - overflow protection (float active - power off).
- ⑧ K2 Burner Protection - Power to burner on/off.



Power Supply Effect Burner

Determine the required length of the 5-pin cable (switch cabinet to effect burner) and cut it accordingly.

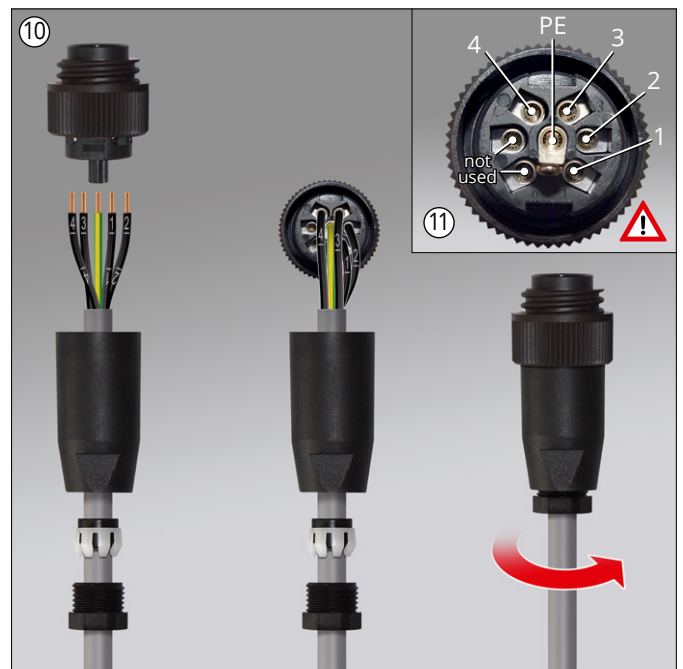
- ⑨ Now push one end of the 5-pin cable through the cable gland on the front of the O-Box.



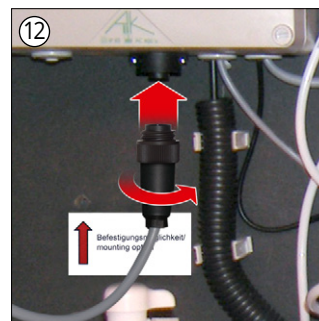
Please pay close attention to the notes!

⑩ Connect the 5-pin cable, which you threaded through, to the standard round connectors (male) according to the picuters.

⑪ Pay attention to the correct assignment of the connections!



⑫ Plug the standard round connector (male) into the standard round connector (female) in the switch cabinet (bottom) and turn to tighten it.

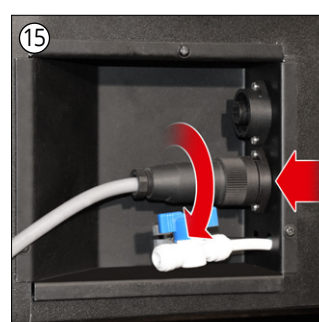


⑬ Connect the other end of the 5-pin cable to the standard round connector (female) according to the pictures.

⑭ Pay attention to the correct assignment of the connections!



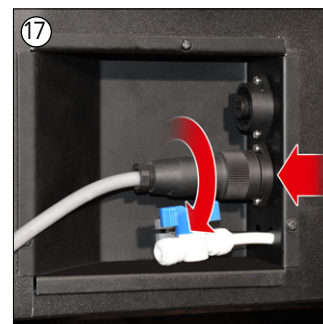
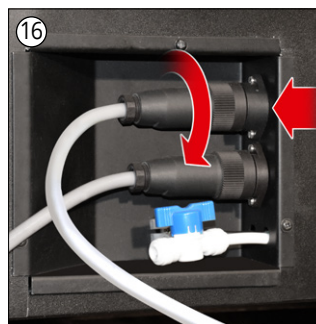
⑮ Plug the standard round connector (female) into the standard round connector (male) on the effect burner (top connector) and turn to tighten it.



