NORDcanopy

OZ 4.0 Ozone Cleaning System Installation Guide

ETS NORD

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General

This guide contains information for the safe installation of the ETS NORD OZ 4.0 Ozone unit.

Read the guide carefully before installing this product.

All the installation activities described in the manual must be performed before the ETS NORD tecnician comes to the site to set up the system. ETS NORD AS reserves the right to issue an additional invoice if the prescibed works have not been performed.

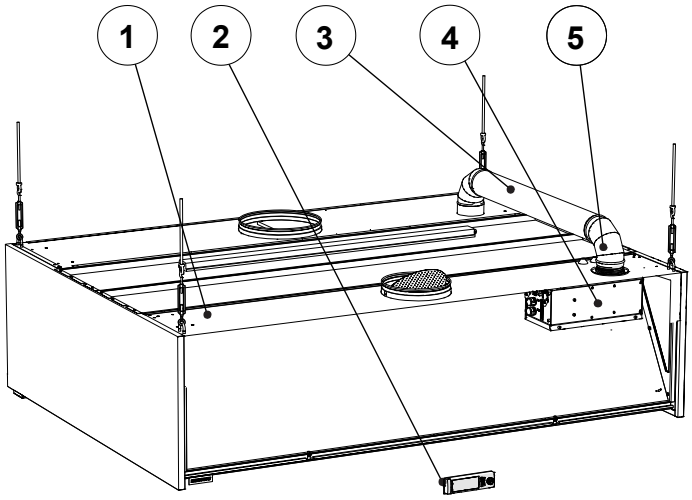
After the installation, the OZ 4.0 pre-commissioning checklist must be filled out and forwarded to ETS NORD when ordering the commissioning of the ozone cleaning system. The checklist can be found at the link https://www.etsnord.com/products/oz-ozone-unit.

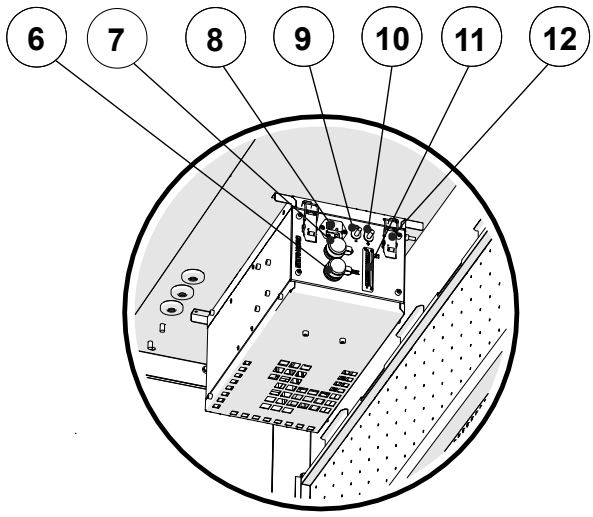
NOTE! The ozone unit needs supply air to function!
The ozone unit must not be installed if the canopy supply chamber doesn't have a supply air duct installed.
In HG Grill canopies and HC Ventilation ceilings the ozone unit must not be installed if it doesn't have its own supply air duct installed.

System overview

Ozone unit generates ozone what is a very effective oxidant, and when mixed into the kitchen's exhaust air brakes down grease and odour particles to water vapor, carbon dioxide and dry minerals what are being removed through the exhaust system.

In one ozone cleaning system, behind one control panel there can be maximum of 9 OZ Ozone units.





1 - Grease canopy
2 - LCD control panel
3 - Ozone duct Ø100 mm (AISI 316)
4 - OZ Ozone unit
5 - 2 x bend Ø100 mm 90° (AISI 316)
6 - M-Link socket
7 - LCD control panel socket
8 - Power supply socket
9 - Exhaust air pressure nozzle (-)
10 - Ambient air pressure nozzle (+)
11 - Ozone unit input connector X1
12 - Ozone unit fastening clamps

Checking the product

Check that the packaged products do not have visible damage. Immediately notify the supplier and manufacturer of the products damaged or missing components.

Make sure that the product is in accordance with the order and that all parts specified in the delivery note are included. Incorrect delivery and transport damage must be immediately reported to both the cargo carrier and ETS NORD Customer Service.

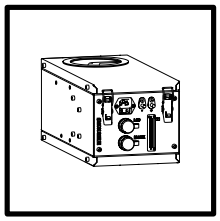
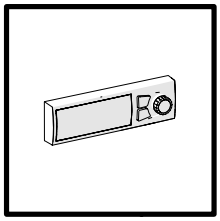
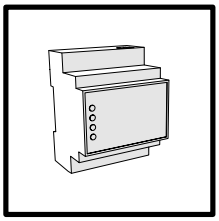
The time for filing a complaint or shipment discrepancy is 5 days after delivery. ETS NORD is not responsible for defects that have occurred after goods have been handed over to the buyer.

If goods purchased from ETS NORD have defects for which ETS NORD is responsible, ETS NORD will repair or replace the defective goods. If the goods cannot be repaired or replaced, ETS NORD will refund to the buyer all fees for such items resulting from the sales contract.

If you have any problems, please contact ETS NORD Customer Service!

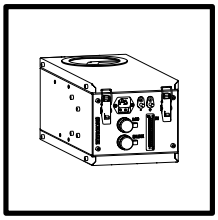
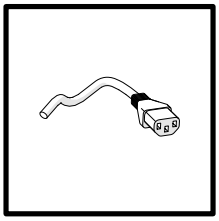
The ozone cleaning system consists of three separate components:

- OZ 4.0 Ozone unit
- LCD control panel
- Remote access device M-link

The integrated ozonator packaging includes:

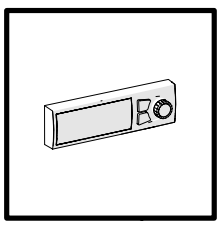
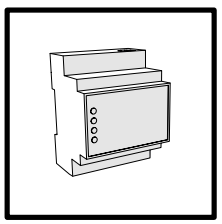
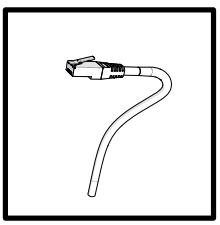
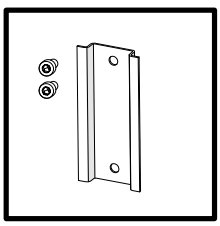
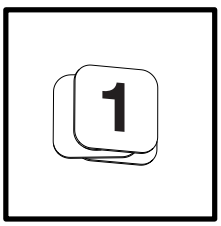
- OZ 4.0 Ozone unit
- Power cable IEC C13 with plug (3m)
- Pressure measurement hoses (2 pcs)
- User manual for personnel
- Quick installation guide

The LCD control panel packaging includes:

- LCD control panel with wall mount
- One sheet of ozone unit device address identification labels
- Installation guide
- M-Link remote access device*
- LAN cable for connection between M-Link and master ozone unit (0,5m)*
- DIN rail + 2 x M5 bolts for mounting M-Link*

  * Is included in the package if remote management or Modbus TCP/IP protocol are needed.

Safety

Failure to comply with the instructions for the use and safety of the ozone unit or improper use may cause bodily injury.

The ozone cleaning system is designed to treat air with ozone only as described in this guide.

Ozone reduces odors and breaks down grease, mold and bacteria. ETS NORD AS assumes no responsibility if the product is not used in accordance with the instructions contained in this guide.
Ozone is harmful to health. Prolonged exposure may cause subsequent damage:

- skin rash and burns;
- respiratory tract irritation and breathing problems.

Warnings!

Ozone danger!
Long-term exposure to ozone can cause health damage.

When removing grease filters, make sure that the ozone cleaning system is switched off!

Risk of falling!
Make sure installation and service personnel have stable work platforms when installing the device.

Risk of electric shock!
Electrical connections to the system may only be made by a qualified and authorized electrician.

