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Ozone Cleaning System Commissioning Guide

ETS NORD

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General Information

1. This manual contains instructions, safety precautions and commissioning detail for the Ozone Cleaning System. Please read this manual in its entirety before proceeding.
2. Before proceeding with the instructions in this manual Ozone Unit(s) and Control Panel must be installed, wired, and have the air pressure measurements adjusted as indicated in the “OZ 3.x Ozone Cleaning System Installation Guide”. Note: A negative pressure of at least 20 Pa must be present in the exhaust chamber for proper operation.
3. An end user may troubleshoot the equipment following the steps and procedures described in the troubleshooting section of this manual. However, if the equipment should require service, repairs to the equipment may only be performed by a service partner authorized by ETS NORD AS. Please contact the closest authorized service partner or ETS NORD’s technical support (www.etsnord.com/service)

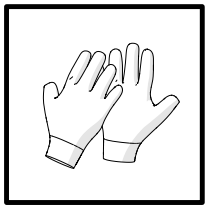
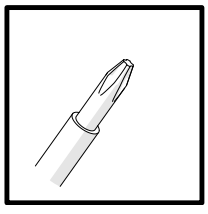
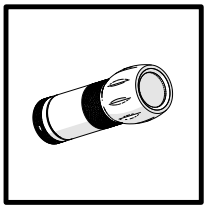
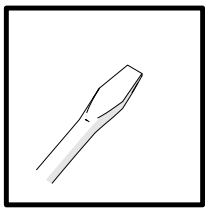
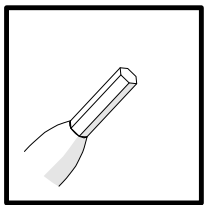
Safety Precautions

1. This equipment uses high voltage to create an electric discharge which generates ozone (O_3). It is intended only for the treatment of exhaust air of a building. ETS NORD AS disclaims any liability if the product is used in any other way than in accordance with the instructions found in this manual.
2. Installation must be performed by licensed and accredited personnel in accordance with all local as well as national standards and regulations.
3. The casing of an Ozone Unit shall never be opened, except as described for its physical installation and wiring in the “OZ 3.x Ozone Cleaning System Installation Guide”.
4. Routine maintenance, cleaning and changing the parts of the equipment of the equipment shall be performed by a service partner authorized by ETS NORD AS. Please contact the closest authorized service partner or ETS NORD’s technical support. More information can be found later in this manual. NOTE! Water or liquid cleansing agents shall never be sprayed onto or inside the equipment.

NOTE! Always use Protective Gloves when installing or opening Ozone unit as there might be risk of sharp edges!

Required tools

For ease of commissioning, it is suggested the contractor have the following tools on hand:

Protective Gloves 	#1 Phillips screwdriver 	Small flashlight 
Narrow 2mm flathead screwdriver 	HEX4 screwdriver 	Ladder 

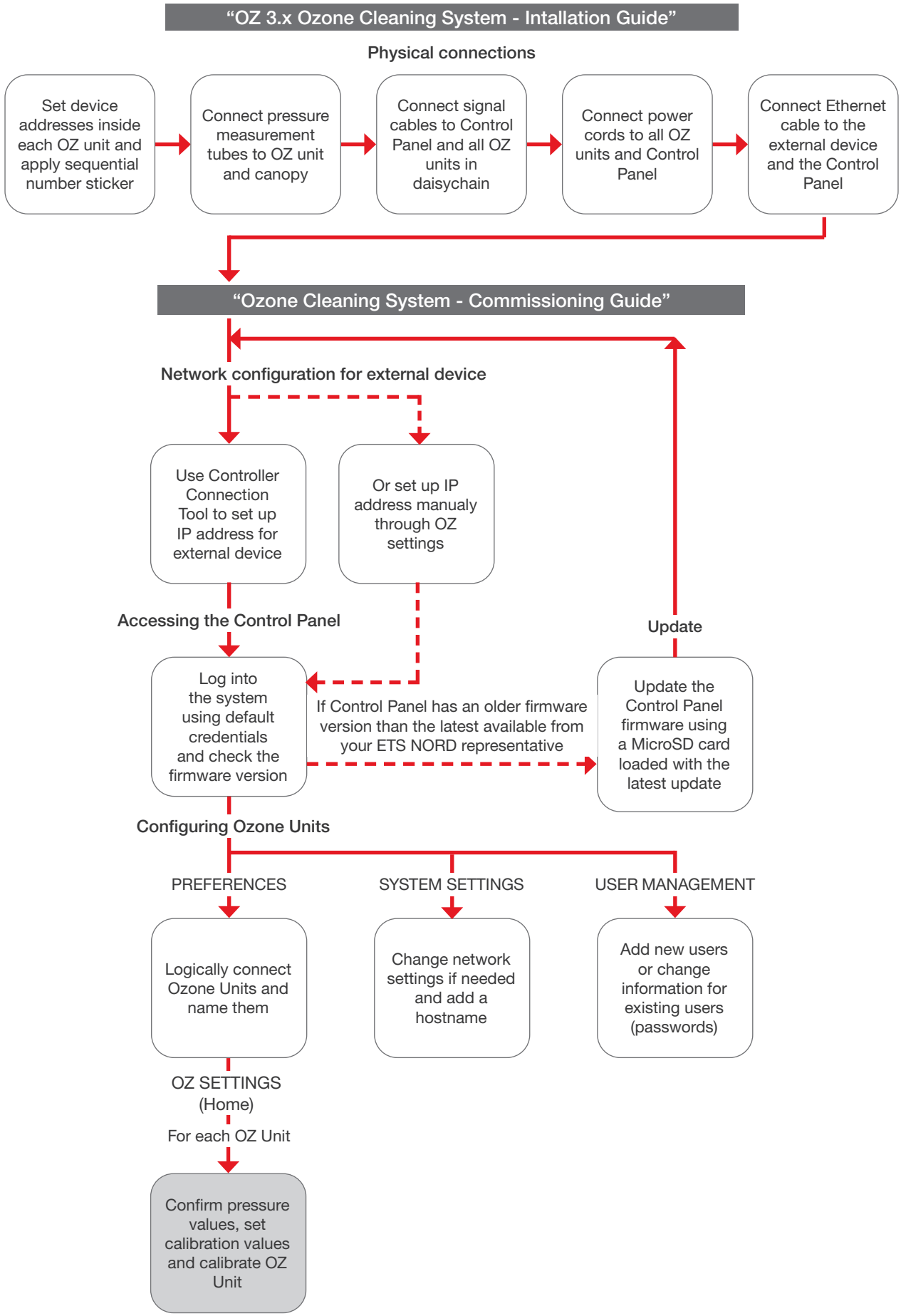
Additional (if possible):

Ventilation Meter

Multimeter

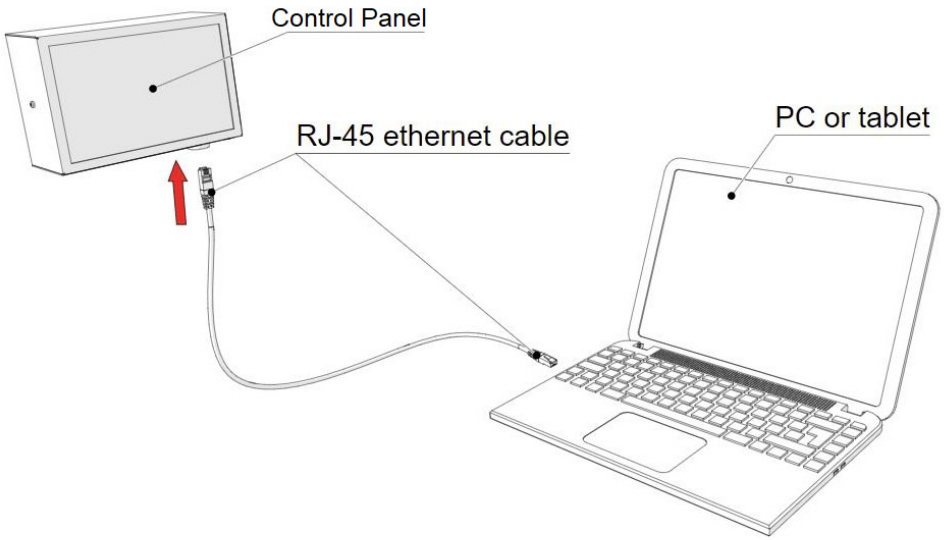
Wire stripper

OZ Setup flowchart



1. OZ Control Panel

The OZ Control Panel operates and manages the Ozone Units, and sends information to a building automation system, if connected (check OZ 3.x Ozone cleaning system automation guide). In addition, it notifies the kitchen staff of any malfunctions detected. For more information, please see section ”Control Panel Display Messages”.