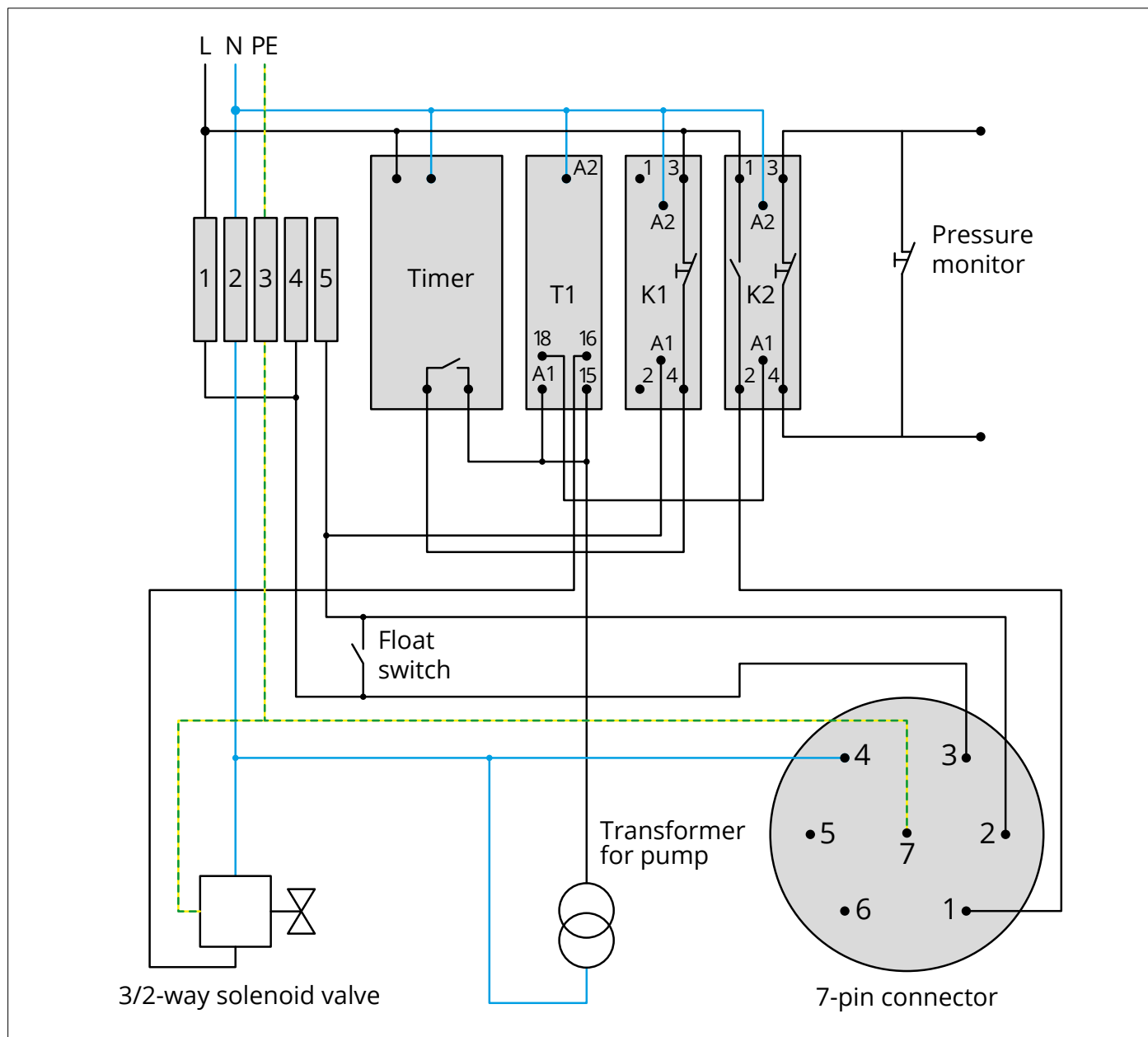
⚠ Please pay close attention to the notes!

Optional (several effect burners)

- ⑩ If using multiple effect burners, connect the enclosed burner cable with the standard round connector (female) to the standard round connector (male) at the effect burner (bottom connection) and turn to tighten it.
- ⑪ Now plug the other end of the burner cable into the standard round connector (female) at the 2nd effect burner (top connector) and turn to tighten it Repeat this process with each additional burner.



Wiring Diagram O-Box

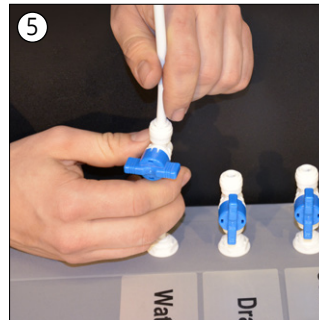
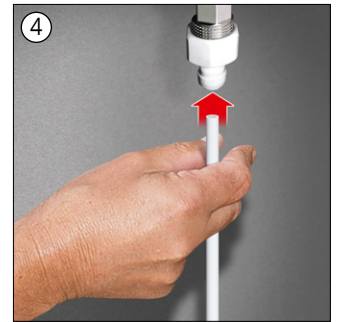


Please pay close attention to the notes!

Water Connection O-Box

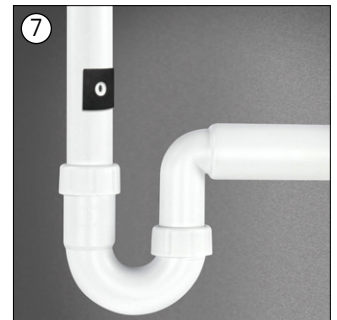
Connecting the Water Supply

- ① If using a tap a 1/2" connection for the water supply line, screw the plastic adapter 1/2" directly on the tap (skip step 2 and 3).
- ② If the water supply line has a 3/4" connection, first screw the plastic adapter 1/2" on the chrome-plated brass adapter 3/4".
- ③ Connect the chrome-plated adapter 3/4" to the water supply using the plastic adapter 1/2".
- ④ Determine the required length of water hose (water tap to O-Box) and slide one hose end into the plastic adapter.
- ⑤ Insert the water hose to the water connector provided on the O-Box (Wasser / water). It is located on the top of the O-Box.