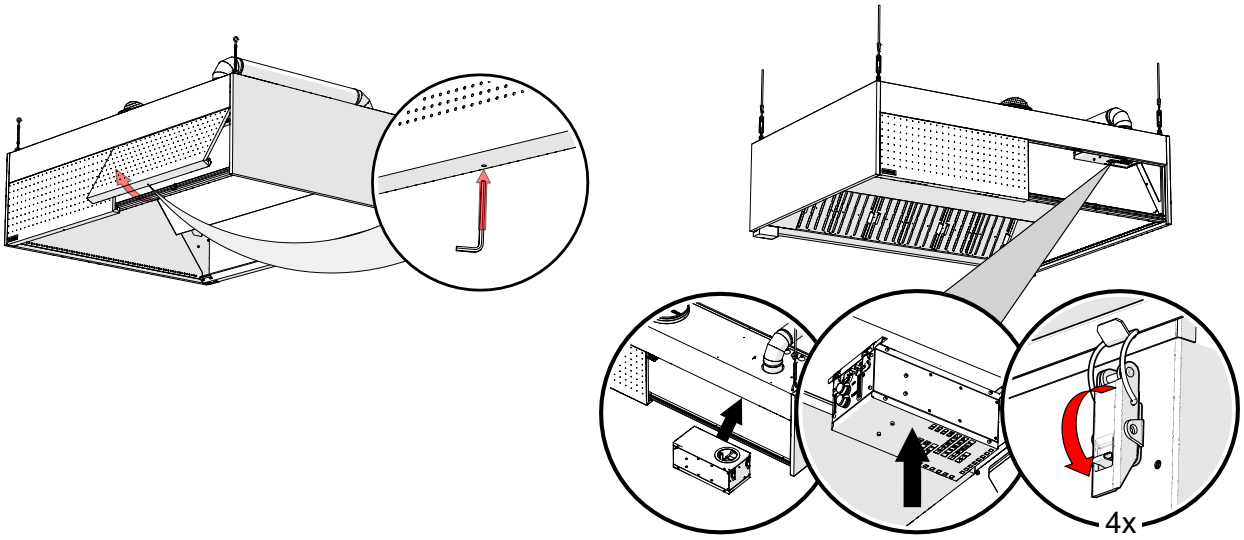
Before maintenance work, always switch off the system and disconnect the plug from the mains!

1. OZ 4.0 Ozone unit installation in HZ Grease canopy

1.1 Install the ozone unit to the supply chamber

Risk of falling! Make sure installation and service personnel have stable work platforms when installing the device.

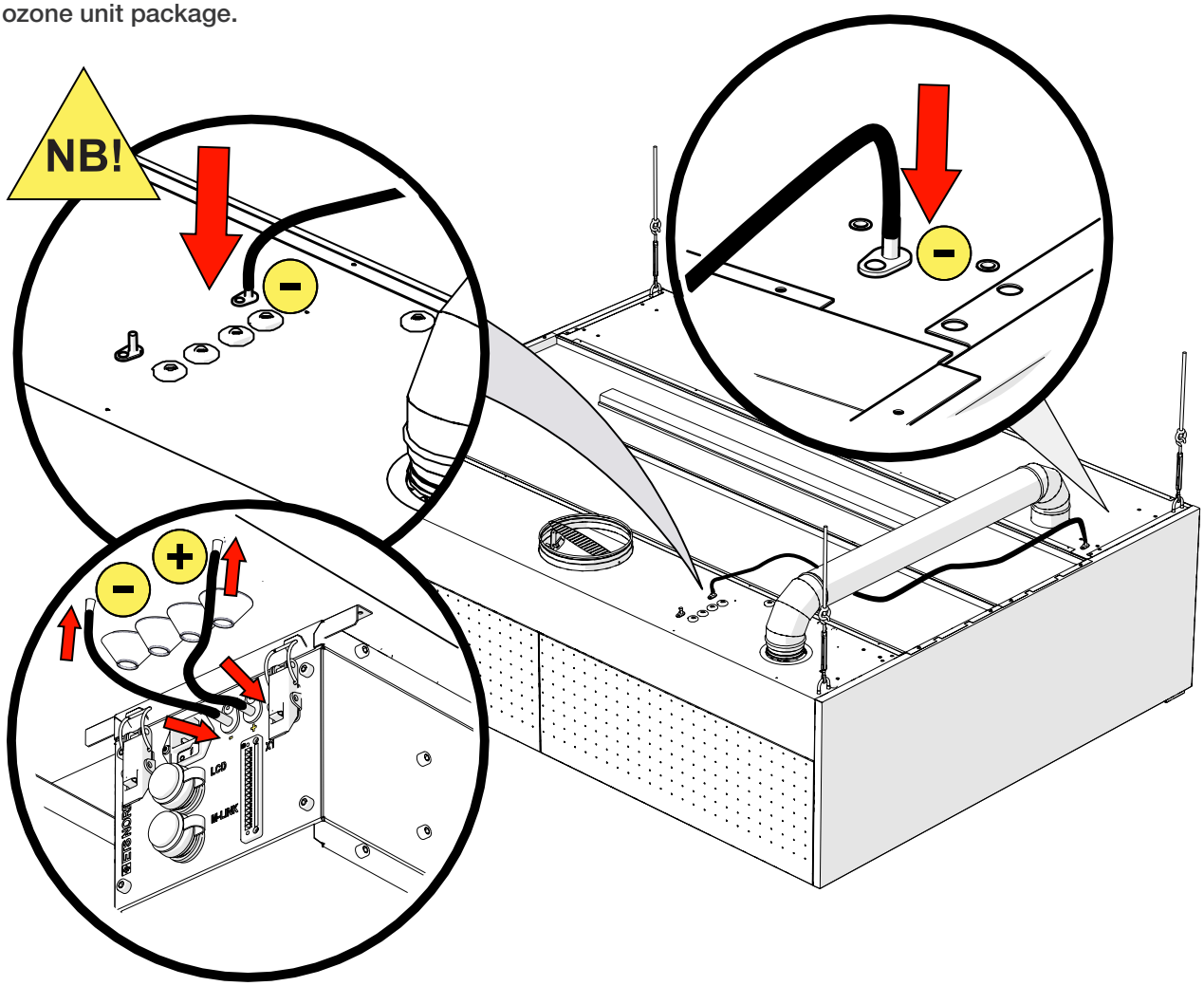
Fasten the ozone unit up against the ceiling of the supply chamber using its four fastening clamps.



1.2 Attaching the pressure measurement hose

For an ozone module to operate properly and safely pressure measurement hoses must be installed.

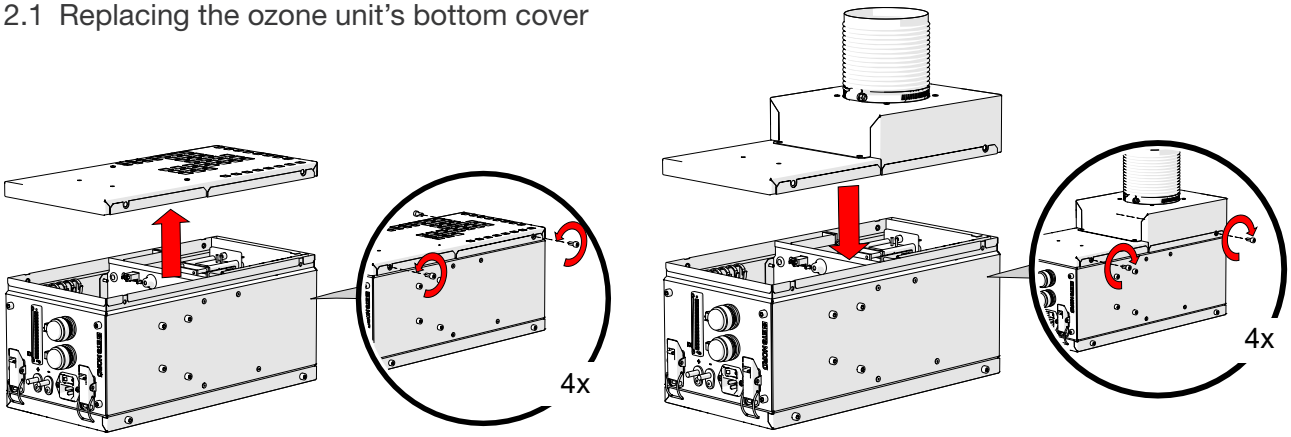
NB! There are two pressure hoses that need to be installed to each ozone unit. Both hoses came with the ozone unit package.