1.1 OZ Control Panel v. 1.0

The Control Panel v. 1.0 is initially accessed and configured via a web browser on an externally connected device such as a laptop, connected by a standard Ethernet cable.

The device must be configured to have a ”static” IP address of 192.168.0.127. This address must be configured through the Control Panel of the device operating system, as the ETS NORD OZ Control Panel does not host a DHCP server function.

If you feel insecure about how it is done, for Windows devices a “Control Connection Tool” is available from ETS NORD’s service site (https://www.etsnord.com/service/oz), that you can access via QR code on the OZ unit.

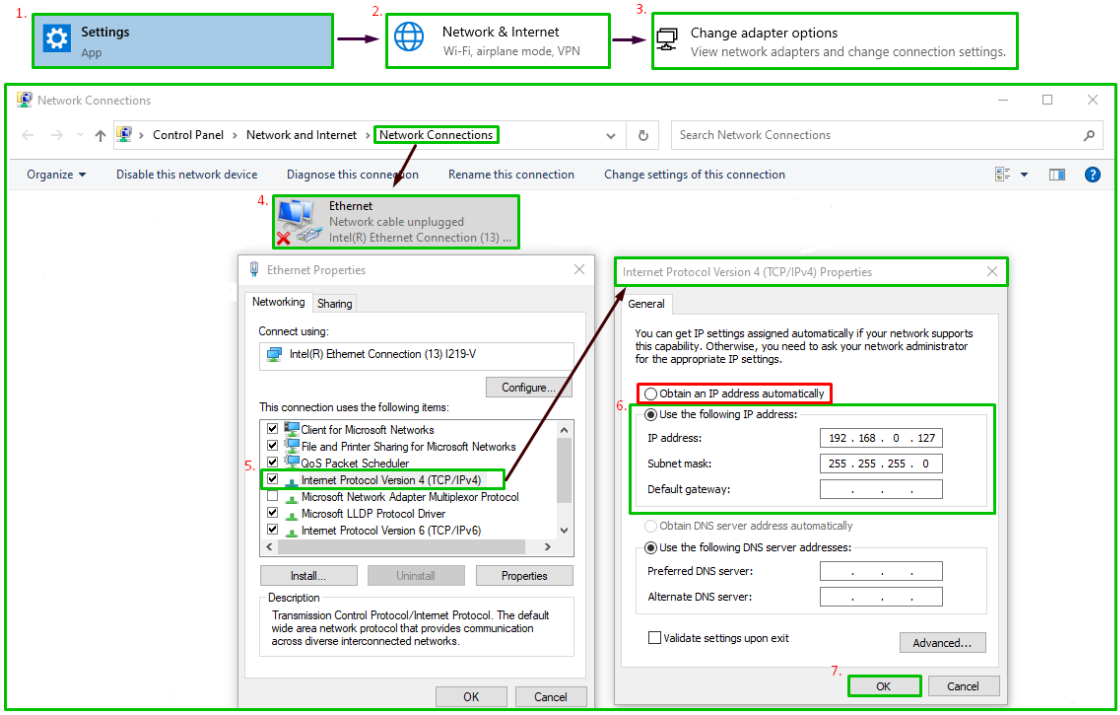
The OZ Control Panel can be also connected to the Internet for monitoring and configuration, after connection with external device has been made. For more information, please see section 3.6 “System Settings”.

1.2 External device configuration

Option 1: Manual Network configuration

To connect the external device to the Control Panel some changes to the network settings have to be made.

- The external device must be in the same LAN subnet as the control panel.
- Open external device “network settings” configuration screen and double check that the following “IP protocol Version 4” settings are in place:
  - IP address: 192.168.0.127
  - Sub Mask: 255.255.255.0
  - … other settings such as DNS Server and Domain Suffix do not need to be changed.



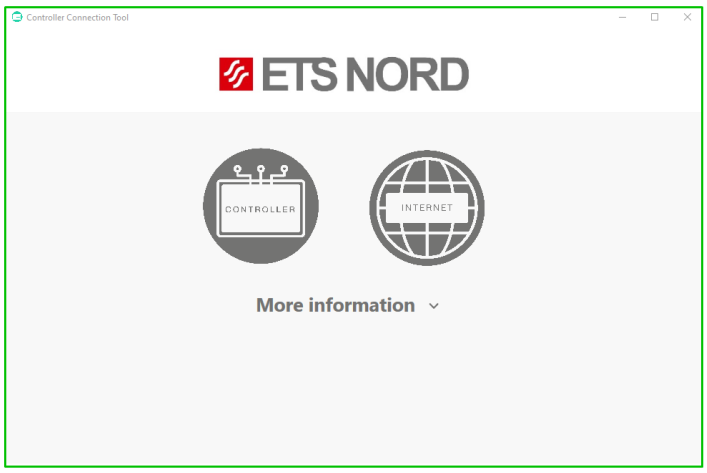
NOTE! Once you have completed the configuration of the Control Panel, remember to change your external device network settings back to its previous configuration. In most cases this is done by clicking ”Obtain an IP address automatically”

Option 2: Automatic Network configuration

If you are using Windows you can instead download “Controller Connection Tool” from ETS Nord’s service site (that you can access via QR code on the OZ unit or http://www.etsnord.com/service) to change network configurations automatically.

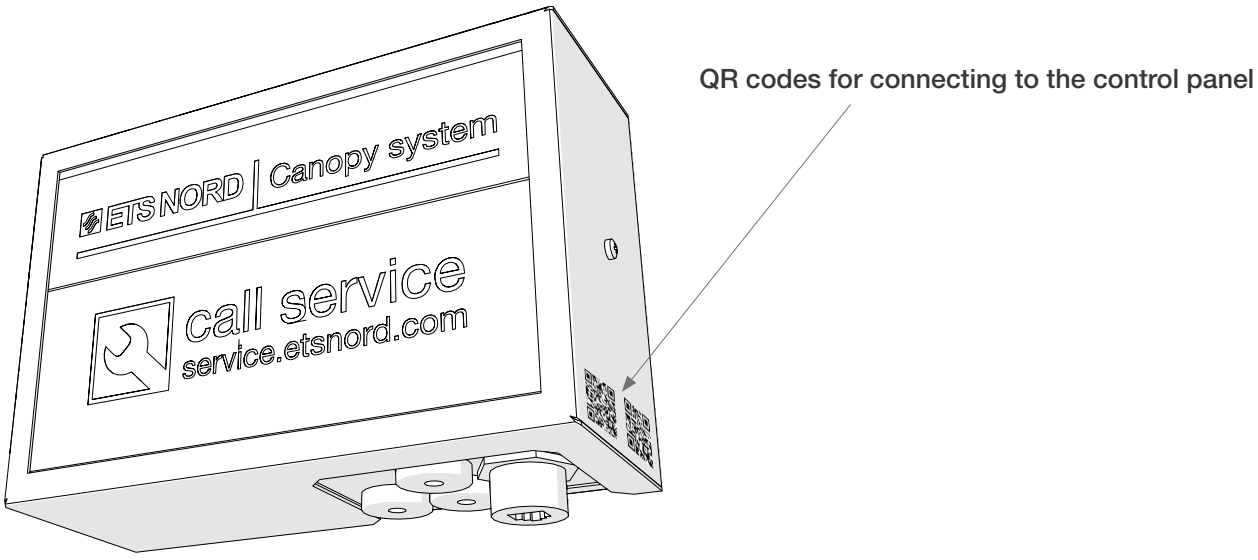
Use it as follows:

1. Click “Controller” to configure the device network to be able to connect with the OZ Control Panel
2. Click “Internet” to reconfigure your device network settings back to their original state after OZ configuration is complete.