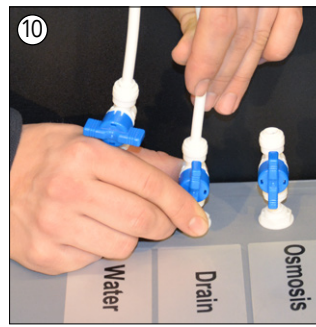
Connection Water Drain Line

- ⑥ Drill an approx. 10 mm hole into the drain pipe used for draining above the siphon.
- ⑦ Pull off the backing from the adhesive seal and affix the seal to the drilled hole.
- ⑧ Position the seal clip and screw it on tightly.
- ⑨ Determine the required length of the water hose (seal clip to O-Box) and slide a hose end into the opening of the seal clip.



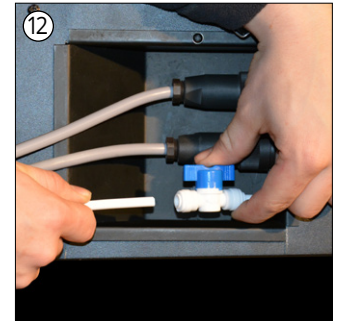
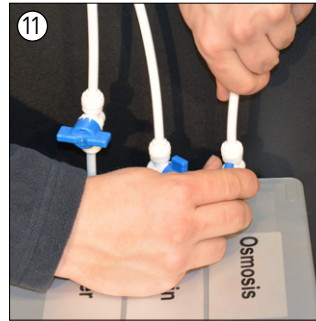
Please pay close attention to the notes!

- ⑩ Insert the water hose into the drain connection provided on the O-Box (Abfluss / drain). It is located on the top of the O-Box.



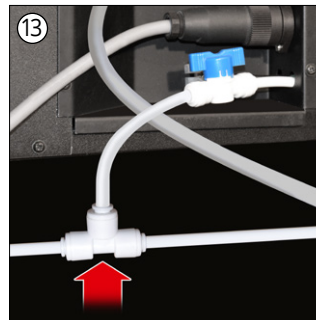
Connection Osmosis Water

- ⑪ Determine the length of water hose required (effect burner to O-Box) and slide one hose end into the osmosis connector (Osmose / osmosis).
- ⑫ Plug the other end to the provided shut-off valve on the effect burner.



Optional (multiple effect burners)

- ⑬ If you want to operate your O-Box with several effect burners, you will need one or multiple hose tees for branching. Repeat this process with each additional burner.

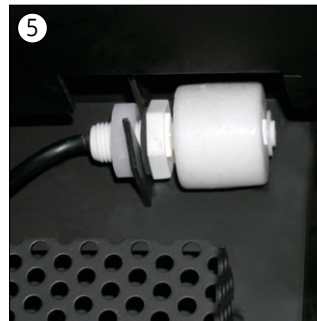
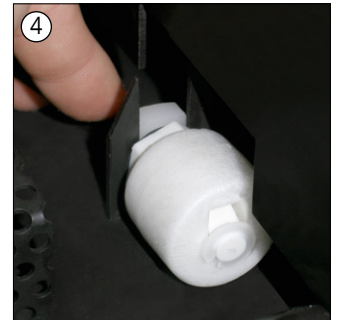
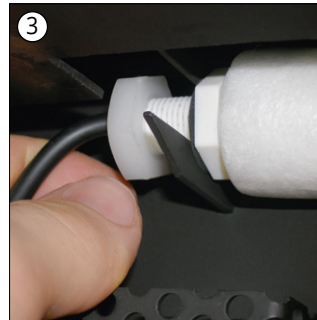
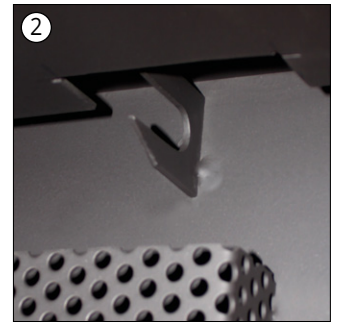
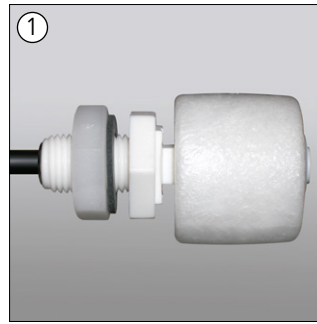


Please pay close attention to the notes!