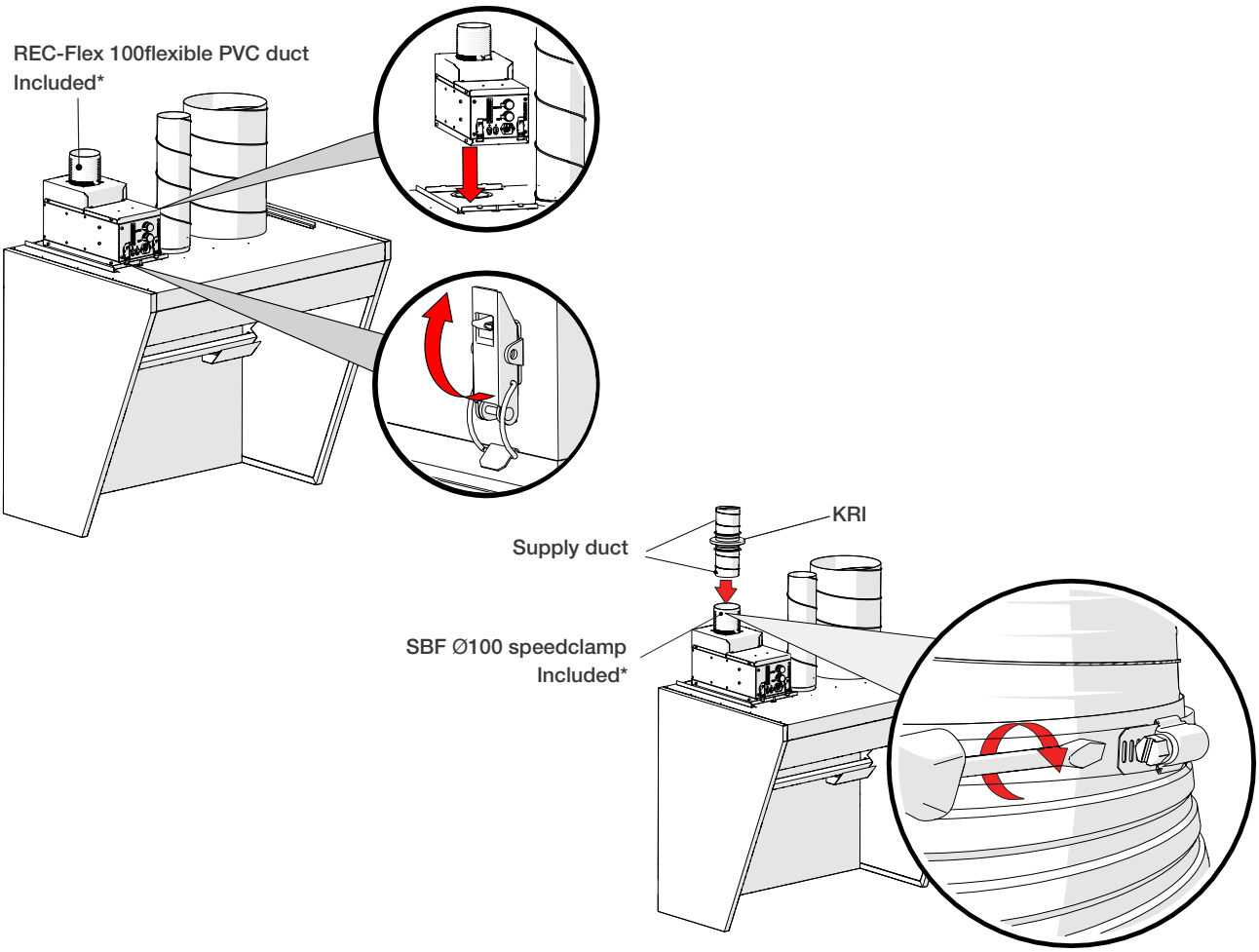
2. Ozone unit installation in HG grill canopy

OZ 4.0 Ozone unit must have its own supply air duct connected to the ozone unit's bottom cover in a way that the ozone unit is removable later on.

2.1 Replacing the ozone unit's bottom cover

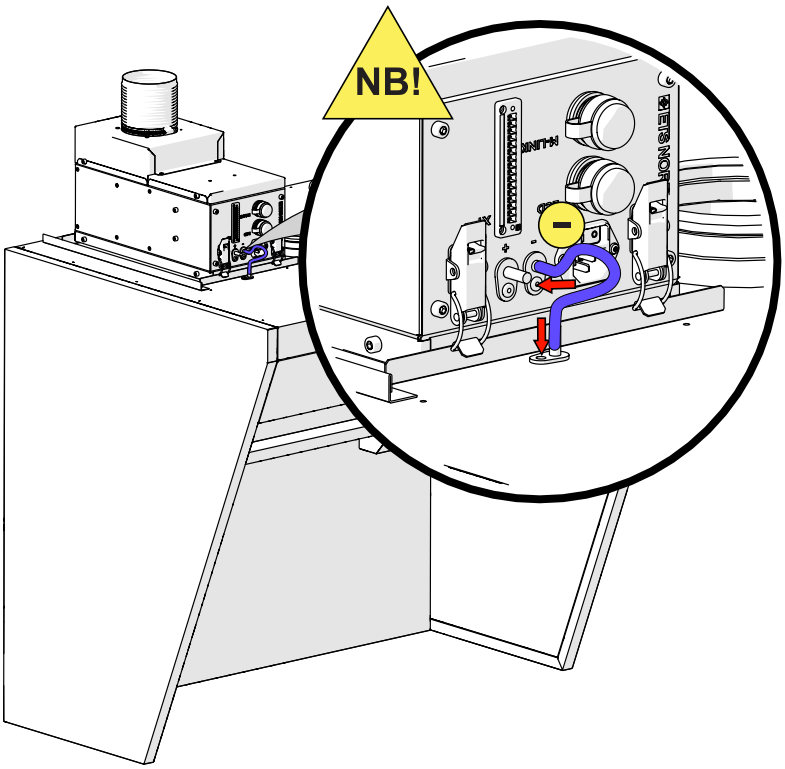


2.2 Installing the ozone unit and connecting the supply air duct



Use 100mm KRI regulation damper (not included in the delivery) to adjust +20 l/s supply air for the ozone unit.

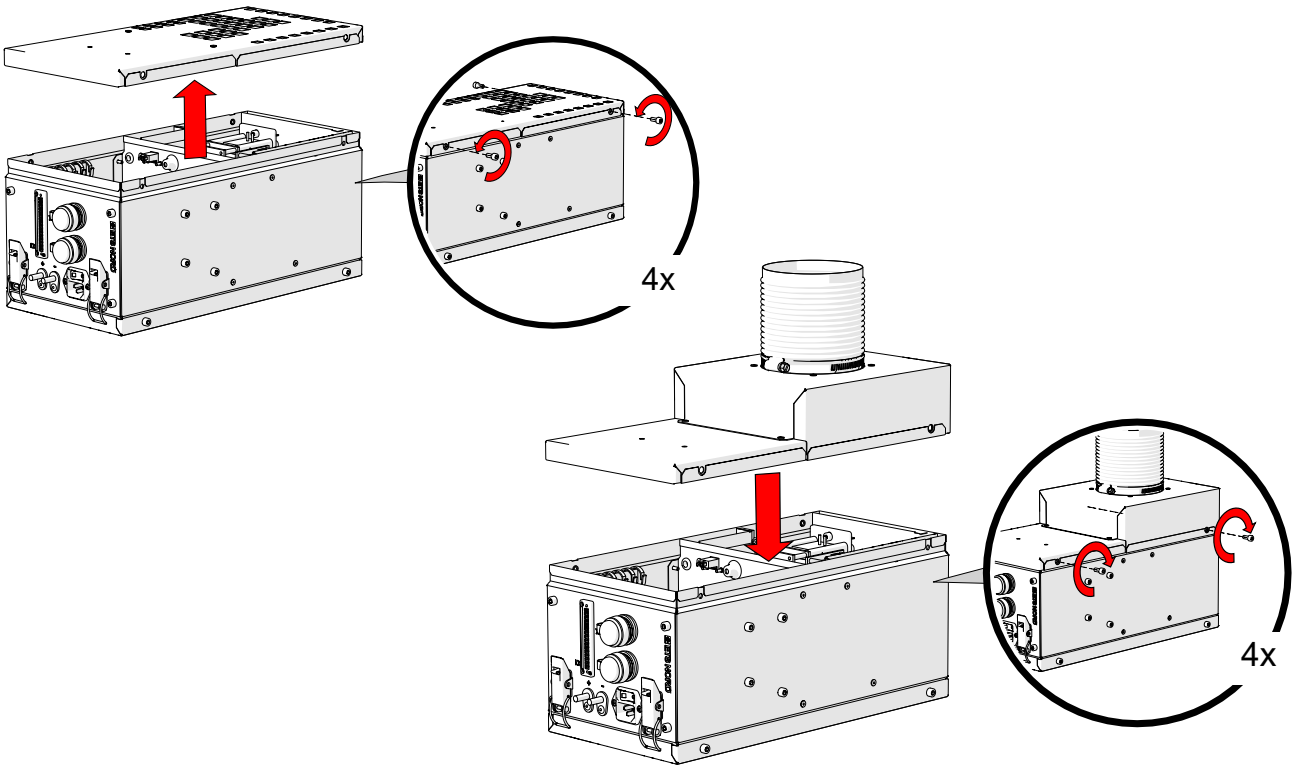
2.3 Attaching the pressure measurement hose



