

# Oxyzone International Pty. Ltd.

## Model T4200 Ozone Generator

**\*\* Also applies to T4100 models \*\***



### Instruction and Maintenance Manual

V1.0 – Nov 2020

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**Please Note:** The OZ-T4100, T4100V, T4100P & T4100VP models use the OZ-T4200 chassis fitted with only one of the power supplies and corona discharge cells. The OZ-T4100 is a 5 gram / hour machine.

## 1. Specification and operation of the Oxyzone T4200 ozone generators

### Description:

The T4200 is the 2 cell version of the T4400 and is built to be the same dependable product as the larger systems. With its stainless steel construction it is ideal for use in the food industry where it can provide sanitising ozone treatment for automatic equipment or processes.

It can include an internal 40lpm air pump to direct ozone gas directly to work surfaces.

Offering an ozone output of 10 gm/hr using oxygen or about 5 gm/hr using air, it is a very versatile product with the ability to provide large savings in a food processing environment.

### External control:

The T4200 is provided with an XLR 3 pin connector for control by an external ORP or dissolved ozone monitor.

### Models available:

- T4200 - 10 gram/hr, 2 cell ozone generator with input for ORP control.
- T4200P - ozone generator fitted with internal 40lpm pump and 0-10lpm flow gauge
- T4200V – Fitted with variable output power supplies
- T4200VP – Fitted with 40 lpm air pump, variable output and 0-10lpm flow gauge



At Oxyzone we have the product and the flexibility to meet your needs.

### T4200 specification

<b>Cabinet size</b>	Width	Height	Depth
<b>All models</b>	370mm	420mm	210mm
<b>Weight</b>	20kg		
<b>Cabinet material</b>	Grade 304 Stainless Steel		
<b>Ozone output</b>	10 gm/hr at 20C using PSA oxygen		
<b>Ozone producing cells</b>	2 individual air cooled cells		
<b>Power supplies</b>	2 Individual high voltage; high frequency power supplies with overload protection		
<b>Power requirement</b>	240 vac, 50 Hz, 300W nominal		
<b>Models available</b>			
<b>T4200</b>	2 cell, 10gm/hr Corona Discharge ozone generator		
<b>T4200P</b>	2 cell CD ozone generator fitted with internal 40LPM air pump		

## Controls and indicators

<b>Start / Stop</b>	Illuminated mains switch
<b>Circuit protection</b>	3A thermal circuit breaker
<b>Safety</b>	Low voltage door interlock switch
<b>Indicators</b>	2 LED indicators showing that the power supplies are operating correctly
<b>Internal pump (T4200)</b>	Thomas 40 LPM diaphragm pump
<b>External control</b>	3 pin XLR connector for external controller
<b>Flowmeter</b>	Indicates the flow level of the oxygen or air feed: 0 to 5LPM for oxygen, 0 to 10LPM or 25LPM for air

## 2. Unpacking and installation of the Oxyzone T4200, T4200P ozone generator

The model T4200 is available fitted for oxygen or air feed. Both models use the same construction and differ only in the fittings. The oxygen feed version we denote as the T4200 and the air feed version, the 4200P. They differ only in the following:

The 4200P is fitted with a 0-10LPM flowmeter instead of the 0-5LPM required for oxygen.

The 4200P is fitted with a hosetail ozone outlet to suit silicon tubing, whereas the 4200 is fitted with a compression fitting for Teflon tubing.

The 4200P is supplied with 3m of silicon tubing. The 4200 is supplied with 3m of Teflon tubing.

Both units are interchangeable with these minor variations

### T4200 Item list

With your T4200, T4200P ozone generator you will receive the following:

- 1) 40008 T4200 mounting strap x 2
- 2) 41034 M8 x 12 Csk screws x 4
- 3) 48023 Inlet air filter x 1 (4200P, air feed)
- 4) 41806 Door key, 3mm double bit x 1
- 5) 40610 Silicon tubing 14mm x 7.5mm x 3m (4200P, air feed)
- 6) 40613 Teflon thick wall 3/8" tubing, 3m (4200, oxygen feed)
- 7) 42034 XLR 3 pin male in-line connector with pins 1 and 2 linked

### Mounting the unit

The unit is not sealed sufficiently to allow mounting in an environment that is hosed down with water or exposed to rain.

When mounting on a wall ensure a space of 200-300mm at each side to allow clear cooling airflow. Clear access to the RH side is helpful for servicing the wiring and electronics.

Allow a space of about 200mm below the unit to facilitate tightening of fittings.

No access is required to the top of the unit.

Stand the ozone generator on its head and fit the 2 mounting straps using the M8 countersunk screws.

Fasten the unit securely to the wall using the holes in the mounting straps; 1/4" or 6mm diameter bolts are adequate.

## Connecting the unit

Open the door and check that no apparent damage has occurred in transit. Check by hand that the unions at the base of the cells are tight.