Mounting the float switch

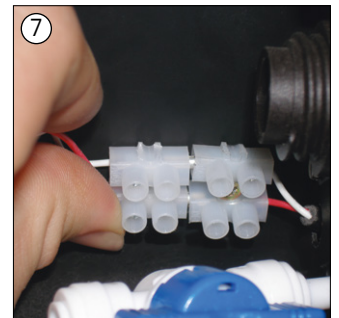
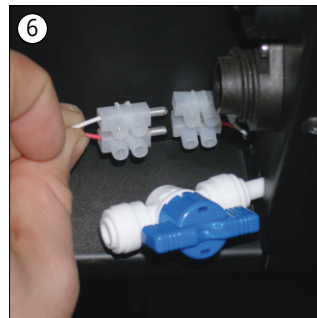
Mounting the float switch in the device

- ① Remove the float switch supplied together with its cable.
- ② Float switch adapter on the device.
- ③ Place the float switch in the float switch adapter provided on the device.
- ④ When positioning, make sure that the narrow polystyrene side faces up!
- ⑤ Screw down the hex nut firmly.



Connection of the float switch on the effect burner

- ⑥ Insert the plug of the float switch in the socket provided on the effect burner.
- ⑦ Press the plug firmly into the socket.



Operating Instructions for the Digital Weekly Timer 2

Description and function

This timer is designed to program power supply in defined time periods.

Keyboard Function

R (Reset)

Clear all data in memory including current time and all programs.

C+ (CLOCK)

Set current time combined with buttons "W+", "H+", "M+". Select 12 or 24 hour mode combined with button "⌚". Activate summertime function combined with button "MANUAL".

⌚ (TIMER)

Set programs combined with buttons "W+", "H+", "M+". Select 12 or 24 hour mode combined with button C+.

MANUAL

Select operating modes of timer.

W+ (WEEK)

Set week combined with button C+ or "⌚".

H+ (HOUR)

Set hour combined with button C+ or "⌚".

M+ (MINUTE)

Set minute combined with button C+ or "⌚".

RST/RCL

Override programs or recall the overridden programs.

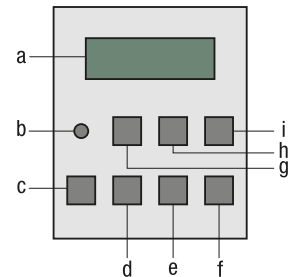
LED

Shows status of power output. When the indicator is ON, there is power output. When the indicator is OFF, there is no power output.



Operating elements

- a LC display
- b R (reset)
- c C+ Clock
- d ⌚ Timer
- e MANUAL
- f RST/RCL override
- g W+ (WEEK)
- h H+ (HOUR)
- i M+ (MINUTE)



Intended use

We do not permit using the device in other ways like described in chapter "Description and function". Use the product only in dry interior rooms. Not attending to these regulations and safety instructions might cause fatal accidents, injuries, and damages to persons and property.

Features

- 10 ON/OFF programs with 1 minute step
- MANUAL ON/AUTO/MANUAL OFF selectable.
- 12/24 hour mode selectable
- LCD display
- Summer time function available
- 16 combinations of day or blocks of days available as follows:
 - MO
 - TU
 - WE
 - TH
 - FR
 - SA
 - SU
 - MO, TU, WE, TH, FR, SA, SU
 - MO, TU, WE, TH, FR
 - SA, SU
 - MO, TU, WE, TH, FR, SA
 - MO, WE, FR
 - TU, TH, SA
 - MO, TU, WE
 - TH, FR, SA
 - MO, WE, FR, SU
- Maximum adjustable countdown 99h:59min:59sec.

Initial operation

1. Plug the timer into a regular 230 V power outlet according to WIRE RULE and turn the power on. Leave for approximately 14 hours to charge the memory backup battery.
2. Clear all current information by pressing R button with a sharp object such as a pen or pencil after charging.
3. The timer is now ready to be set up for use.

Setting current time

1. Press G+ button and hold, simultaneously press W+ button until the actual day is displayed. Continue by pressing H+ or M+ button until the current hour or minute is displayed. When setting, the buttons W+, H+ or M+ can be held down for rapid forward counting.
2. Release both buttons. The week and time will be set.
3. To reset incorrect time, repeat above steps

Setting programs

Tip: To be ensured that the settings do not overlap, especially when using the block option. If there are program settings overlapped, the timer ON or OFF will be executed according to program time, not by program number. Program OFF has the priority to be over program ON.

1. To setup the first sequence, you must press the ☹ TIMER button once. The LCD shows "ON_1" and you can start with the first turn-ON setting.
2. You can setup the day or a block of days by pushing the W+ button. Then you must setup the time by pushing the H+ button for hours and the M+ button for minutes. If the day and time has been setup then push the ☹ TIMER button once to finish the "ON" setting and it switches automatically to the "OFF" setting. You can press and hold H+ / M+ to go fast forward the hours and minutes.)
3. OFF_1 is now on the display. To setup the turn-OFF setting you can follow step 2 and finish the first sequence by pressing the ☹ TIMER button. You will switch automatically to the setup for the second sequence and you can repeat these steps for a second sequence.
4. To jump back to the previous sequence, please press and hold the ☹ TIMER button for 2 seconds.
5. After completing settings, press the G+ button and the timer is working on.