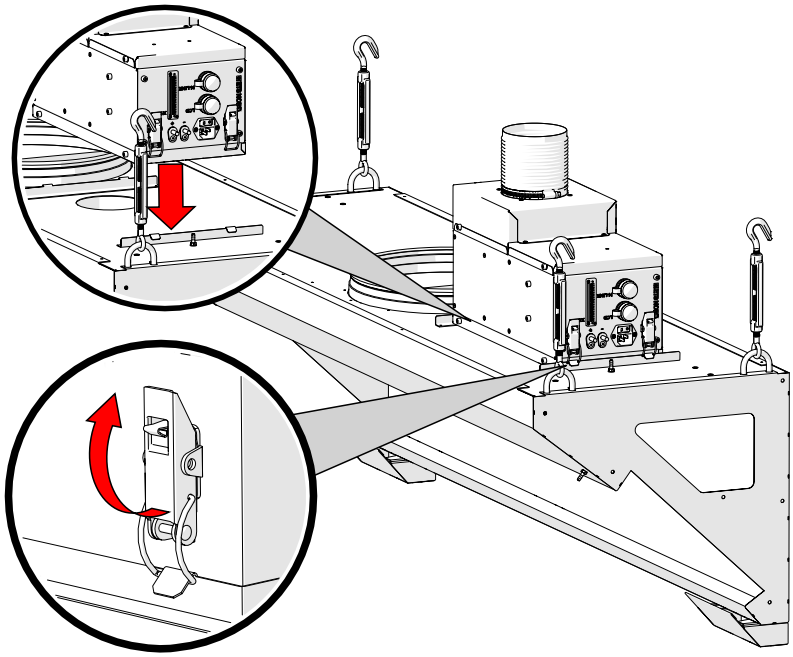
3. Ozone unit installation in HC ventilation ceiling

OZ 4.0 Ozone unit must have its own supply air duct connected to the ozone unit's bottom cover in a way that the ozone unit is removable later on.

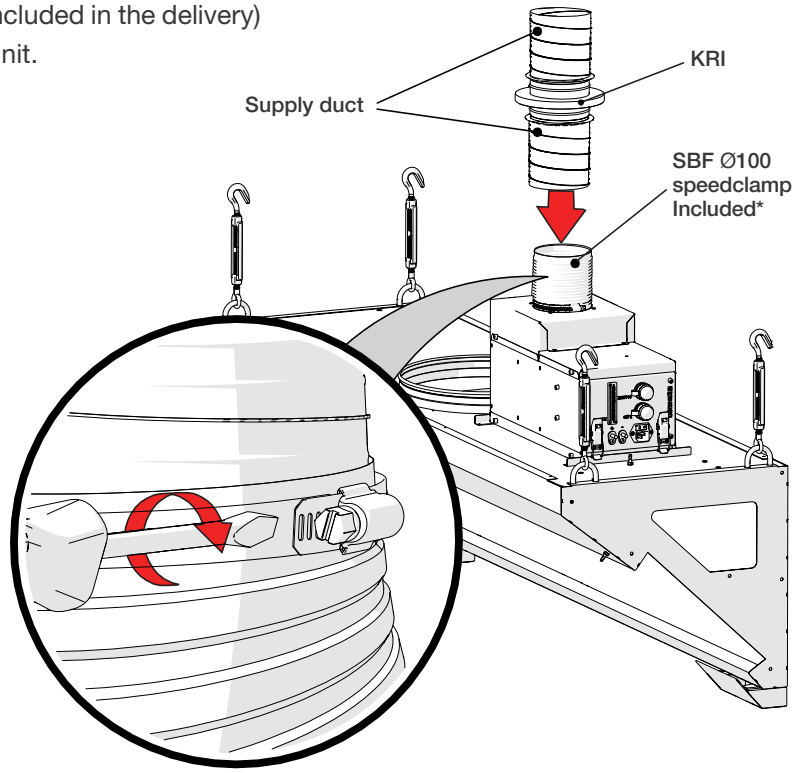
3.1 Replacing the ozone unit's bottom cover



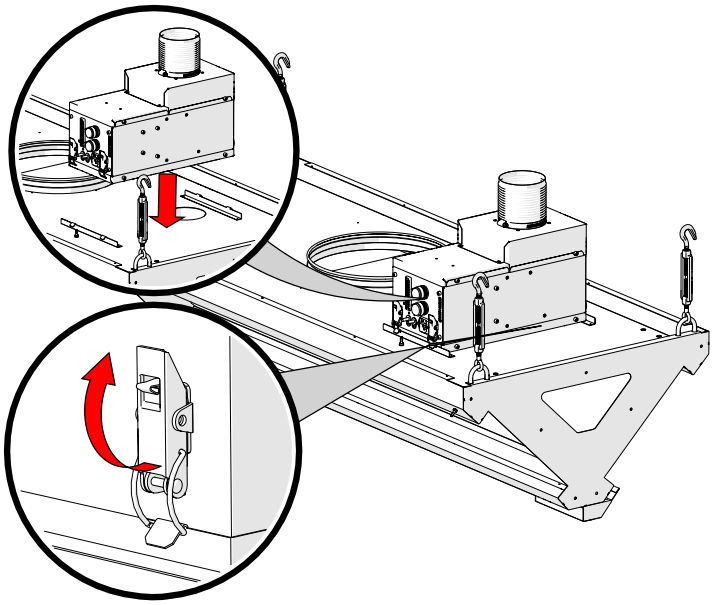
3.2 Installing the ozone unit on HCE module and connecting the supply air duct



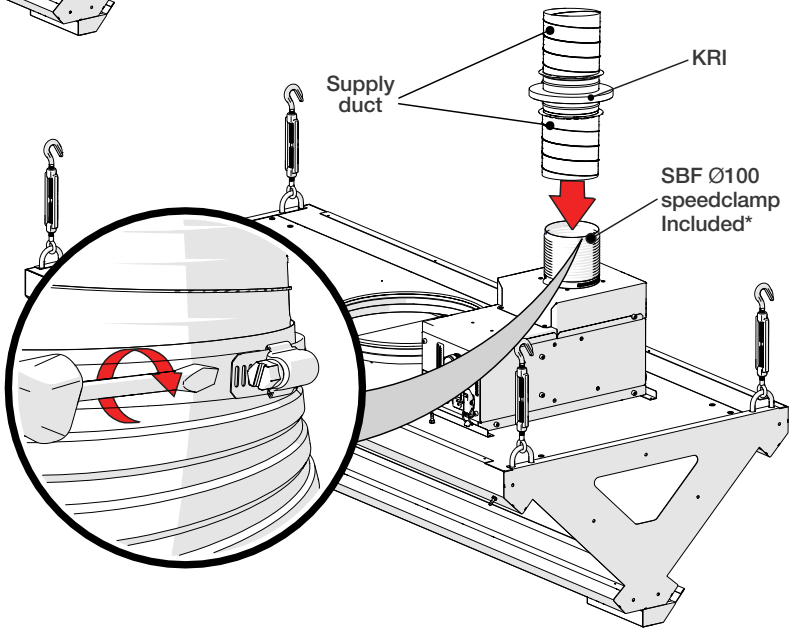
Use 100mm KRI regulation damper (not included in the delivery) to adjust +20 l/s supply air for the ozone unit.



