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Ozone Air Cleaner XT - series MANUAL



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Table Of Contents

1	<i>Initial operation</i>	2
2	<i>Safety Precautions</i>	2
3	<i>Specified Application</i>	3
4	<i>Operation mechanism</i>	4
5	<i>How to set up the device</i>	4
6	<i>Detailed description and operation procedure</i>	5
6.1	Turn on device	6
6.2	Start operation	6
6.3	Select operation time	6
6.4	Select performance level of air fan	6
6.5	Shut down operation program	6
7	<i>Initiation</i>	6
7.1	Important notes prior to initiation	6
7.2	Tips on determining the operation period.....	7
8	<i>Shutdown</i>	7
9	<i>Technical Specifications</i>	8
10	<i>Transportation</i>	8
11	<i>Care and maintenance</i>	8
12	<i>Bug fixing</i>	9
13	<i>Optional Equipment / Replacements</i>	9
14	<i>Disposal</i>	10

1 Initial operation

The ozone generators of the XT-series follow the latest standards of today's technology and thereby fit European and international guidelines.

The relevant information, declarations and data is deposited. In order to assure a long lifetime, optimized function and a hazard-free operation with the device, we urge you to read the following instructions and to follow them.

- This instruction manual is a substantial part of the ozone air cleaner. It must be kept within closest range to the ozone generator or the location, it is set up on. The operator should be able to access this manual at any given time.
- CAUTION: Follow the national safety guidelines and accident prevention regulations.
- Extensive tests on material, operation and quality were performed at the device before delivery. Despite of that there might be certain hazards, if the device is operated by untrained personnel or if it is not operated accordant to its specifications.

Please abide the following safety precautions!

2 Safety Precautions

CAUTION: The device generates ozone. Keep in mind that ozone is toxic and may not be inhaled!

Please read the following instruction manual before operating with the device. Damages caused by disregard of the instructions written in this manual, are excluded from any warranty or liability.

Do not enter the treated room during the device's operation or before the ozone level in the air has adapter a healthy standard value again.

- A disregard of the safety measures can lead to serious harms of your health.
- No person, animal, plant or any kind of creature is allowed to be in the room, while the device operates.
- Leave the room immediately after starting the device.
- If necessary, the entrance of the treated room should be sealed, so that an emission of the ozone from the treated room is inhibited. Furthermore the ozone treatment of the room must be clearly marked for others and the room must be locked.

CAUTION: The ozone generators contain high voltage elements. Pull the power plug before opening device's enclosure. Otherwise it might lead to life endangering situations.

CAUTION: There is an earthing cable included in delivery- It is strongly forbidden to bridge the earthing or to connect the device to a electricity circuit that is not earthed.

- Do not operate with the device as long as the enclosure is missing or as long as there are errors in its construction.
- The device features an air blower with an air filter. The inlet and outlet of the device must be kept clear and may not be blocked under any circumstances. The minimum distance from walls and objects of the devices should be approx.. 30 cm.
- Do never cover the device or remove it from the applied area during operation.
- The device may not be exposed to a direct water beam, rain or any kind of humidity. If water or liquids penetrate the device, it must be switched off and checked on by professional personnel before operating it again.
- Let the device prior to application acclimate to the surrounding temperature
- This device is only designed for the applications mentioned in this manual. In case the device is used for any other application than these, it might lead to hazardous situations.

Safety measures for indoor-operations

The national relevant guidelines for operation with ozone must be followed. Ozone is a toxic oxidizing agent and proves to be hazardous and harmful to the health. There are certain safety measures that must be followed to avoid an uncontrolled release of the gas.

CAUTION: Ozone cannot be inhaled! It causes a reduced lung efficiency, which can continue for several days!

Safety measures and equipment:

- Wear masks with ozone filters, which cover the eyes, mouth and nose.
- The treated rooms must have a sufficient supply of fresh air and a sufficient air exhaust.

Seek immediate medical attention in the following cases:

- Inflammation of the eye, feeling of dizziness and extensive tussive irritation.
- Dyspnoe and pain during inhalation.

3 Specified Application

The device is designed for neutralization of smells and the disinfection indoors by the fission of molecules and cells by means of ozone. The ozone is generated by the device itself and emitted through the air blower. The device was designed to neutralize smells in industrial and commercial areas. The operation conditions for this device are an air temperature of +10 to +40 °C and a relative air humidity of max. 80 %.

Standard Delivery Contents:

- 1 x ozone generator XT-series
- 1 x IR remote control incl. battery
- 1 x instruction manual

4 Operation mechanism

The device is a high-performance ozone generator designed to neutralize smells and to disinfect the air. Ozone is the strongest oxidant used for disinfection. It reacts quickly with most of organic substances. Therefore the relevant molecules are split. Thus it demolishes smells in kitchens, of fustiness, urine and others, such as cigarette and burning smell. The purification method is similar to air clarification in nature and during storms. The device follows most recent European guidelines and safety regulations.