MANUAL / AUTO setting

Operating modes can't be changed during program settings.

1. Press MANUAL button to revert the three modes in turn.
2. The programs can only be executed in AUTO mode. When AUTO is selected, the timer operates as the programs set. In MANUAL ON or MANUAL OFF mode all programs are ignored and the timer doesn't operate. When MANUAL ON mode is selected, power output is always ON. When MANUAL OFF mode is selected, power output is permanently off.
3. When the mode is turned from MANUAL ON to AUTO, the timer will keep the setting of MANUAL ON until to the following program.

12/24h mode

Press G+ and ☹ TIMER simultaneously to turn the time display between 12 and 24 hour mode.

Summertime function

1. Press G+ and "MANUAL" simultaneously. LCD shows S (Summer time). Clock advances 1 hour.
2. To revert to winter setting, press the two buttons again. Clock moves backward 1 hour. S disappears in LCD.

Specifications

Input:	200-230 V AC, 50 Hz
Max load:	16 (2) A, 3600 W
Min. setting time:	1 minute
Accuracy:	+/- 1 minute per month
Battery backup:	NiMH 1,2 V >100 hours
Operating Temperature:	-10°C bis 40°C

Operating Instructions for the Digital Weekly Timer 2

Intended use

The "DIN rail mount digital weekly time switch" serves as a timer switch for 230 V/AC electrical appliance and provides for 16 programmable switching times (8 ON and 8 OFF times). Acceptable electrical appliances include resistive and inductive loads, which are operated by 230 V/AC. The maximum current input of the connected appliances must not exceed resistive loads of 16 A, and inductive loads (or motor load) of 3 A.

The device has been designed for installed on DIN top-hat rails. Operation is exclusively permitted in dry and closed areas. Contact with moisture must be avoided by all means possible. The device must be operated exclusively via the 230 V/AC, 50 Hz provided by the public mains network.

Unauthorised conversion and/or modification of the device are inadmissible because of safety and approval reasons (CE). Any usage other than described above is not permitted and can damage the product and lead to associated risks such as short-circuit, fire, electric shock, etc. Please read the operating instructions thoroughly and keep them for further reference.

Safety instructions



We do not assume liability for resulting damages to property or personal injury if the product has been abused in any way or damaged by improper use or failure to observe these operating instructions. The warranty/guarantee will then expire!

The icon with exclamation mark indicates important information in the operating instructions. Carefully read the whole operating instructions before operating the device, otherwise there is risk of danger.

Persons / Product

- If the appliance is used in a commercial context, such as industrial plant, the safety regulations applicable to electrical equipment and relevant operating resources as laid down by the employers' liability insurance association must be observed.
- The appliance is designed and constructed according to Safety Class II. It must be connected to 230 V / AC, 50 Hz mains socket of public mains supply system only.
- This device is not a toy and should be kept out of reach of children!
- The input current of the connected appliance must not exceed 16 A, resistive load, or 3 A, inductive load.
- The device must not be subjected to heavy mechanical stress.
- The device must not be exposed it to extreme temperatures, direct sunlight, intense vibration or dampness.
- Never turn on the device immediately after it has been brought from a cold into a warm room. Condensed water might destroy your device. Leave the device in OFF position and wait until it acclimatise to room temperature.

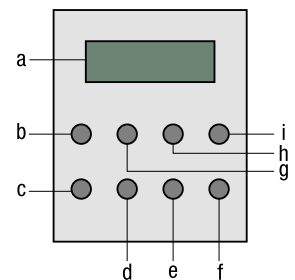
- If there is reason to believe that safe operation is no longer possible, the device is to be put out of operation and secured against unintentional operation. Safe operation is no longer possible if:
 - the device shows visible damages,
 - the device no longer works,
 - the device was stored under unfavourable conditions for a long period of time and
 - the device was subject to considerable transport stress.

Miscellaneous

- Servicing, adjustment or repair works must only be carried out by a specialist/ specialist workshop.
- If any questions arise that are not answered in this operating instruction, contact our Technical Advisory Service or other experts.

Operating elements

- a LC display
- b ☰ = Normal display (time and control state display)
- c PROG = program settings
- d R = Clear button
- e MAN = Operating mode switch (auto or manual on/off)
- f RST = Reset button
- g D = Day of the week setting button
- h H = Hour setting button
- i M = Minute setting button



Connection



Installation work must only be carried out by suitably qualified personnel who are familiar with the hazards involved and with the relevant regulations.

Before connecting the device, interrupt the power circuit, which the device is to be connected with. Remove the relevant mains fuse or trigger the automatic fuse!

Make sure all corresponding cables are deprived of voltage. Do not make any electrical connection to terminals 3, 4 and 5. Make sure the cables are insulated and the points of contact are covered. Never use bare wire for connection.

1. Install the digital time switch on the control panel or in the switch cabinet or distribution box of a domestic power distribution system.
2. Connection is via screw terminals.