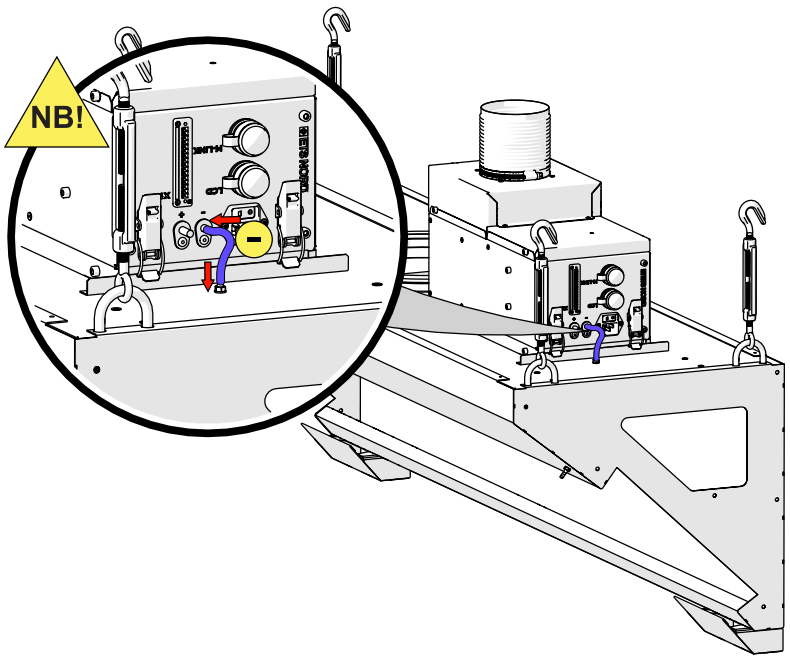
3.3 Installing the ozone unit on HCI module and connecting the supply air duct



Use 100mm KRI regulation damper (not included in the delivery) to adjust +20 l/s supply air for the ozone unit.



3.4 Attaching the pressure measurement hose

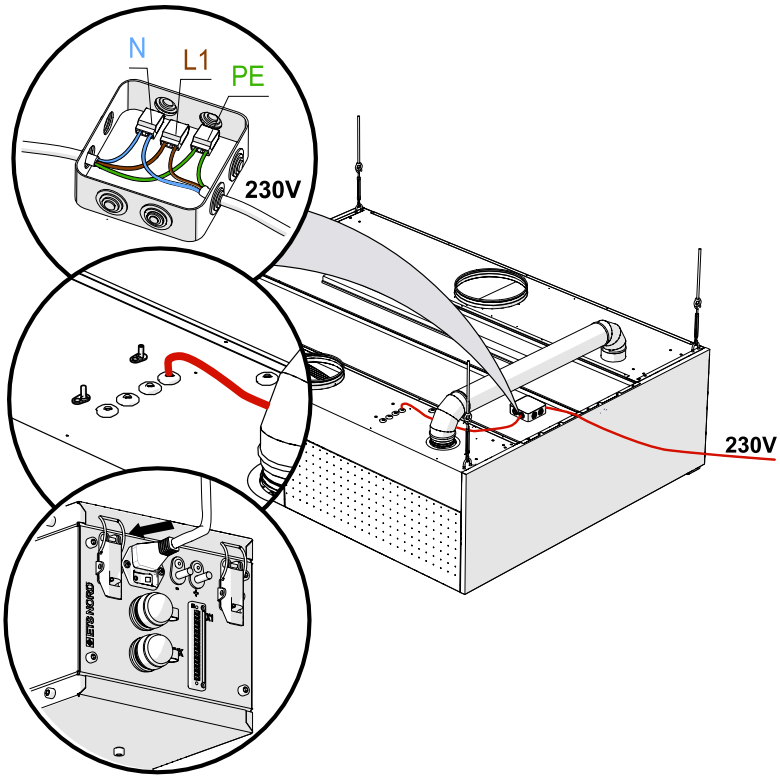


4. Electrical installation

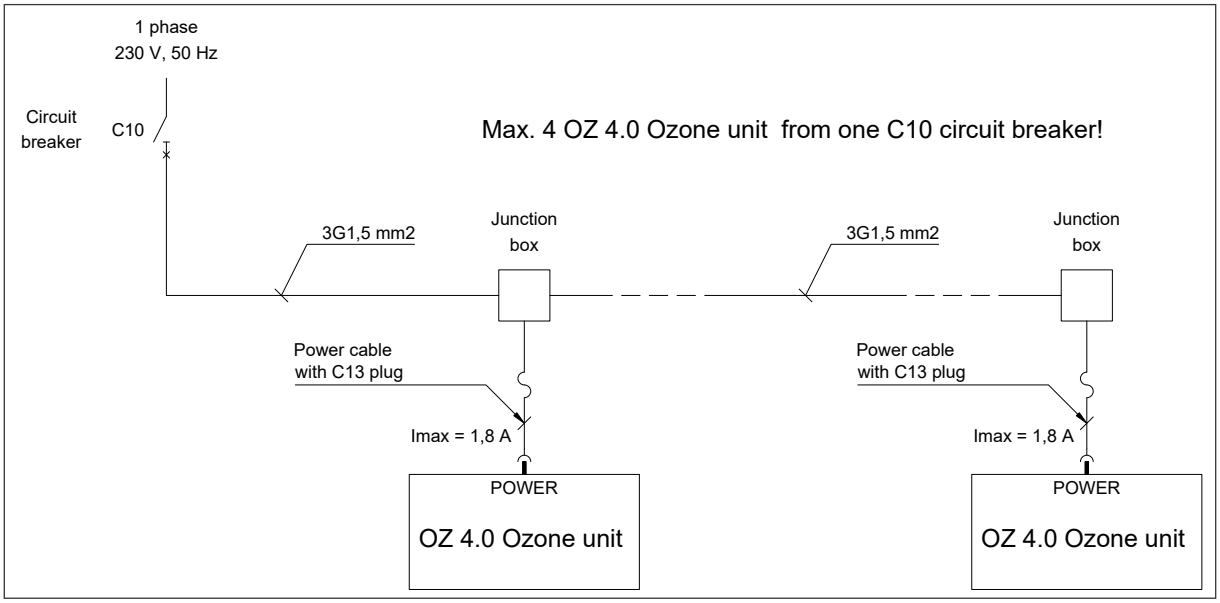
Risk of electric shock! Electrical connections to the system may only be made by a qualified and authorized electrician.

All the cablings and electrical installations indicated in the following chapters must be compiled by an electrician of the site.

4.1 Ozone unit power supply



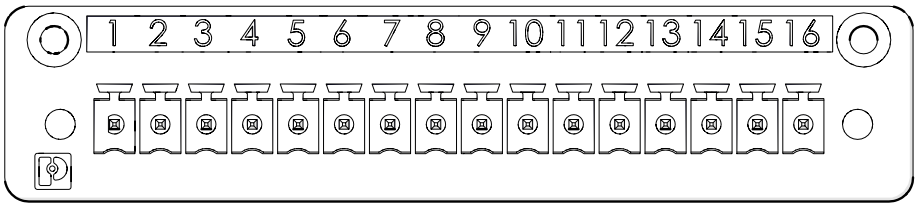
Up to four ozone units can be connected under one C10A circuit breaker.



If there are up to 6 ozone units in the system, use a C16A circuit breaker. For over 6 ozone units in the system, use an additional circuit breaker.

After connecting the power supply of the ozone unit, leave the power switch into the OFF position.

4.2 Ozone unit connections to connector X1



Input connector	IO grouping	IO name	Terminological name
1	Modbus RTU (for connection between control units)	A	Modbus data (A)-
2		B	Modbus data (B)+
3		GND	Modbus grounding
4	Modbus RTU for Building management system	A2	Master ozonator only Modbus data (A2)-
5		B2	Master ozonator only Modbus data (B2)+
6		GND	Master ozonator only Modbus grounding
7	Work permission	Work permission +	Fire alarm system or work permission
8		Work permission -	Fire alarm system or work permission
9	Status signals for building management system	Operation status	Building automation
10		Critical error	Building automation
11		Service + fault status	Building automation
12		COM	Common 24V for building
13	24V+	24 V/DC	LED notification panel power supply
14	0V-	GND	LED notification panel power supply
15	Reserve input	0...10V	
16		GND	