1.3 OZ Control Panel v. 1.1

If you use Control panel v. 1.1 it is possible connect to the Control Panel wirelessly. For this a connection to the Access Point must be established. The Control Panel v 1.1 has a sticker with QR codes. First is for the network SSID and password and the other for the IP address of the Control Panel.



First scan the QR code for the network connection.

This will give you the details of the network (SSID and password) and allows you to automatically connect to the network.

If scanning the QR code does not work or is not possible then the network has to be found manually through the external device's network settings.

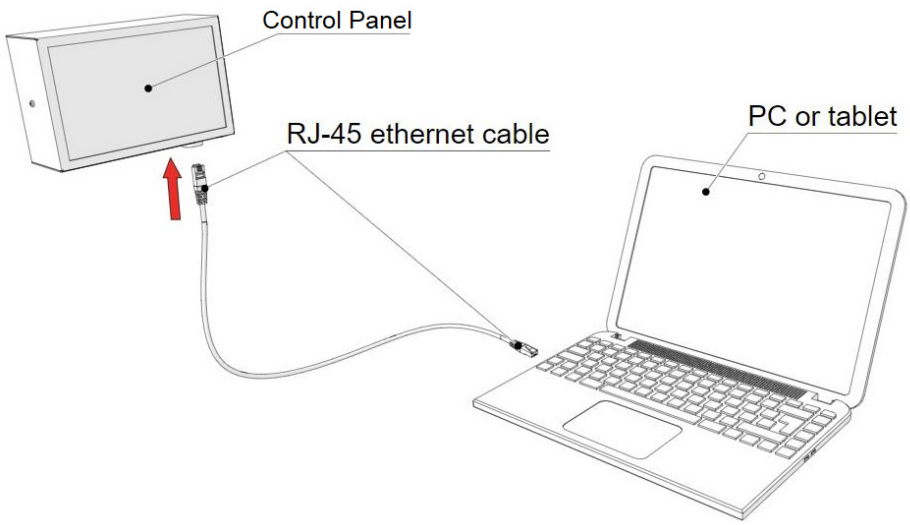
SSID: ETS OZ

Password: Moveair1

After log in the second QR code may be scanned for easy access to the IP address of the Control Panel.

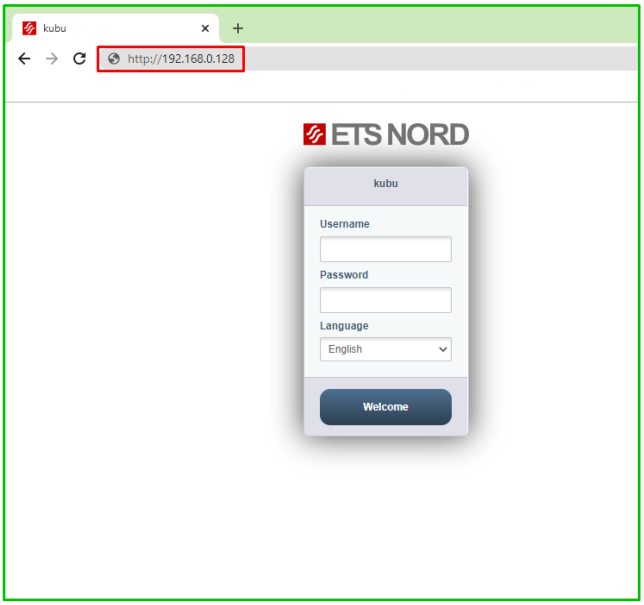
If scanning does not work or is not possible then the IP address 192.168.0.128 must be input to the external device's browser.

Should there be any problems with the WiFi of the Control Panel then it can also be accessed manually via a ethernet cable. Simply insert the cable to the RJ-45 port on the control panel and connecto to the IP address 192.168.0.128. Setting a static IP for the external device is not necessary with the v 1.1 Control Panel.



2. Logging in to the Control Panel

Start the browser on the external device and enter the IP address: **http://192.168.0.128** in the address bar.



Recommended browsers: Chrome, Firefox (NOTE! For best results, ensure that your browser is up to date).

Log in to the user "Admin" with the credentials shown below. Please note that these values are system defaults, and if the firmware is updated then any other credentials entered into the system will lost and reset to these values. It is recommended to change theses values if the system will be connected to a data network for configuration or monitoring.

User name	Password	User level	User rights
Admin	2222	100	To set up system
User	1111	10	For viewing only

NOTE! If default passwords are changed or new users are added, this information must be entered onto the product registration sheet. For more information, please see section 3.7 "User Management"

3. Control Panel and Ozone unit configuration

3.1 Control Panel Interface Overview

PREFERENCES

Functions available:

- Reset the service counters;
- Configure the data connection to a building automation systems;
- Configuring Ozone unit present in the system, either manually or by an automated search function.

- **HOME**

  START and STOP the operation of all configured Ozone units.

  - All other configuration pages are accessed from here.

- **SETTINGS**

  Each Ozone unit is calibrated and configured independently within this menu screen, including ozone generation level, rotation cycle delay, etc.

- **TRENDS DISPLAY**

  Each Ozone unit logs its own historical data. In this section one can view a graphical representation of operating conditions recorded over time.

The following sections 3.2 - 3.7 provide details of each of the above configuration screens.

3.2 PREFERENCES - Configuring Ozone Unit(s)

Perform a physical check

Verify that all OZ 3.x Ozone Cleaning System units are sequentially interconnected (”daisy- chained”) beginning at the Control Panel, proceeding to the closest Ozone Unit, and so on.

Next, verify that electrical power is available and connected to all units and that each unit’s power switch is in ”ON” position.

For more information, please refer to the separate ETS NORD technical document “OZ 3.x Ozone Cleaning System Installation Guide”.

Next, confirm that each Ozone Unit has been set to a unique address (no two units may have the same address) and that the address labels have been applied to the canopy as earlier described.

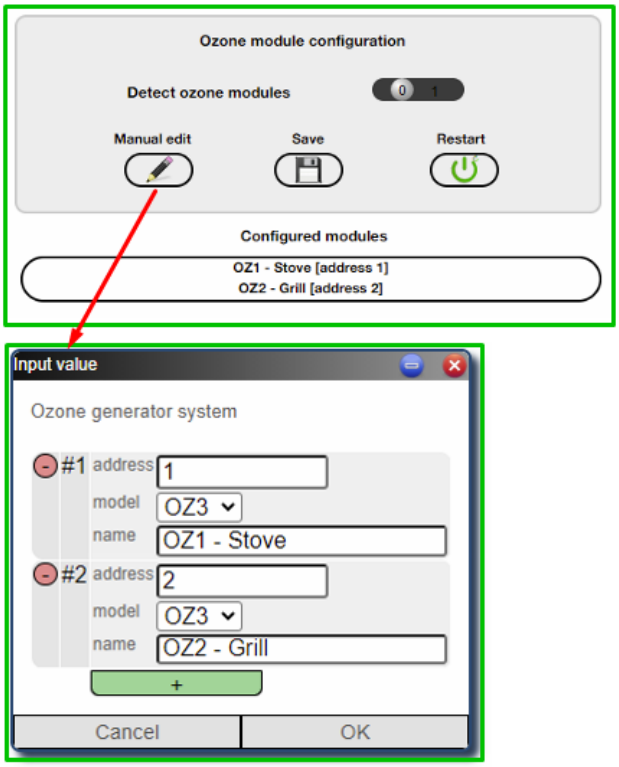
Communications setup

The system will attempt to automatically discover all installed Ozone Units if the ”Detect Ozone units” button is pressed.