Terminal numbers	Contact
1 - 2	Voltage supply 230 - 250 V~, 50 / 60 Hz
8 - 7 - 6	Changeover contact max. switching capacity 240 V~, 16(1)A

Operation

Make sure that the programmed ON or OFF times do not overlap.

A. Time and day of week configuration

1. Press the "⌚" and "D" at the same time to set the current day of week.
2. Press the "⌚" and "H" at the same time to set the current hour.
3. Press the "⌚" and "M" at the same time to set the current minute.
4. Press and hold the "⌚" and "D", "H" or "M" buttons to start the fast setting sequence.

B. Timer programme configuration

1. Press "PROG" to enter the programme setting mode, "1^{ON}" will be shown on the lower left hand corner of the display.
2. Press "D" to set the day of week.
The days of the week setting is possible to set individual days "Mo", "Tu", "We", "Th", "Fr", "Sa", "Su", or different combination of days as listed below:
Combination 1. "Mo - Tu - We - Th - Fr - Sa - Su"
Combination 2. "Mo - Tu - We - Th - Fr",
Combination 3. "Sa - Su",
Combination 4. "Mo - Tu - We - Th - Fr - Sa",
Combination 5. "Mo, We, Fr",
Combination 6. "Tu, Th, Sa",
Combination 7. "Mo, Tu, We"
Combination 8. "Th, Fr, Sa",
(Mo = Monday, Tu = Tuesday, We = Wednesday, Th = Thursday, Fr = Friday, Sa = Saturday, Su = Sunday)
3. Press "H" and "M" to set the time at when the connected load is to be switched on.
4. Press "R" to clear the display thus deactivate the ON or OFF time. Press "R" again to recall the setting.
5. Press "PROG" to set the switched off time, "1^{OFF}" will be shown on the lower left hand corner of the display.
6. Return procedures 2 to 5 to set all 16 programmable switching times (8 ON and 8 OFF times).

C. Operating mode selection

To set the required operating mode, press the "MAN" button until the desired status appears in the display. Watch the bottom line of the display to see which operating mode is set.

- AUTO ON = Automatic operation output set to "ON", terminal 6 and 7 opened.
- AUTO OFF = Automatic operation output set to "OFF", terminal 6 and 7 closed.
- ON = Manual operation output set to "ON", terminal 6 and 7 opened.
- OFF = Manual operation output set to "OFF", terminal 6 and 7 closed.

D. Daylight saving time

Press the 'H' and 'M' buttons simultaneously to add one hour to the set time. The display will show 'S'.

G. Reset

Press "RST" to reset all setting.

Maintenance

Clean the appliance externally with dry, anti-static cloth only. Do not use abrasive or solvents!

Technical data

Voltage supply::	230 V/AC, 50 Hz
Switching current:	Max. 16 A (resistive load) Max. 3 A (inductive load)
Operating temperature:	-10 °C bis +60 °C
Clock accuracy:	1 second per day
Dimensions:	86,5 x 36 x 69 mm

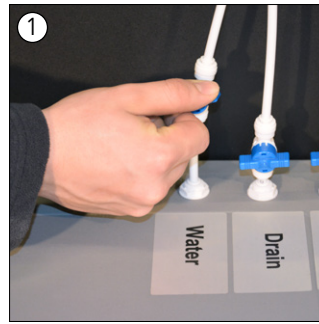
The programming of the timer



After 23 hours operating time the O-Box has to be switched off for at least 1 hour in order to assure a cool down period for the burners and the O-Box itself. Please make sure to observe this when setting the timer.

Filter replacement O-Box

- ① Close the valve on the the water connection of the O-Box.
- ② Close the valve on the water tank / pressure vessel.




- ③ Tilt the filter cartridge of the sediment filter (yellow) towards the front.
- ④ Turn the filter cartridge of the sediment filter to the left (counterclockwise).
- ⑤ Pull out the filter cartridge.



- ⑥ Tilt the filter cartridge of the PCB filter (green) towards the front.
- ⑦ Turn the filter cartridge of the PCB filter to the left (counterclockwise).
- ⑧ Pull out the filter cartridge.

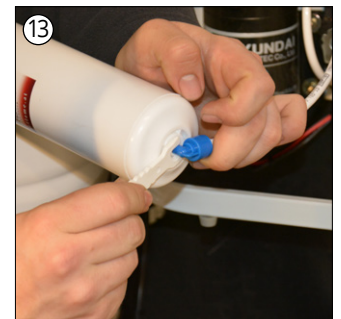


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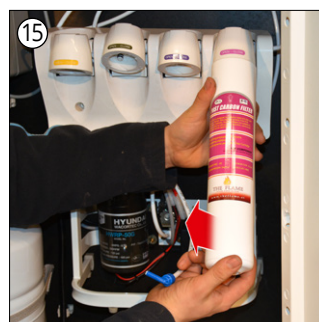
- ⑨ Tilt the filter cartridge of the membrane filter (blue) towards the front.
- ⑩ Turn the filter cartridge of the membrane filter to the left (counterclockwise).
- ⑪ Pull out the filter cartridge.