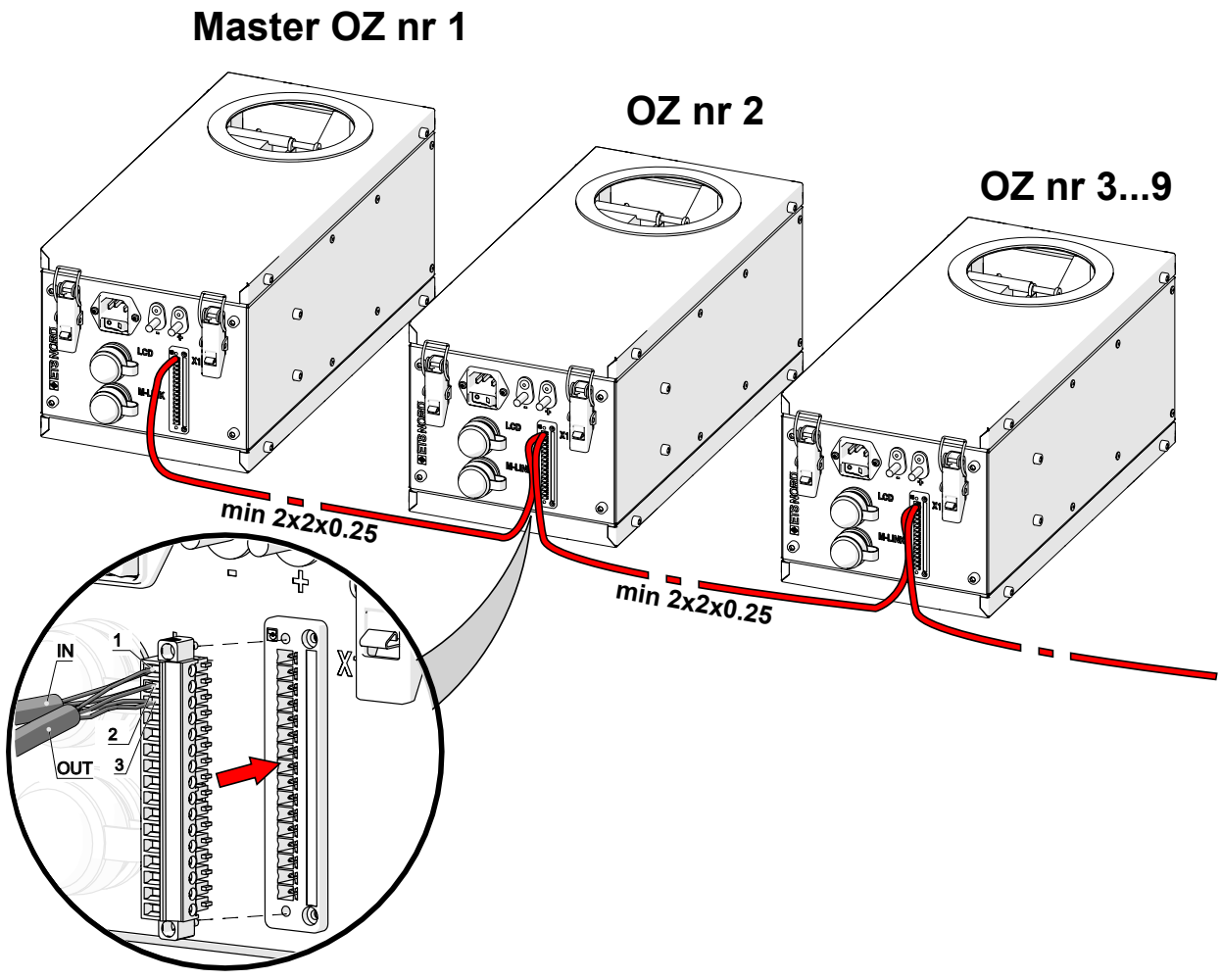
NB! Maximum cable core cross-section is 1,5 mm2 (solid conductors) for X1 connector.

4.3 Modbus data connection between the ozone units

If there is more than one ozone unit then they must be connected in parallel directly to the next ozone unit. **The first device from which the cable passes to the next device must be the Master device, i.e., the LCD control panel must be connected to this (Master) ozone unit in the future.** Maximum of 9 ozone units can be in one system behind one LCD control panel.

Use a 2×2×0,25 mm² twisted pair cable for Modbus connection between devices.

Input connector	Input connector nr.	IO name	Terminological name
X1	1	A	Modbus data (A)-
	2	B	Modbus data (B)+
	3	GND	Modbus grounding



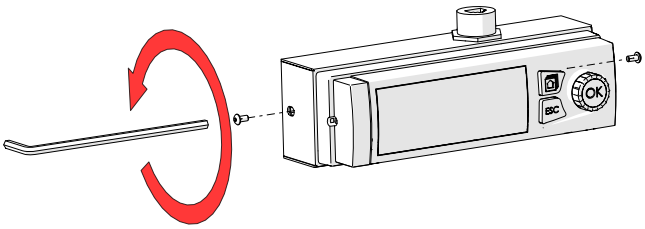
5. LCD control panel installation

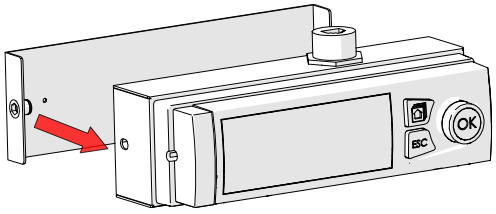
NB! To install the control panel, choose a location in the kitchen or its immediate vicinity that is visible and easily accessible to the staff. Avoid placing the control panel above kitchen appliances.

5.1 Attaching the mounting frame and connecting the LAN cable

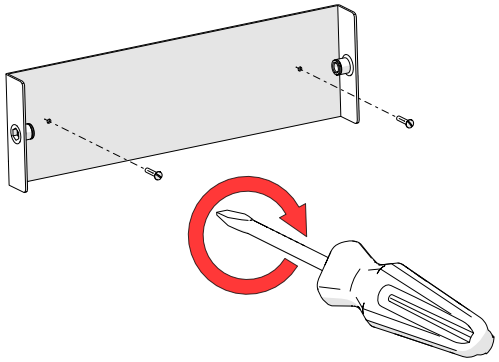
LCD control panel is delivered in separate packages.

First, remove the rear bezel of the control panel by removing the two bolts on each side.

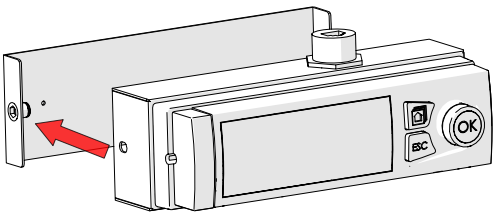


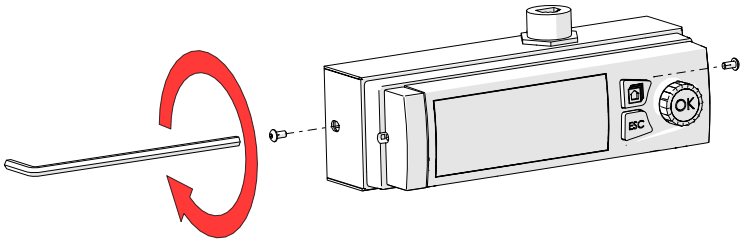


Attach the mounting frame to the wall or the side of the canopy so that the user always has free access to it. Avoid installing the control panel in a greasy area.

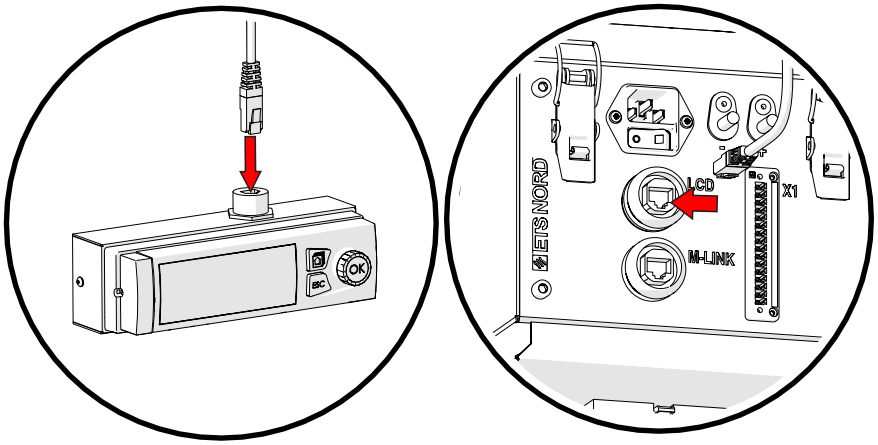


Reattach the control panel to the mounting frame and fix it with bolts on both sides.





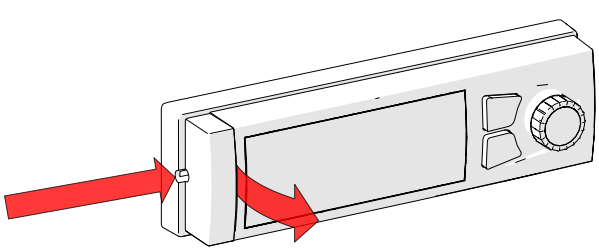
Connect the LAN cable from the LCD control panel to the Master ozone unit socket marked „LCD“.