- If successful, click the ”Save” button, confirm “OK” and then press “Restart” button. Confirm “OK”.
- **Wait five (5) seconds and click “Save” button, confirm “OK” and then press “Restart” button, confirm “OK”.**
- If some Units are not found by the discovery process, click the ”Manual edit” button and enter the data manually.

The physical address set using the microswitches in each unit must match the settings entered the configuration, and only Ozone Units (Model: OZ3) provided by ETS NORD will function with the current firmware.

When naming the Ozone Units, it is highly recommended to use descriptive names of the location where the unit is attached. This, together with the address labels on the top edge of the canopies, ensures ease in locating each unit when needed.



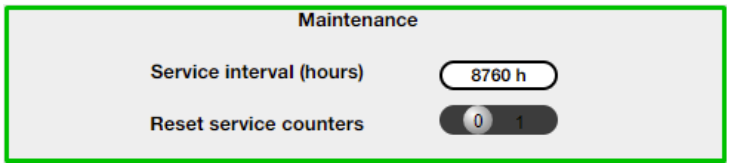
After naming is done click “Save” button

Example:

Ozone unit #1 name: OZ1 – Stove

Ozone unit #2 name: OZ2 – Grill

...etc.



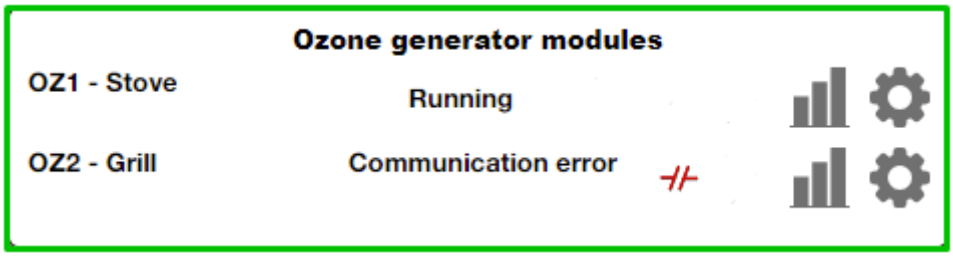
NOTE! Service counter configuration: Servicing of the system should be performed at least once annually. The default value for Service Interval is 8760 hours (once a year).

If it is known that kitchen grease ducts are cleaned more often than once per year, it is recommended that Ozone units also be serviced more frequently.

3.3 HOME - Connecting Ozone Unit(s) and Operation Status

This screen displays the connection and operating status for each Ozone unit.
NOTE: "Operation allowed" must be enabled for normal system operation.

Example: OZ unit 1 (Stove) is working properly. However, OZ unit 2 (Grill) does not have an operational data connection. If any Ozone unit configured in the system does not reliably maintain the status "Running", please see section 4.1 "Troubleshooting".



If you experience connection difficulties with any Ozone units, first confirm that the power from the kitchen electrical panel is on, and that all Ozone units are switched on. Next, double-check that the daisy-chained data wiring is run correctly and that all wires are properly stripped and making a good contact in their connector terminals.

For more information, please refer to the separate ETS NORD technical document "OZ 3.x Ozone Cleaning System Installation Guide".

3.4 SETTINGS – Ozone Unit(s) Configuration and Calibration

In this settings screen important operational values are configured for each Ozone unit.
NOTE! Each Ozone unit must be configured separately.

First, confirm pressure values:

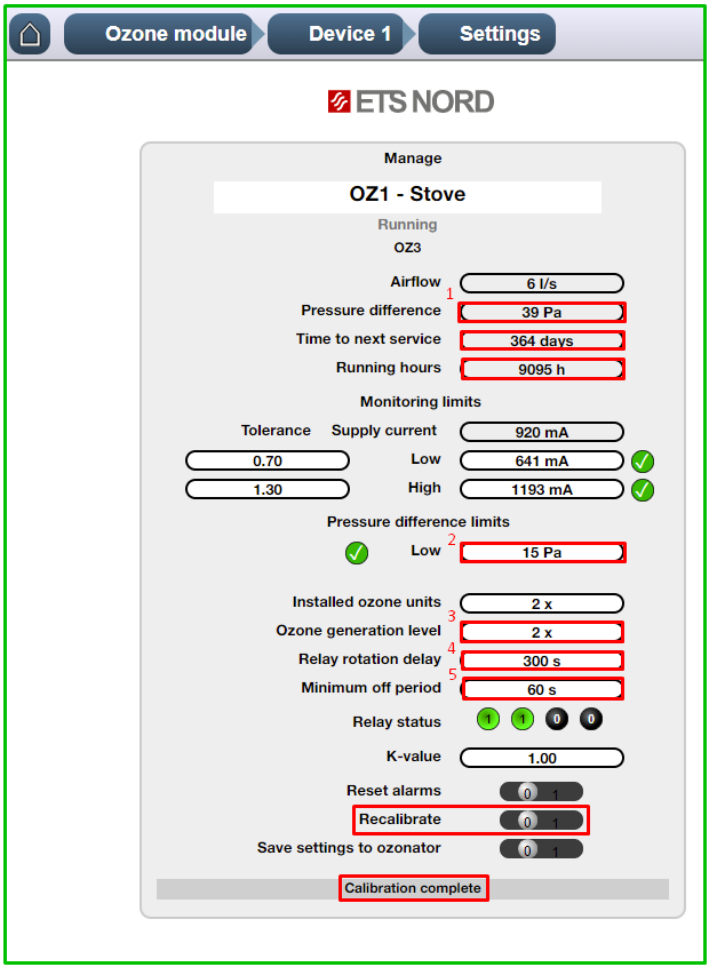
Ensure that the pressure differential across each Ozone unit meets the following system requirements: To ensure reliable operation, in the exhaust chamber there shall be a negative pressure of at least 20 Pa[1] when the exhaust system operating in full or partial cooking status.

NOTE! "Pressure difference low limit" determines the minimum negative pressure required for the Ozone unit to operate. 15 Pa is the default, minimum recommended value. Ozone units shut down automatically any time the negative pressure drops below this value.[2]

Next, set Ozone unit calibration values:

"Ozone generation level" represents how many of the "Installed ozone units" will operate simultaneously, thereby specifying the amount of ozone the Ozone Module shall produce. The recommended "Ozone generation level" is **"2 x"**[3] with a "Cycling delay" of **"300 s"**[4] and "Minimum off period" of **"60 s"**[5].

- After the configuration values are set, each Ozone unit needs to be calibrated.



To calibrate an Ozone unit:

- "Operation allowed" must be enabled on the HOME screen.
- Click the "Recalibrate" button. The calibration process for each Ozone unit will take up to **5 minutes.**
- At completion there will be a status message **"Calibration complete"** under the button.

NOTE! If calibration results in an error message, for example "Failed: Timeout," then the process must be repeated. If the process fails again, then please contact the manufacturer or your local ETS NORD reseller.

"Running hours" displays how long the Ozone unit has been running throughout its lifetime. The recommended maximum operating time is 10,000 hours, after which power supplies and ozone plates should be replaced to ensure maximum productivity.

Note! This value will not reset after service timer has been reset.

"Time to next service" shows the number of days or hours remaining before service must be performed.

