

Oxygen and Ozone Generator Modules

JIN INTER develops technologies, components and functional features for water-related products and home appliances. This sheet summarizes the oxygen generation methods used by JIN INTER, the oxygen generator types we offer, and our ozone generator module.

Oxygen generation methods

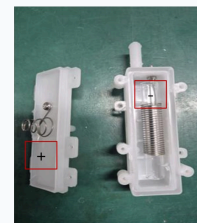
Method	How it works	Oxygen concentration
Electrolysis JIN INTER	Electricity passed through water breaks water molecules down into hydrogen gas (H ₂) and oxygen gas (O ₂).	30 - 80 ppm
PSA JIN INTER	Pressure Swing Adsorption. Air is compressed and nitrogen is separated by zeolite, which extracts oxygen. Used in medical oxygen tanks.	30 - 40 ppm
Membrane separation JIN INTER	A polymer membrane separates nitrogen and oxygen. Used in air purification.	30 - 40 ppm
Plasma JIN INTER	Low-pressure plasma: energy supplied to gas molecules through an electric field separates them into ions and electrons, forming a plasma. Closer to ozone generation than oxygen generation, it is mainly used for sterilization: air purification and odor removal, drinking water treatment, industrial wastewater treatment and food preservation.	30 - 40 ppm
EOP JIN INTER On request	Electrochemical oxidation with diamond-coated electrodes. Water is oxidized at the electrode surface, forming oxygen and strong oxidants. The electrode material is premium and costly, so this method is offered on customer request.	Per project

Oxygen generator types



Electrolysis type

- **Operating condition:** DC 5V / 2-3A
- **Additional devices:** diaphragm pump and UF membrane
- **Advantage:** safer and much less smell than the plasma type
- **Consideration:** higher cost, because of the reservoir and the additional devices



Plasma type

- **Main parts:** air pump and plasma module
- **Advantage:** lower cost than the electrolysis type
- **Consideration:** generates much more ozone (O_3) than oxygen (O_2), so an ozone removal filter such as a zeolite filter is essential



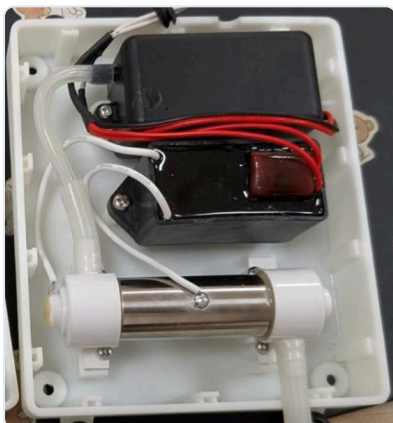
EOP type On request

- **Main part:** electrolysis cell with diamond-coated electrodes
- **Advantage:** diamond-coated electrodes are very durable and chemically stable
- **Consideration:** the electrode material is premium and costly, and is imported, so this type is built when a customer requires it. It can also form ozone, so ozone recovery is recommended

Oxygen generator types compared

	Electrolysis type	Plasma type	EOP type
Principle	Water split into H_2 and O_2	Plasma formed in gas by an electric field	Electrochemical oxidation at diamond-coated electrodes
Operating condition	DC 5V / 2-3A	Air pump and plasma module	Specified per project
Additional devices	Diaphragm pump, UF membrane	Ozone removal filter (e.g. zeolite)	Specified per project
Smell and safety	Safer, much less smell	High ozone output, ozone must be removed	May form ozone, ozone recovery recommended
Relative cost	Higher	Lower	Highest

Ozone generator



Features

- Built from high-quality materials for safe and easy operation.
- Delivers high-concentration ozone for odor removal (including VOCs) and sterilization.
- Uses high-voltage corona discharge to convert oxygen (O₂) into ozone (O₃), with dry air or oxygen as the feed gas.
- Suitable for integration into water purifiers, disinfection cabinets, oxygen rooms, dehumidifiers, refrigerators and similar equipment.
- Compact and portable design for easy professional and DIY installation.

Operating conditions	Room temperature
Material	Metal + plastic
Input voltage	110 V / 220 V
Output voltage	3.5 kV
Power consumption	10 W
Operating frequency	11 kHz
Ozone output	500 mg/h
Dimensions	170 x 120 x 60 mm
Weight	Approx. 249 - 254 g (8.78 - 8.96 oz)
Feed gas	Ambient air

Package contents

Quartz tube (ozone discharge tube), PCB module (high-voltage driver board), air pump, housing.

Operating notes

With adequate cooling, the ozone generator can operate continuously for approximately 4 hours at an ambient temperature not exceeding 35 °C. For typical use, an operating cycle of 30 minutes is recommended.

Applications

- **Food processing:** process water, production and packaging areas, tool sterilization.
- **Beverage:** purified water, mineral water and beverage production.
- **Fruit and vegetable processing:** processing, storage and preservation.
- **Cold storage:** shelf-life extension for produce, grains, eggs, meat and seafood.
- **Pharmaceutical:** process water, HVAC systems, sterile rooms.
- **Drinking water:** deep well, municipal and rural supply.
- **Public facilities:** air purification in hotels, restaurants, schools and cafés.
- **Other:** water, sewage and wastewater treatment, swimming pools, air purification.

Integrating an ozone generator into a product

Excess ozone must be recovered

When ozone is bubbled into water, for example in a water purifier, the product must include a mechanism that recovers the excess ozone afterwards. Ozone that is not dissolved must never be taken in directly by the user, whether as gas or as residual ozone in the drinking water.

- 1 **Recover the excess ozone.** Route the gas leaving the bubbling stage through an ozone removal stage, such as a zeolite filter, before it is released.
- 2 **Protect the drinking water outlet.** Make sure ozone gas cannot be carried into the dispensed water, and that residual ozone in the water is removed or allowed to decay before the water is dispensed.
- 3 **Prevent backflow.** Fit a check valve between the ozone generator and the water so that water cannot flow back into the generator.
- 4 **Use ozone-resistant materials.** Select tubing, fittings and seals that resist ozone, for example PTFE, silicone and stainless steel.
- 5 **Keep the gas path sealed and ventilated.** Avoid leaks inside the appliance and ventilate the enclosure.
- 6 **Respect the operating limits.** Use a typical 30 minute operating cycle. Continuous operation of about 4 hours needs adequate cooling and an ambient temperature not above 35 °C.
- 7 **Verify and comply.** Test the ozone level at the outlet and in the surrounding air, and follow the regulations of the target market.

The same ozone removal requirement applies to plasma type oxygen generators, which produce much more ozone than oxygen.

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