- ⑫ To replace the membrane filter use the spanner supplied.
- ⑬ Insert the spanner with the small opening between the hose fitting (blue) and the membrane filter cartridge.
- ⑭ Now slide out the hose fitting.



- ⑮ Tilt the filter cartridge of the carbon filter (pink) towards the front.
- ⑯ Turn the filter cartridge of the carbon filter to the left (counterclockwise).
- ⑰ Pull out the filter cartridge.

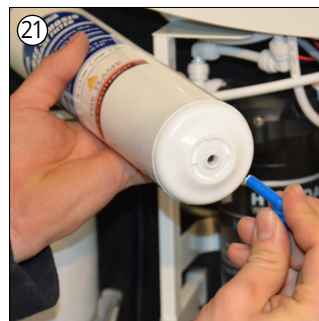


 Please pay close attention to the notes!

- ⑮ Install a new filter cartridge of the carbon filter.
- ⑯ Turn the filter cartridge to the right (clockwise).
- ⑰ Tilt the filter cartridge to the rear.



- ⑱ Insert the hose fitting (blue) into the new membrane filter.
- ⑲ Push the hose fitting firmly into the filter cartridge.
- ⑳ Install a new membrane filter cartridge.
- ㉑ Turn the filter cartridge to the right (clockwise).
- ㉒ Tilt the filter cartridge to the rear.



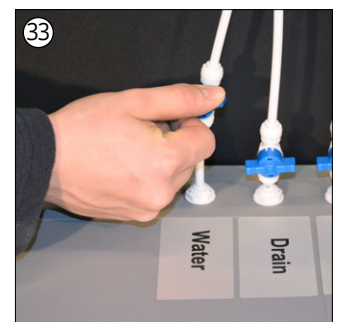
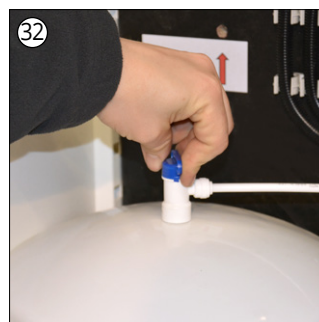
- ②⑥ Install a new PCB filter cartridge (green).
- ②⑦ Turn the filter cartridge to the right (clockwise).
- ②⑧ Tilt the filter cartridge to the rear.



- ②⑨ Install a new sediment filter cartridge (yellow).
- ③⑩ Turn the filter cartridge to the right (clockwise).
- ③⑪ Tilt the filter cartridge to the rear.



- ③② Open the valve on the water tank / pressure vessel again.
- ③③ Open the valve on the water connection of the O-Box.



Order Parts List O-Box

Component A (Box)

① Plastic cabinet

Cabinet with 2 hinged doors
Dimensions: approx.
W 68 cm, H 87 cm, D 40 cm

Product number: O-KA-KS



② Cable gland

M 20

Product number: O-KA-KV



③ Straight pipe fitting A

Plastic white

Product number: O-KA-GESVA



④ Shut-off valve

Plastic white-blue

Product number: O-KA-ASH



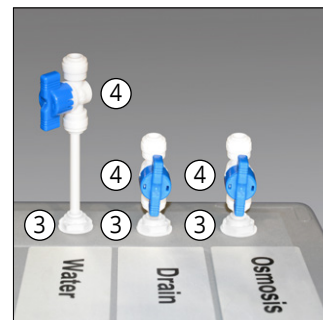
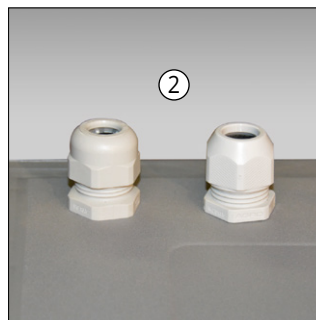
⑤ Holder for float switch

Product number: O-KA-HSS



⑥ Float switch

Product number: O-KA-SS



Order Parts List O-Box

Component B (switch cabinet)

⑦ Distribution cabinet

Product number: O-KB-VS



⑧ DIN rail timer

Digital

Product number: O-KB-HZD



⑨ Time relay multifunction

1 W, 10 A

Product number: O-KB-ZM



⑩ Contactor

25 A, 1 S + 1 Ö, 230 V

Product number: O-KB-SCH



⑪ Terminal clamp 2,5 mm²

Product number: O-KB-RKG



⑫ Terminal clamp 6 mm²

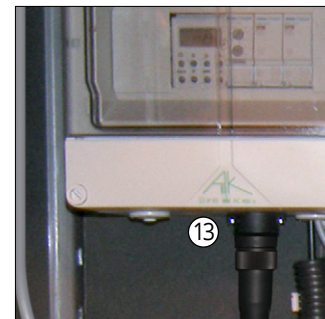
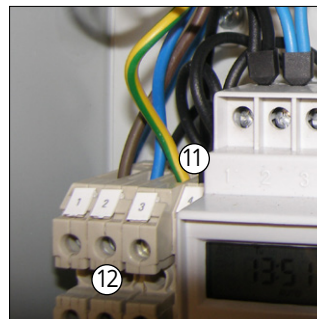
Product number: O-KB-RKK