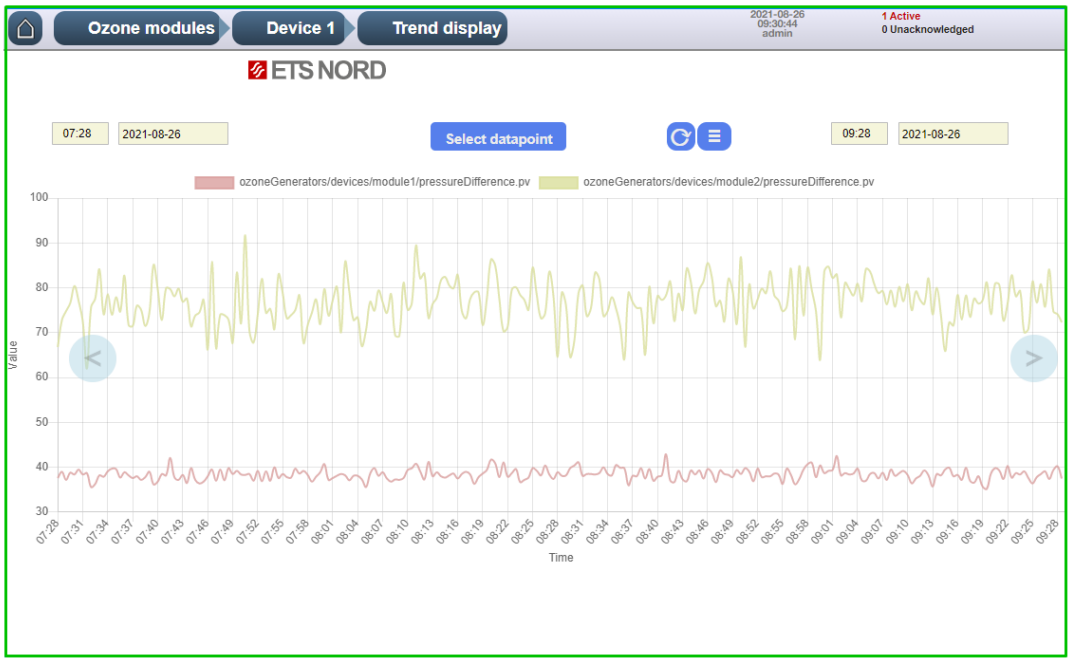
3.5 TRENDS DISPLAY

Each Ozone unit logs its own historical data. In this screen one can view a graphical representation of operating conditions recorded over time.

Under “Select datapoint” you can choose graphs:

- Airflow
- Running time
- Pressure difference
- Supply current

The time span can be freely set to view either a longer period or to pinpoint a specific time for troubleshooting.

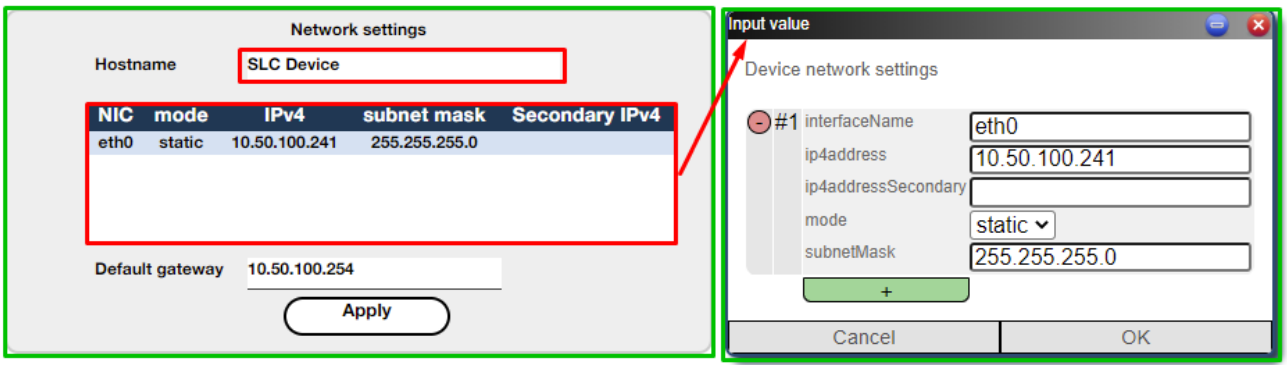


3.6 SYSTEM SETTINGS – Network Settings and Hostname

Navigate to System -> Settings to change network settings and the hostname of the Control Panel.

To connect the Control Panel to the Internet it is recommended to contact your network administrator for **static** IP address and other network settings.

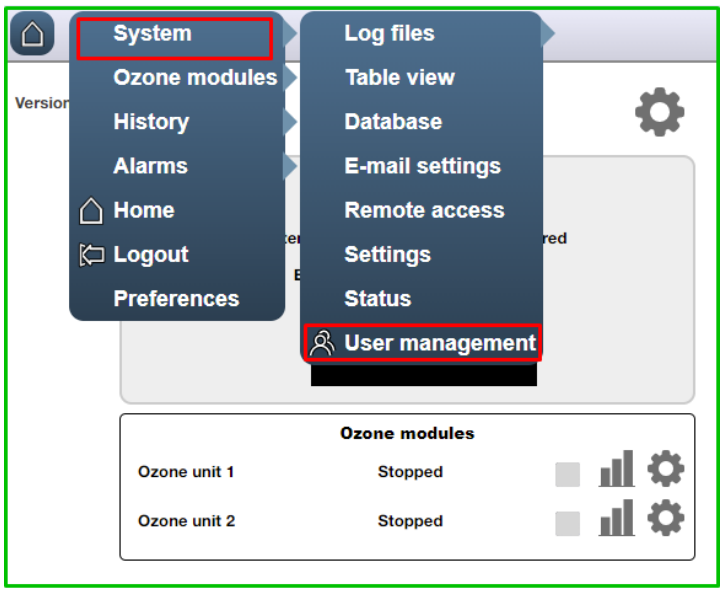
- Click on “SLC Device” to change the hostname of the control panel.
- Click on each network settings line to configure them according to your needs.
- After all settings are set press “Apply”



3.7 USER MANAGEMENT

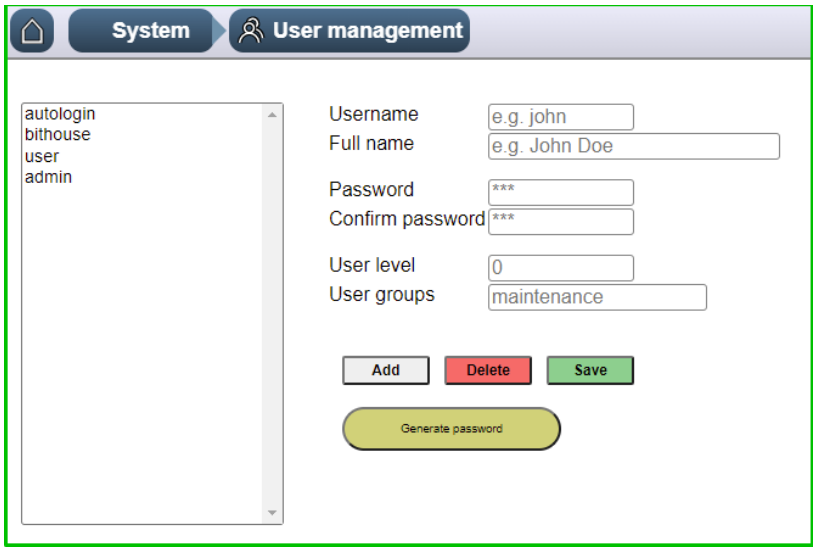
- Log in to the Control Panel as Admin
- Go to System -> User management
- Fill in the Form
- User level: 10 (viewing rights only) or 100 (admin rights)

The following is an example of creating a new user.
Begin by opening the “User management” menu.