The ozone is generated through electrical discharge (Corona discharge) on the patented “Ceramic Dielectric Electrode”, otherwise known as the plasma discharge plate. Due to high potentials the “Ceramic Dielectric Electrode” generates high electrical field strengths, which leads to many short barrier discharges between the electrodes.

An integrated air blower sucks the surrounding air at one side of the device into the device, leads it through the “Ceramic Dielectric Electrode” and then gives out the ozone containing air back into the surrounding air.

The ozone in this device is generated without the help of any further chemicals or utilities. It only uses electrical energy and surrounding air. Thus it causes no environmental pollution. After the device is switched off again, the remaining ozone dissociates after some time into Oxygen again.

5 How to set up the device

If you set-up the device, consider not to block the inlet and outlet for the air blower, so that the device can easily suck in the surrounding air at the back of the device whilst releasing it at the other side through its ventilation slots.

The idea location for a set-up in order to assure an ideal air circulation within the room, is the centre of the room with an elevation of 2/3 of the rooms total height (e.g. on a ladder). The power supply of the ozone air cleaner can be maintained via an adapter. For additional safety the adapter should be plugged into a power jack that is outside the treated room. Thus the generator can be shut down without actually entering the treated room.

As an alternative the device can be installed permanently on walls and other adequate vertical surfaces.

CAUTION: Please follow the safety regulations for the operation on ozone generators indoors.

6.1 Turn on device

Press main “POWER”- button at the front of device. The LED above that button will be red. Now the device operates in standby mode and can be programmed via its remote control (advised) or its control panel.

6.2 Start operation

To start the device, press the “Air Fan” – button or the “step II / ON” – button on the remote control. Now you will be hearing a confirmation tone. Now the LED of the timer will be shining from 2 h to 15 minutes (LED test), as well as the LEDs from the air fan on level I to level III. You will hear a confirmation tone again.

6.3 Select operation time

By pressing the timer button you can choose the following operation times: 15 minutes, 30 minutes, 1 hour, 2 hours. By pressing the timer button you can jump between these options and the selected option will be indicated through the LED lights and a logging beep. After the time is up, the device will automatically switch into Standby mode. On the remote control each time period has its own button, so you can directly choose the relevant time.

6.4 Select performance level of air fan

Similar to the operation time you can also choose the performance level of the air fan from three levels. Each alternation will be indicated through a beep tone and by the LED lights. Even here you can choose the relevant air fan level directly on the remote control.

6.5 Shut down operation program

All programs can be immediately shut down via the OFF-switch (red button on remote control). After pressing it, the device immediately switches into Standby mode and can be programmed again.

7 Initiation

Check prior to every initiation whether the inlet and outlet for the air fan has no foreign matter in it and whether the air fan has no contaminants. Contaminated or blocked gutters have to be cleaned out immediately. Therefore read chapter “Care and maintenance”.

7.1 Important notes prior to initiation

Follow the safety measures and safety regulations for an operation with the ozone generator indoors. You have to leave the room immediately after initiating the ozone generator.

Perform the following safety measures before initiating the device:

- All openings and entries have to be closed or sealed, so that the ozone cannot leak out from the treated room and potentially lead to an inhalation of the ozone in rooms, where there is a person. The ozone is toxic and might affect the health of any person that accesses the room, where the ozone air cleaner is in operation and the cycle is not yet completed. In that case there might be acute hazards of intoxication.
- Install warning signs at every entry of the room that is being treated, to warn from entering the room since there is toxic gas spread. The signs might contain the period, ending time or any further information on the ozonisation.

7.2 Tips on determining the operation period

The treatment time depends on various factors, e.g.:

- Type of smell
- Intensity of smell
- Size of the room and temperature
- Time and intensity of impact
- Composition of the material and source of smell
- Spread of smell

If you treat a room that is not heated at the time, but will be heated again after treatment, it might lead to a recurrence of the smell. Thus the room temperature should be kept during treatment always a little higher than the operation temperature later on (approx.. +5 °C).

In case the smell reappears after the treatment, you might have chosen a much too short treatment time or the room temperature might have been too low. Repeat the treatment by varying the room temperature and the treatment time.

8 Shutdown

After the set time is run out, the device automatically switches into Standby mode, as mentioned above.

- The time the treated room needs until the ozone concentration in the air is back to its initial non-toxic state, or reaches the MAK level of 0.1 ppm, depends on various factors like the air humidity, the treated material, size of the room, period of treatment etc.
- The treated rooms need to be checked on their ozone concentration by trained and authorized personnel, before they become open for access again.
- The mean half-life of ozone is 30 min., depending on temperature, air pressure, UV radiation etc.
- The following calculation can be followed for the determination of the time of regeneration:
If the air concentration is at the time $t=0$ at a level of 100 % (e.g. 20 ppm- high value!!), It will be 50% after half an hour (10 ppm). After an hour it will be 25 % (5 ppm). After four hours it will be only 0.4 %, which equals 0.078 ppm for a relatively high initial air concentration. The MAK value is on 0.01 ppm. Thus the room can be accessed after four hours again.
- Even after four hours we recommend to not access the room before it wasn't thoroughly aerated. The regeneration time can be even shortened by the aeration. Always aerate the treated room afterwards. If the room must be accessed for aeration, wear an adequate mask.