When viewed from the front of the unit, the rear ¼" BSP connector is the air or oxygen inlet. This is in the form of a ¼" BSP T piece with a hosetail fitting on one side and a plug on the other. They can be fitted either side of the T; they may be only finger tight when supplied.

Connect either a source of oxygen, clean filtered air or the small filter to this outlet.

The front 3/8" BSP connector is the ozone outlet and is also fitted with a T piece, hosetail/compression fitting and plug.

This outlet may be fed to an injector using the silicon tube or Teflon tube provided. With oxygen feed the ozone concentration is far higher and Teflon tube is supplied. With air feed the silicon tube is adequate and easier to work with.

When running on air feed, the ozone generator will produce minute quantities of nitric acid as a result of exposing humid air containing nitrogen to a high voltage field. This will be drawn in with the ozone and mixed into the water with negligible effect. With oxygen feed nitrogen is not present and nitric acid is not produced.

## Setting up the unit

The 4200 will normally be used to produce ozonated water. If using the product to provide gaseous ozone only then please request the special instructions that are required for that application.

With the 4200 switched off, connect the ozone outlet to the injector. If using oxygen feed then disconnect the oxygen generator or bottle as flow from this will affect the initial adjustment.

Using the back pressure valve and bypass valve adjust the air flow to give 2LPM for oxygen feed or 9LPM for air feed.

For oxygen feed, reconnect the oxygen supply and adjust the oxygen flow to give 2.5LPM; i.e. a slight positive pressure from the supply.

The 4200 can be controlled by an external ORP or other controller. Depending on your delivery instructions, the 4200 will be configured with a link fitted to the PCB or a 2 pin plug with wiring to the 3 pin XLR connector. The XLR connector and harness are installed in the 4200 but not connected to allow you to change in the future.

The 4200 is now ready to be switched on. If using oxygen the ozone gas from the outlet will be at a very high concentration (around 30,000ppm) and is dangerous if inhaled. Ensure that the ozone outlet is connected to the injector and that there is suction present.

Open the door, connect the 3 pin mains plug and switch the 4200 on. With the door open it will not run but the mains switch will be illuminated.

Close the door and the cooling fans will run. If the link is fitted to the control PCB then the High Voltage (HV) power supplies will both operate and the indicator LED's will be illuminated.

If the XLR wiring is connected to the control board then with the XLR shorting plug removed neither of the HV power supplies will operate.

Connect the XLR shorting plug to the 3 pin socket and the system will start to produce ozone. Both LED indicators should be lit indicating that the power supplies are functioning.

The T4200 is normally wired to allow the ozone generated by both cells to only commence when an external device or connector causes pins 1 and 2 of the XLR connector to be shorted. The pre-wired shorting connector is provided to allow that to happen without an external device.

The external device can be an ozone level monitor or an ozone safety monitor. It can simply be a relay contact operated by someone switching on the lights. It must not be connected to a voltage source as it only uses 12VDC supplied by the internal power supply.

We can change this configuration, before delivery, to provide both cells operated by the external device or one cell on permanently and one cell operated by the external device. A wiring diagram is provided to allow the customer to change this himself if desired.

### **3. Maintenance and repair of the Oxyzone T4200 ozone generator**

#### **Periodic maintenance**

The only maintenance is the periodic cleaning of the cells. This will be dependent on the cleanliness of the air supply. Make the first clean at 2 months for air feed or 4 months for oxygen and adjust the time as required.

You will require a small bath of methylated spirits, a stainless steel scouring pad and a bottle brush to carry out the cleaning plus it's advisable to use plastic gloves to protect your hands.

Firstly, disconnect all power to the unit.

Open the outer door and the power supply door to allow access to the cells.

Note the position of the pipework to facilitate reassembly.

Remove the high voltage connections at the top of the cells.

Remove the silicon pipe from the ozone cells, if it is tight then cut it off instead. Do not force it as the Teflon cap cannot withstand high mechanical stress.

Using pipe grips; loosen the union at the base of the cell and remove the complete assembly from the cabinet. Repeat for the second cell.

**See separate "Cell Maintenance" Instruction sheet.**

Replace the Viton O rings in the union at the base of the cell prior to fitting.

Reconnect the silicon tube and the high voltage leads. If they are loose then look down the end and give a small squeeze across the metal connector tube with pliers.

Wipe clean the inside of the cabinet before final assembly and running.

#### **Repair of the 4200**

##### **General**

If fans don't operate then the circuit breaker has probably tripped. Before simply resetting it, remove the side panel and check that the machine has not been subject to water ingress or insect infestation.

If the fans operate but no power supply indicators light then insert the XLR shorting plug. If indicators then light the problem is external to the machine.

If the indicators fail to light then the fault is probably in the control PCB or the 12VDC power supply.

Use the schematic diagram to diagnose the cause of the problem.

## **HV Power supply replacement**

If a power supply LED on the control board is not lit then the cause will most likely be a HV power supply or cell failure. The power supplies are fitted with over current protection that causes them to shut down if a cell goes short circuit for any reason. The over current protection circuit is reset when mains power is removed and then reapplied. Power supplies are numbered left to right, i.e. the right hand power supply is number 2.