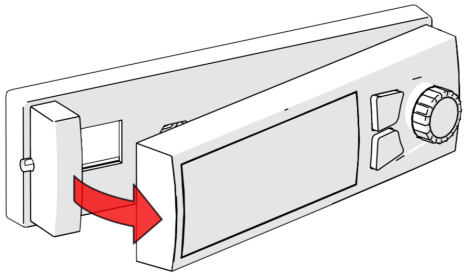


5.2 Fixing the control panel to the wall without a metal case

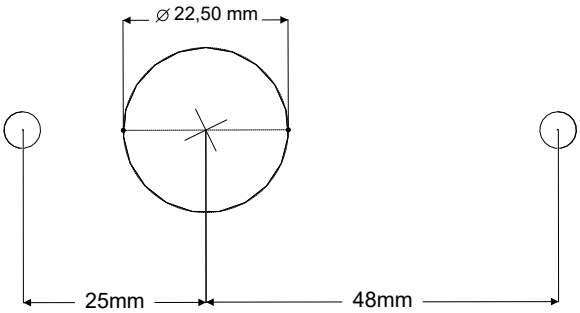
If you want to install the control panel on the wall so that its LAN cable comes from the back and remains inside the wall, the metal housing of the control panel must be dismantled, and the plastic mounting frame attached to the wall.

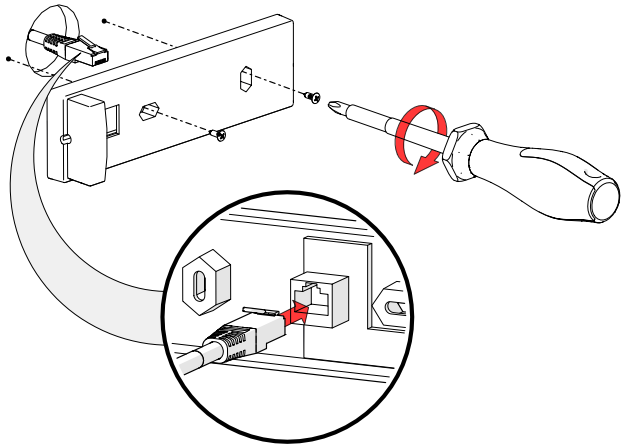
Remove the control panel from the mounting frame.



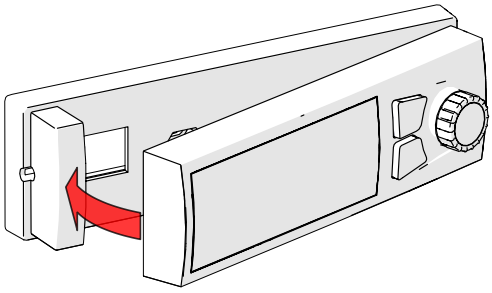


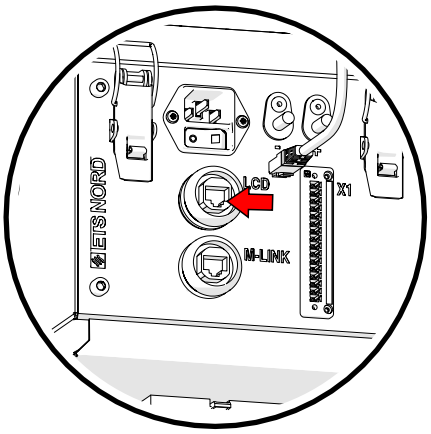
Attach the mounting frame to the wall so that the LAN cable can come through the wall from the back.
The drawing shows the mounting holes in the mounting frame.





Place the screen back on the mounting frame and connect the LAN cable to the ozone unit „LCD“ socket.



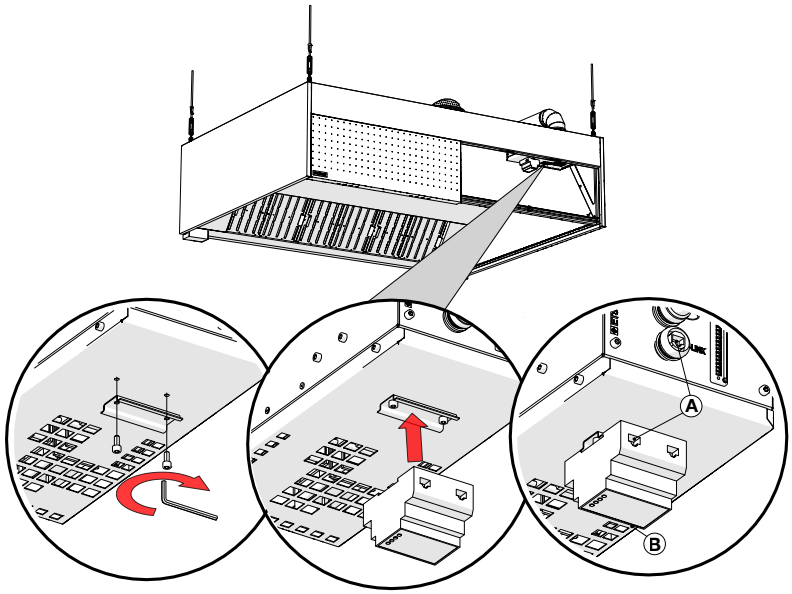


6. Connecting the remote access device M-Link

The M-Link remote access device is an accessory and is supplied if the user wants to use the Modbus TCP/IP protocol or the remote management and maintenance service provided by ETS NORD.

This device must be connected to the **Master ozone unit. Master is the one with the LCD control panel connection**.

Install the DIN rail and the M-Link to the Master ozone unit.

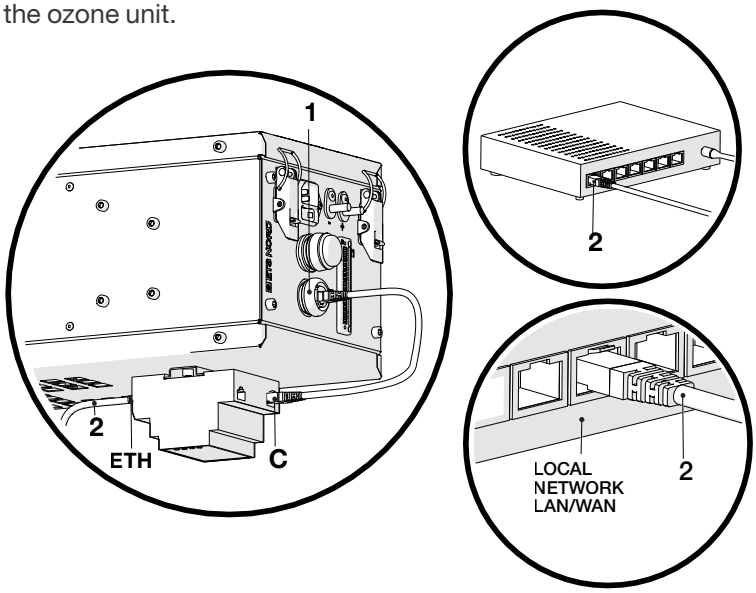


A – LAN cable connection between the device and the ozone unit

B – Ethernet port, for network connection

Connect the LAN cable from the router or directly from the local network to the M-Link Ethernet port.

From the C port of the M-Link, connect the LAN cable included in the package to the “M-LINK” connector of the ozone unit.



1 – M-Link socket on the ozone unit

2 – Internet connection between local network or router and M-Link

ETH – Ethernet port of M-Link for network connection

C – The connection port between the M-Link and the ozone unit

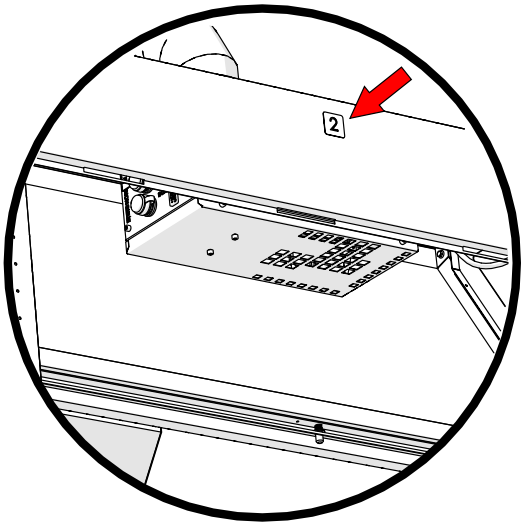
A local network is required, and it must be possible to connect the M-Link to it. If the customer does not want to connect the remote access device to their local network, there is also the option of using a 4G router. The router can be purchased through the ETS NORD sales department, and additional costs are incurred.