Enter information for the new user, then click “Add”. To modify information for an existing user, simply highlight the entry, make your changes, then press “Save”.
The menu contains a random password generator. To obtain a random password, click the button “Generate password” then use your copy/paste command to enter the password into the appropriate blank before clicking “Save”.

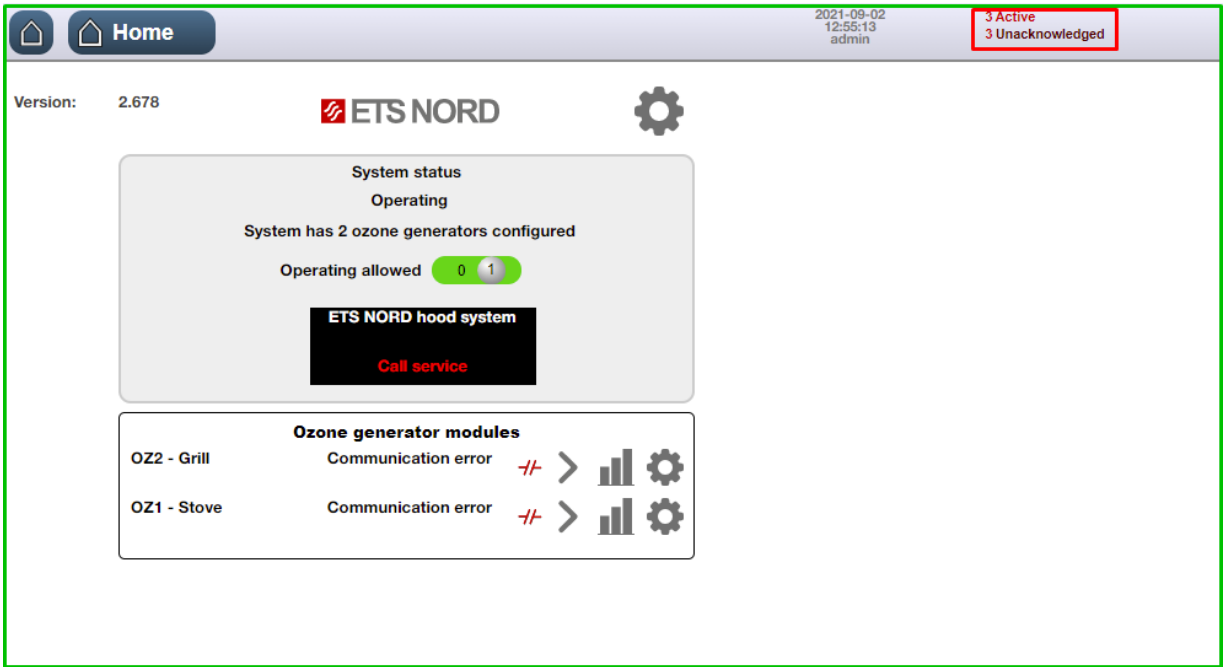
Note: “User Group” is only a descriptive command field, without system functionality.

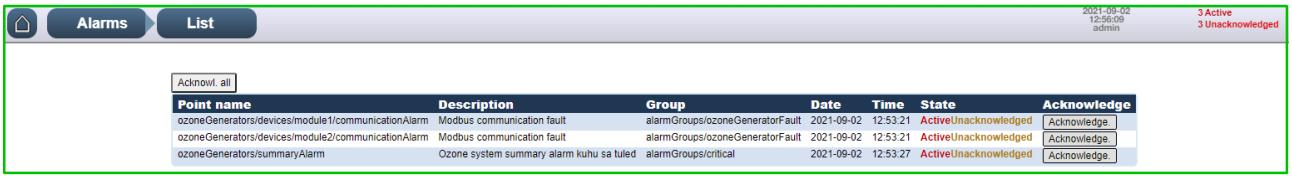


NOTE! If default passwords are changed or new users are added, this information must be entered on the product registration sheet.

4. Control Panel Alarms and Troubleshooting

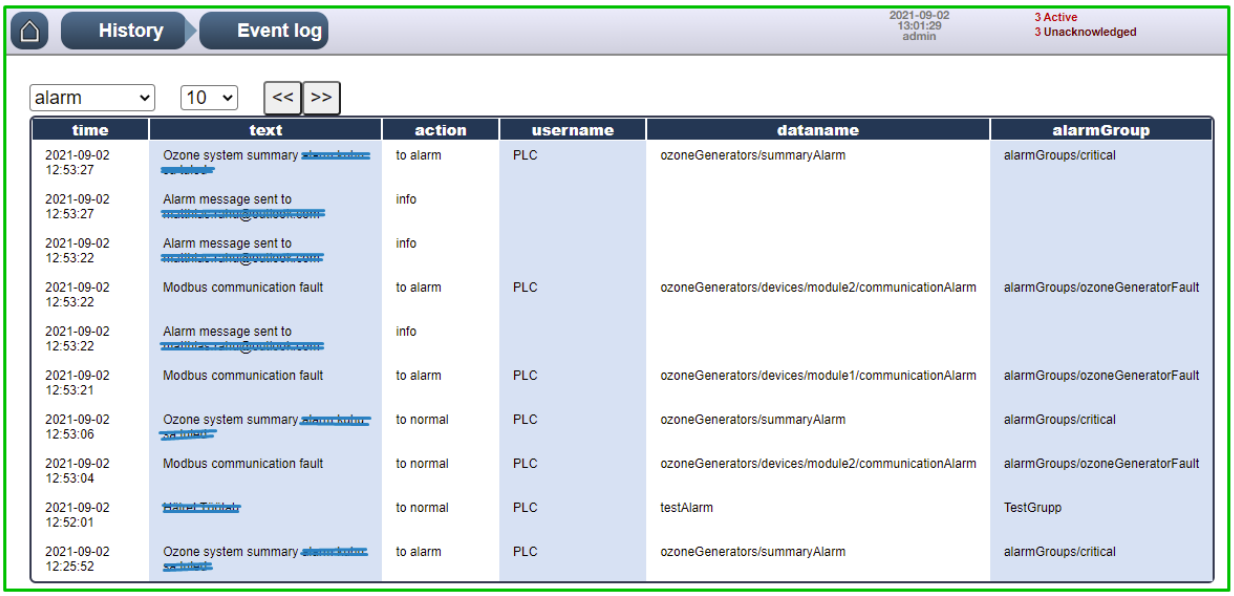
An active alarm summary can be found on the top right of the home page. By clicking on the text, the alarm history log will open and display the type, description, date and time of logged alarm events. If the same alarm repeats itself, only the most recent event will be displayed. All alarm events are saved to the alarm event history.





Alarm history can be VIEWED as follows:

System -> History -> Event Log



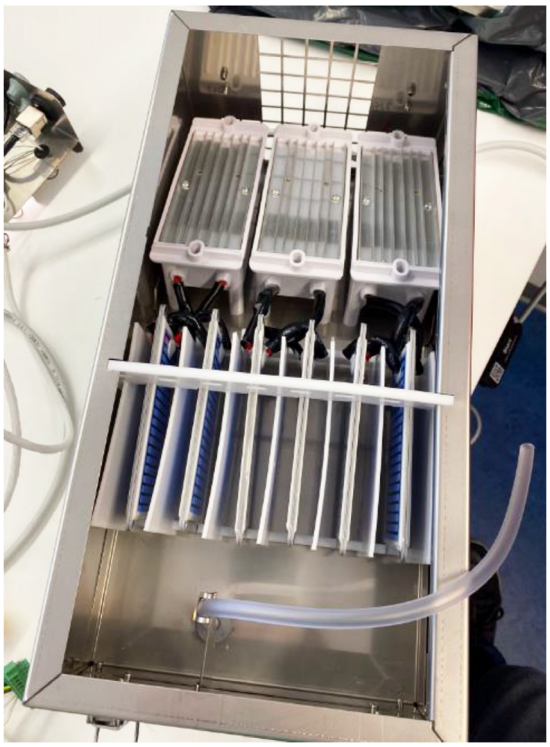
4.1 Troubleshooting

The most common causes for difficulty during commissioning of an ozone system are usually easily solved. Please use the following troubleshooting list to diagnose the example problems shown below.