We recommend waiting at any case at least 4 hours before accessing the room again.

9 Technical Specifications

Ozone power / hour:	750, 1500, 3500 or 7000 mg/h
Generating method:	Corona discharge
Air circulation:	max. 300 m ³ /h
Power Source:	220 – 230 V AC / 50 / 60 Hz
Nominal flow:	---A ± 10 %
Power input:	max. 90, 100, 120, 140 Watt
Operation temperature:	10° ~ 40° C
Height:	310 mm
Width:	420 mm
Depth:	120 mm
Weight:	3,300 to 3,500 g

10 Transportation

The device has to be secured before transportation and protected from any kind of impact. Too intense impacts might lead to damages at the electrode / Plasma discharge plate.

11 Care and maintenance

A regular care and maintenance of the device and following the operational instructions assure a smooth operation and long lifetime of the device.

NOTE: The device must be shut down and disconnected from any power, before performing any maintenance!

The interval between maintenances depends on the stress and operation frequency of the device. Especially the “Ceramic Dielectric Electrode” requires regular maintenance since it is often covered with contaminants.

To determine the necessary interval for maintenance, consider your operation frequency, and the surrounding conditions, in which the device is operates. If it was a dusty and dirty surrounding or if it is a renovation after fire, you should check whether the device requires any maintenance.

Dry and relatively clean environments, where the device was applied require a less frequent maintenance of several months. The following criteria are relevant for the determination of the maintenance interval:

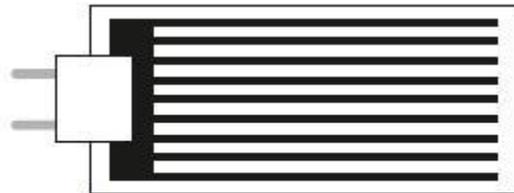
- If device operates several hours continuously
- Several days a month (e.g. if the device is free for rent)
- In heavily polluted environments (e.g. dust etc.)
- In humid surroundings

The following signs indicate the necessity of maintenance and cleaning:

- The ventilation noise is clearly louder than normal
- The electrode is covered. This can be determined by the typical noise of the electrode, when it generates ozone. If this noise has become quieter the electrode might be covered by something.
- The air filter is covered

Follow these steps to clean the device:

- a. Pull the power plug of the device and open the silver cover at the front to clean out the Plasma discharge electrode.
- b. Underneath there is the plasma discharge electrode. The plasma plate does not necessarily need to be demounted for cleaning. Check the electrode during cleaning on potential cracks or fractures.

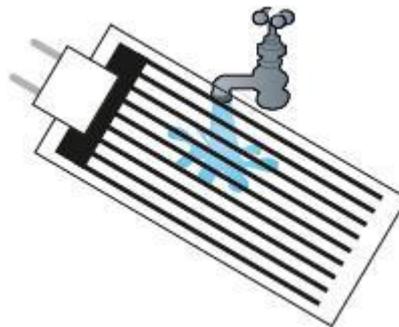


Cearamic Dielectric Electrode

- c. Begin cleaning the electrode with a damp cloth. If you use a dry cloth for cleaning, make sure it is without any fluffs, since they might lead to damages on the electrode. Be careful not to damage the electrode during cleaning.
- d. Make sure the electrode is absolutely dry before operating again.

If you the electrode is much heavier polluted you might have to demount the electrode:

- a. Loosen the electrode from its attachment, since they are only clipped in.
- b. After demounting the plate it can be cleaned carefully under clear water with a mild soap solution (e.g. dishwashing detergent).



- c. The device can be remounted after it has fully dried.

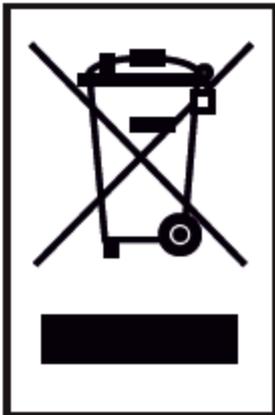
12 Bug fixing

Bug	Potential cause
Device produces less / no ozone	If the air fan is functioning and there was still no discharge it might be due to polluted electrodes. Clean those according to the instructions.
Device does not start	Check power (230V / 50 Hz). Check power plug on any damages. Change the fuse, if necessary (2A – flink)

13 Optional Equipment / Replacements

- Plasma electrode
- High voltage transformer
- Remote control

14 Disposal



Device may not be thrown into household waste. It has to be given in a specialised disposal company.

NOTE: "This instrument doesn't have ATEX protection, so it should not be used in potentially explosive atmospheres (powder, flammable gases)."

Please contact PCE Instruments if you have any questions concerning our products, service etc.

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To follow the WEEE guidelines (Waste of Electrical and Electronic Equipment) we take our devices and either recycle them or give them to a recycling company.