When using a router, an electrical connection must be provided by an electrician via an additional plug so that the router can be connected to the mains.

Without the M-Link remote access device, it is not possible for ETS NORD to provide the customer with a maintenance service, during which the customer is informed of the malfunctions that have occurred and the necessary maintenance or repair of the ozone unit is carried out.

7. Marking the canopy with stickers

Canopy marking stickers are delivered in the package of the LCD control panel. Stickers should be installed on the canopies where the ozone units are located. The number on each sticker indicates which ozone unit with what Modbus address is located in which canopy.



If there is one single unit or more than one ozone units in the system, then the Master ozone unit must be marked with the sticker 1 and Slave ozone units according to their Modbus address.

8. Building management system (BMS)

The ETS NORD OZ cleaning system can be connected to building automation via I/O status signals, Modbus RTU or TCP/IP. In addition, it is possible to grant work permission to the system through a potentially free NO/NC contact from the building automation centre, ventilation unit or fire alarm system (FAS). The

OZ 4.0 Ozone Cleaning System Automation Guide for building automation technicians can be found on the ETS NORD's website.

8.1 Compatibility with building automation through status signals

The ozone cleaning system can be combined with building automation where the ozone unit sends status signals to the BMS.

If there is more than one ozone unit in the system and they are connected through Modbus, the I/O signals for the BMS must be connected only to the Master control unit.

The following table shows the X1 input connector connectors for BMS.

X1 input connector connections:

Input connector	IO name	Terminological name
1	Operation status	BMS
2	Critical error	BMS
3	Service + fault status	BMS
4	COM	Common 24V for building automation

Building automation signals come from the relay outputs of the controller.

The status table is given in the table:

IO name	Value is 0	Value is 1
Operation status	Status – **Off** (Ozone unit is not working)	Status – **On** (Ozone unit is working)
Critical error	Status – **Normal** (Ozone unit does not have a hardware fault)	Status – **Alarm** (Ozone unit has a hardware fault)
Service + fault status	Status – **Normal** (Ozone unit has no faults and does not need maintenance)	Status – **Alarm** (Ozone unit has one or more faults and needs maintenance)

8.2 BMS through Modbus RTU

When connecting the ozone cleaning system to building automation via Modbus RTU a connection must be made to the Master ozone unit X1 connector.

X1 input connector connections:

Input connector	IO name	Terminological name
4	Modbus RTU (A)	Modbus RTU for BMS
5	Modbus RTU (B)	Modbus RTU for BMS
6	GND	Grounding

For building automation via Modbus, you can find the OZ 4.0 Ozone Cleaning System Automation Guide on the ETS NORD website under the ozone cleaning system.

8.3 BMS through Modbus TCP/IP

M-Link is needed to use the TCP/IP protocol.

When connecting the ozone cleaning system to building automation via Modbus TCP/IP a connection must be made to the M-Link ethernet port of the Master ozone unit.

For building automation via Modbus, you can find the OZ 4.0 Ozone Cleaning System Automation Guide on the ETS NORD website under the ozone cleaning system.

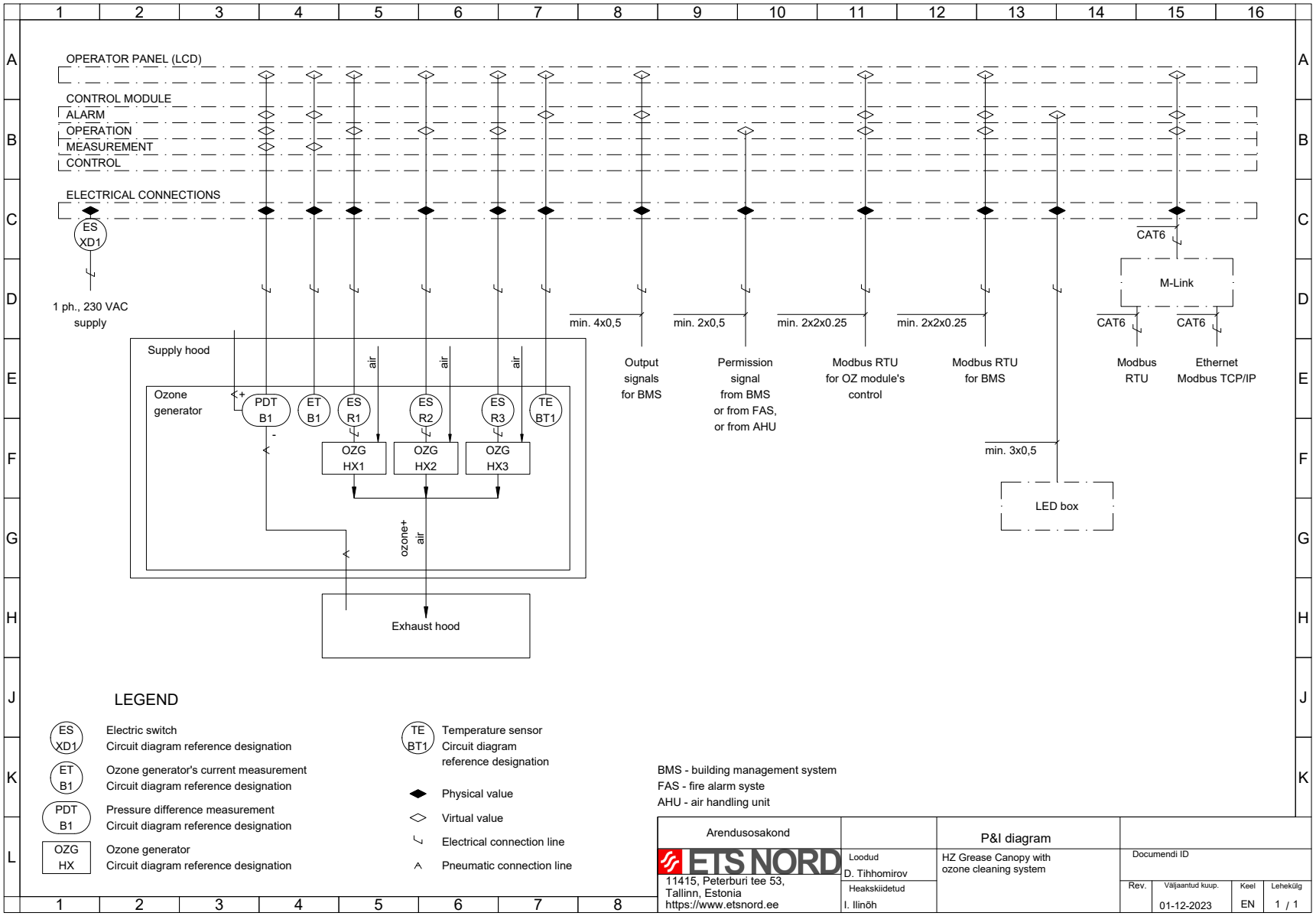
8.4 Working permission

In the case of the ozone cleaning system, it is possible to integrate it with an automatic fire system (AFS) or to give the system a work permit by building automation. The connection must be made to the X1 connector input of the Master ozone unit through a potentially free NO or NC contact.

X1 input connector connections:

Input connector	IO name	Terminological name
7	Work permission +	Automatic fire system and work permission
8	Work permission -	Automatic fire system and work permission

9. Ozone cleaning system functional diagram



10. Facts about ozone

- Ozone is a colourless gas, the sharp smell of which can be detected by a person at a concentration of 0.02 ppm (0,4 mg/m3).
- The smell of ozone is similar to the smell of chlorine used in swimming pools.
- The use of ozone is subject to the applicable protection legislation. For example, in Estonia the following hygienic limits for ozone are provided:
  - 0,05 ... 0,2 ppm (during working time, 8 hours)
  - (Directive 2000/39/EC) 0.3 ppm (15 minutes)
- Acute exposure to ozone may result in the following damage:
  - skin irritation and burning sensation
  - severe irritation and burns in eyes and vision loss
  - pulmonary irritation in the respiratory tract and respiratory problems
- If the presence of ozone is detected indoors, the Ozone Module must be switched off immediately and the area must be ventilated.

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