⑬ Standard round connector (female)

7-pin

Product number: O-KB-SRVW



Order Parts List O-Box

Component C (osmosis system)

⑭ Osmosis system

Product number: O-KC-OA



⑮ Water tank

Product number: O-KC-WT



⑯ Water hose

1/4" · 1 m

Product number: O-KC-WS



⑰ 3/2-way solenoid valve

1/8" IG, 230 V / 50-60 Hz



Product number: O-KC-WMV

⑱ Straight female connector

Nickel-plated brass

Product number: O-KC-GASV



⑲ Angular stud

Plastic white

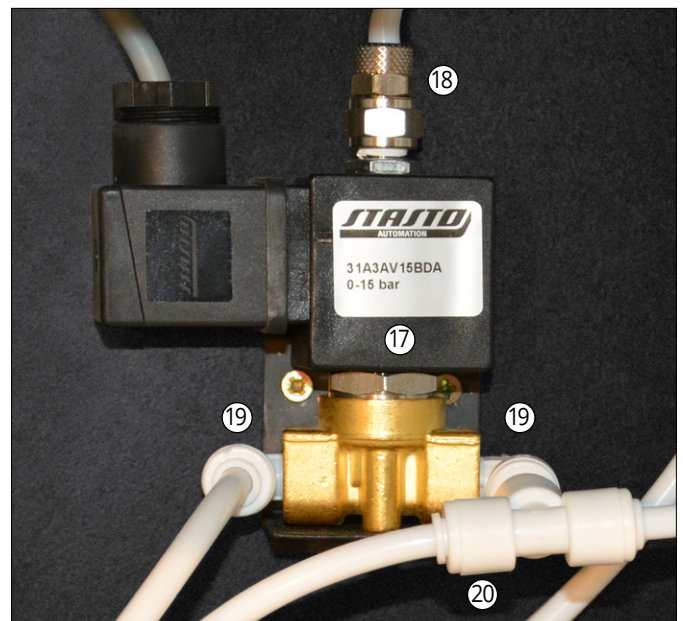
Product number: O-KC-WE



⑳ T connector

Plastic white

Product number: O-KC-STS



Bestellteile-Liste O-Box

Komponente D (Filter)

②① Sedimentfilter

Product number: O-KD-SF



②② PCB-Filter

Product number: O-KD-PCBF



②③ Membranefilter

Product number: O-KD-MBF



②④ Carbon-Filter

Product number: O-KD-CF



②⑤ Spanner

For filter change

Product number: O-KD-GSF



Filter change:



All filters should be replaced every 12 months in order to ensure proper operation!

Filter set:

Consisting of one each of Sedimentfilter, PCB-Filter, Membranefilter and Carbon-Filter.

Product number: O-KD-FS

Order Parts List Mounting

Component E

(Mounting electrical connection)

②⑥ Standard round connectors (male)

Plastic black

Product number: O-KE-SRM



②⑦ Standard round connector (female)

Plastic black

Product number: O-KE-SRW



②⑧ Cable 5 x 1,5 mm

5-pin, numbered

Product number: O-KE-K5L

Required length:

Switch cabinet (O-Box) to effect burner: m



②⑨ Burner cable

Length: approx. 1,3 m, premounted, Included with additional effect burners!

Product number: O-KE-BK

Quantity required:

1 effect burner:	0 pc.
2 effect burners:	1 piece.
3 effect burners:	2 pc.
4 effect burners:	3 pc.
5 effect burners:	4 pc.



Order Parts List Mounting

Component F (mounting water supply)

③① Plastic adapter 1/2"

1/2" connection, plastic white

Product number: O-KF-KA



③① Brass-adapter 3/4"

3/4" chrome-plated brass

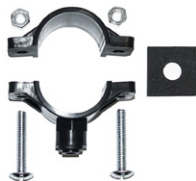
Product number: O-KF-MA



③② Seal clip

For connection water drain line

Product number: O-KF-DK



③③ Water hose (individual)

1/4", individual length

Product number: O-KF-WSI

Required length:

Faucet (water supply) to O-Box: m

Seal clip (outflow) to O-Box: m

Last effect burner to O-Box: m

For any additional effect burner a 0,5 m
long hose connector is required (connecting
hose tee with effect burner): m

Total: m



③④ Hose tee

Plastic white

Product number: O-KF-ST5

Quantity required:

1 effect burner: 0 pc.

2 effect burners: 1 piece

3 effect burners: 2 pc.

4 effect burners: 3 pc.

5 effect burners: 4 pc.