1. Electrical supply has not been installed and connected to each unit, or their power switches or safety interlock switches have not all been set to their ON position.
2. An Ozone unit fuse has failed, check the fuse continuity.
3. Cables connector terminal screws may be loose, or the data wiring is incorrectly connected between the Control Panel and Ozone units.
4. Ozone units have not had their address switches all set to unique values in the daisy-chained system.
5. Insufficient negative pressure is present in the exhaust chamber of the canopy, or an excessive positive pressure is present in the supply chamber.
6. An Ozone unit may not be properly fastened against the canopy ceiling. Check the pressure differential between the kitchen environment and the internal pressure of the Ozone unit at its pressure test nipple.
7. A pressure switch hose may have become dislodged in either the canopy, or inside the Ozone unit. Open the Ozone unit and check that its plastic hoses are correctly fastened. The hoses must be properly fastened for its internal pressure switch to operate correctly.
8. Ensure that all necessary air nipple caps are removed.
9. Check that “Operating allowed” button is enabled (green).

Visual and physical check

First step is to check all devices for damage, dirt and moisture on the ozone plate side. Open the lid and check inside. If there is visible residual moisture, it can indicate that the devices have been stored incorrectly for example outside in the rain. In this case, warranty is not valid and should be mentioned in commissioning report.

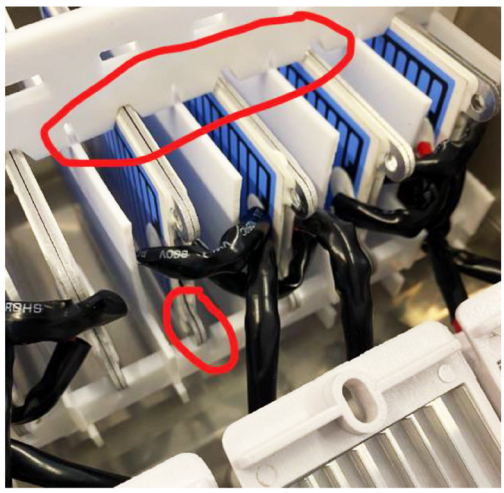


New and clean Ozone Unit (3.1)

New, but not clean Ozone Unit (3.1) – Unit with residual moisture

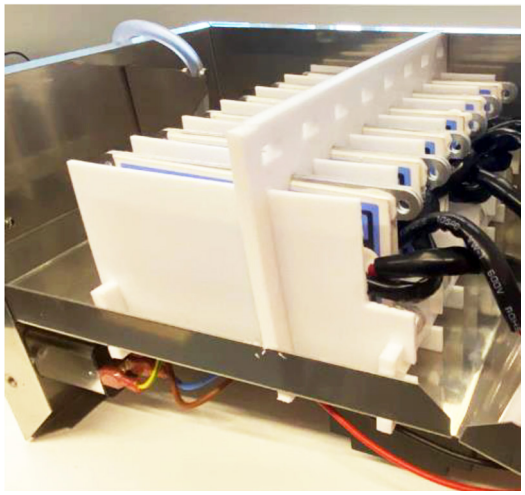
Ozone plates

Check that all the ozone plates and teflon plates are firmly attached and no gaps are visible. This is an example of our bad quality control.



Ozone plates are not firmly attached or correctly in their slots

If there is problems with Ozone plates, You may have to open the side of the chassis and remove all the teflon parts. Bend those Teflon parts a little, so the gaps are wide enough for ozone plates. Use protective gloves so that grease is not transferred from fingers to ozone plates.

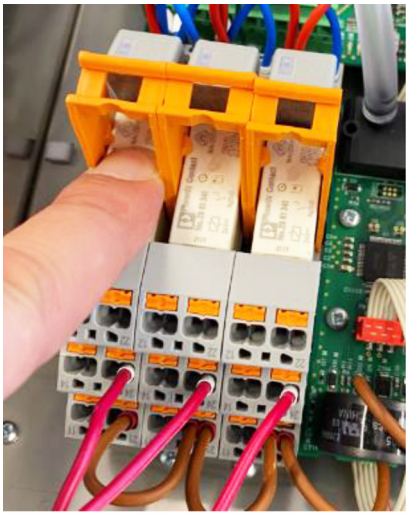


The side of the chassis is open

Correctly installed Ozone plates

Relays

To ensure good and easy outcome, when opening Ozone units bottom cover to set device addresses, it is recommended to check also the relays and their position. They should be firmly attached, pushed to their sockets.



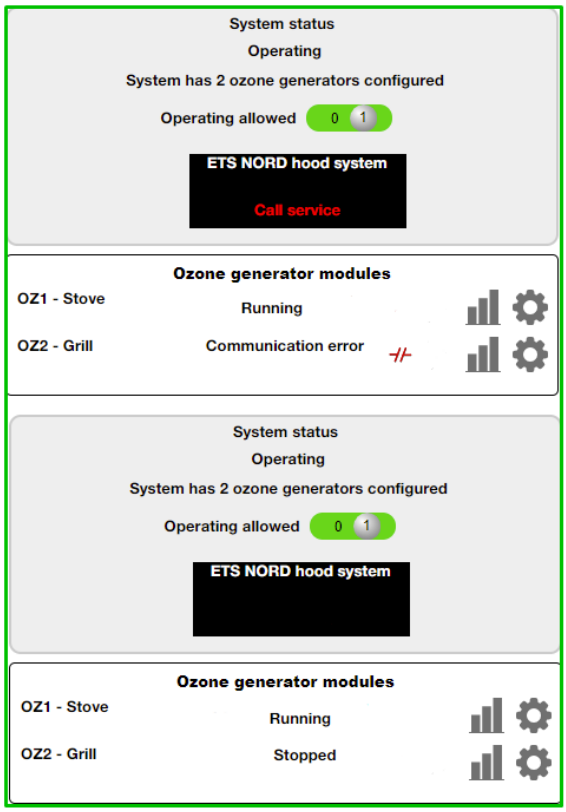
Firmly pushed to their sockets

Sample 1 - Communication error:

The data connection between the Control Panel and “OZ2-Grill” is not operational.

Check troubleshooting items above: #1, #2, #3, #4

For more information, please see the separate ETS NORD technical documen ”Ozone Cleaning System - Installation Guide”.



Sample 2 - Stopped:

The Control Panel reports zero or near zero Pa negative pressure; However, a physical check indicates the negative pressure measured at the canopy exhaust chamber or Ozone unit is correct.

Check troubleshooting items above: #6, #7, #8, #9

For more information, please see the separate ETS NORD technical document “Ozone Cleaning System - Installation Guide”

NOTE! Even if the service counter time has not yet expired it must be reset after each maintenance.