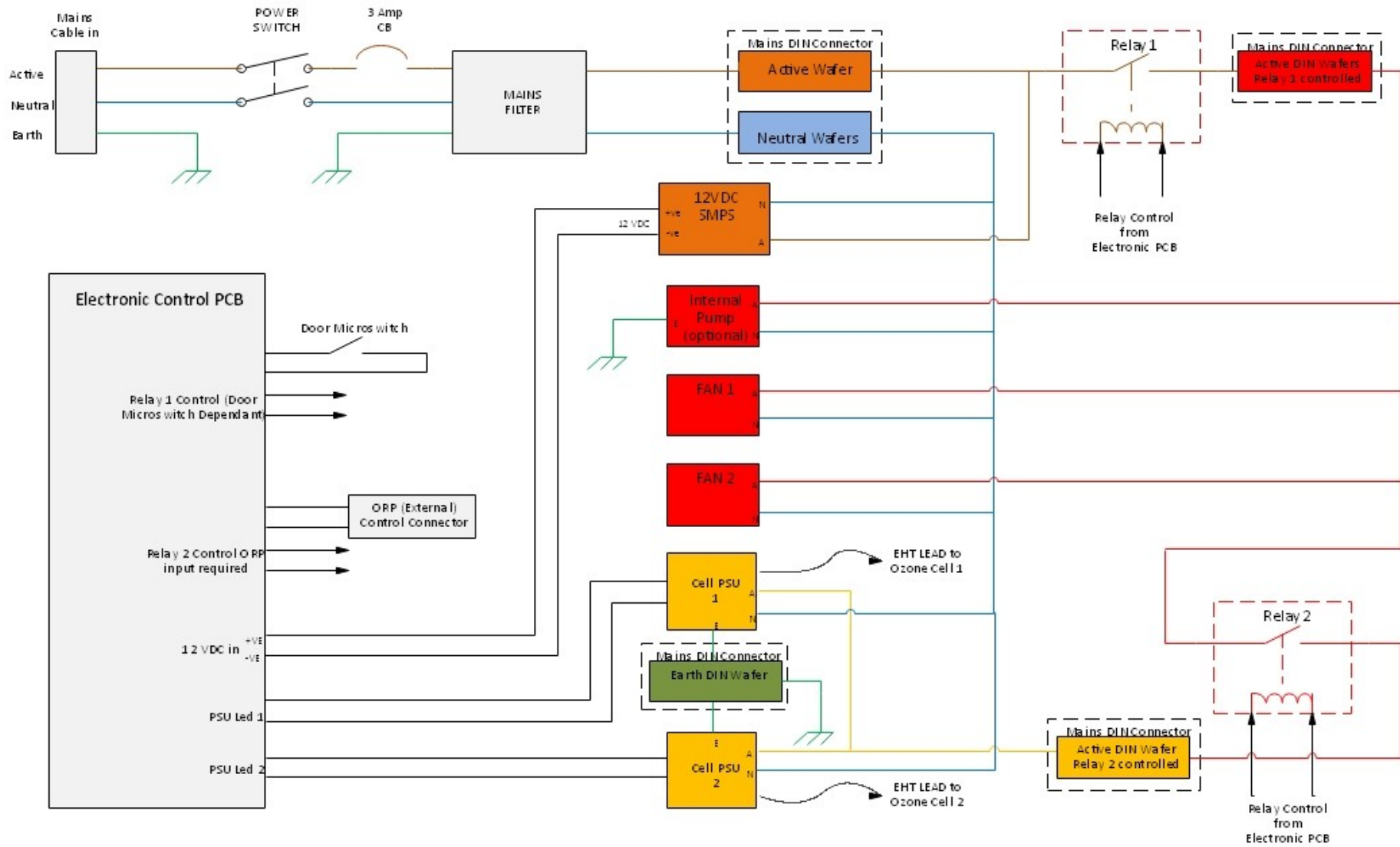
Remove the securing screws from the power supply door, open the door and check that the 3 pin IEC mains connector on the power supply has not been dislodged in transit. Close the door and switch on to confirm.

Remove the HT lead from the failing power supply and place it where it will not short out to the frame. Close the door and switch on. If the power supply LED fails to light then the power supply is probably faulty and should be replaced. If the power supply LED operates then the cell is probably faulty and should be dismantled and checked. Look for a small fracture in the quartz or burn marks at the lower end.

If water ingress has occurred and the power applied at that time then a short can develop which will quickly burn a track through the Teflon end of the quartz cell. The quartz cell is not repairable and not expensive.

To replace a power supply, remove the mains connector and the 2 pin signal connector. Loosen the 4 hex screws and remove the power supply. Refit in the reverse sequence.

# OZ-4200 BLOCK DIAGRAM





# T4200 Mains Connector Wiring