5. How to update the Control Panel firmware

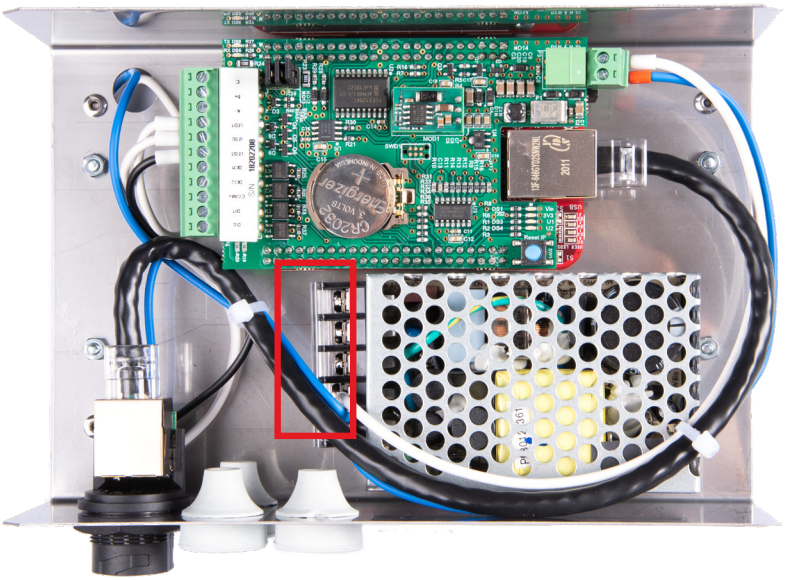
NOTE! The version of the Control Panel firmware will be displayed after logging into the system. It is highly recommended to update the Control Panel firmware the most recent version available. Please check with your ETS NORD sales representative.

NOTE! When firmware updates are performed, all system configuration settings are reset to factory defaults and any previously recorded data is deleted. It is therefore recommended that the equipment administrator record any important settings before performing an update of an already installed and running system.

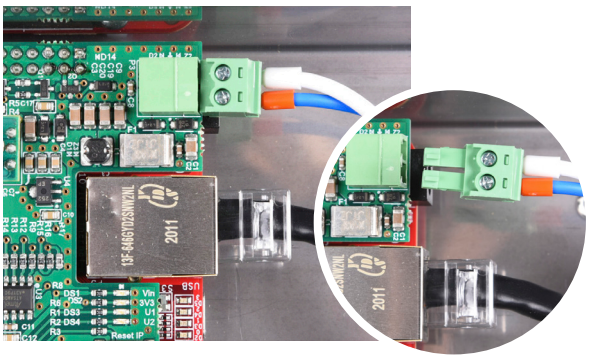
To update the firmware you will need a MicroSD memory card containing the latest firmware version. This is available from your nearest ETS NORD representative.

WARNING!

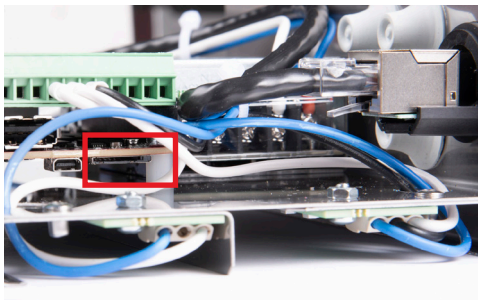
Only persons authorized to install and maintain electrical equipment shall be allowed to handle this equipment. Electrical shock due to improper access can be life-threatening. Before starting the update process shut off the power circuit to the device at the building electrical closet.



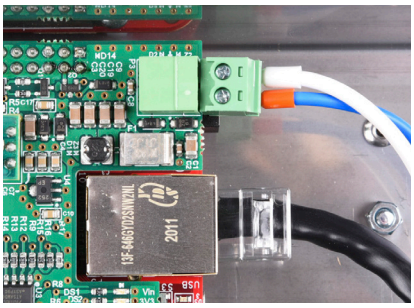
a) Open the chassis of the Control Panel by removing the two fixing screws on the sides of the chassis.



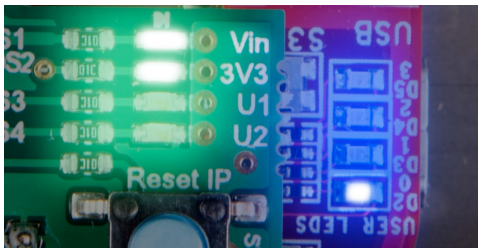
b) Disconnect the power from the Control Panel. To do this, remove the electrical plug as shown in the photograph.



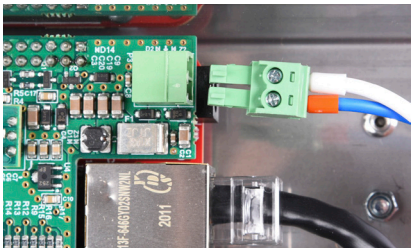
c) Insert the MicroSD card into the slot as shown.



e) Reconnect the power to the Control Panel and the device.



d) The system firmware update will commence immediately upon application of power. Please wait, as it can take up to 3 minutes to complete. During the update, the two (2) green LEDs ”Vin” and ”3V3” will be constantly lit next to the Ethernet connection socket. Do not interrupt the update process! The update is completed when only Vin and 3V3 are extinguished and only the blue LED D2 remains blinking on the red circuit board.



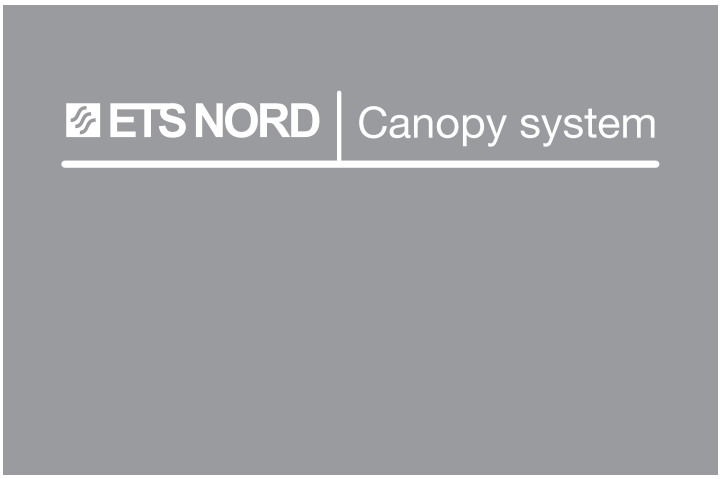
f) Disconnect the power again, and remove the SD card

g) Reassemble the chassis and reapply power to the device.

NOTE! The version of the control panel firmware will be displayed after logging into the system. It is highly recommended to update the control panel firmware to a newer version, if available. Please check with your ETS NORD sales representative.

NOTE! When system firmware updates are performed, all previous system configuration settings are reset to factory default and any previous recorded data is deleted. It is therefore recommended that the equipment administrator record any important settings before performing an update of an already installed and running system.

Control Panel display messages



When ”ETS NORD Canopy system” is lit in white, the system is operating normally.

Call service is blinking:

This indicates that the system is operating normally, but it is time for its annual maintenance.

Call service is lit: pressure warning.

This indicates the system is not operating due to a pressure warning. Check that all grease filters are correctly installed in the extraction chamber of the canopy, and that the bottom edges of all filters do not have any gaps.

Call service is lit is red:

This indicates a technical fault has been detected in the system. Contact your ETS NORD representative or nearest authorized service company as soon as possible at: **www.etsnord.com/service**

For further assistance, contact your ETS NORD representative or nearest authorized service company. Visit: www.etsnord.com/service

NOTE! Cooking in the kitchen may continue when Control Panel alarm is active as long as there is no sign of ozone.

Maintenance

Fire Safety in the buildings

Professional kitchen ventilation ducts should be checked and cleaned according to the intensity of use, but at least once a year or as regulated by the local authorities. Ozone Units must be checked and serviced at least once a year.

We highly recommend a maintenance contract for each Ozone unit.

For further assistance, contact your ETS NORD representative or nearest authorized service company:
www.etsnord.com/service

Maintenance and configuration of Ozone unit may only be carried out by ETS NORD trained personnel or its authorized contractors. Technical assistance or annual maintenance can be requested from the website www.etsnord.com/service.

Warranty registration form (required)

To receive the 2-year warranty from the installation date, the product registration has to be submit to ETS NORD within ten (10) days. This will be done during commissioning phase by ETS representive.

COMMENTS

Signature / date

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Let's move the air ***together!***