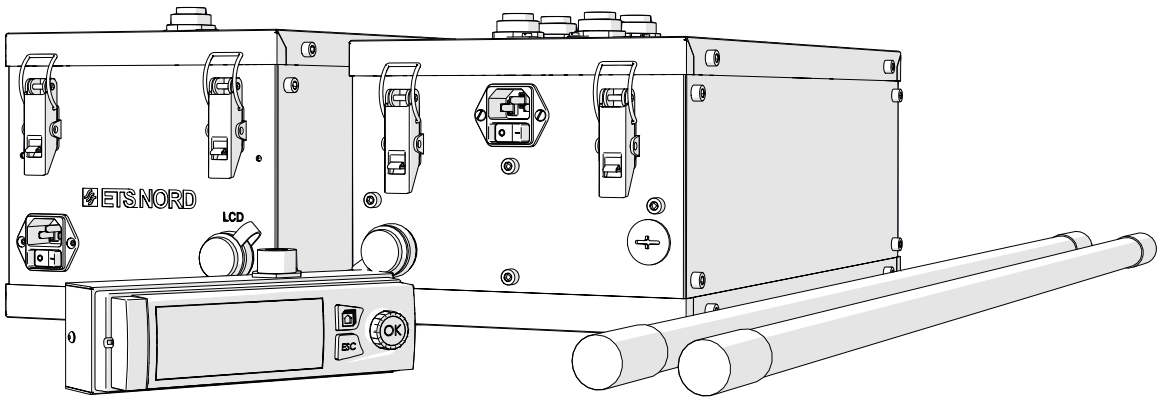

NORDcanopy

UV Cleaning System Installation Guide

ETS NORD

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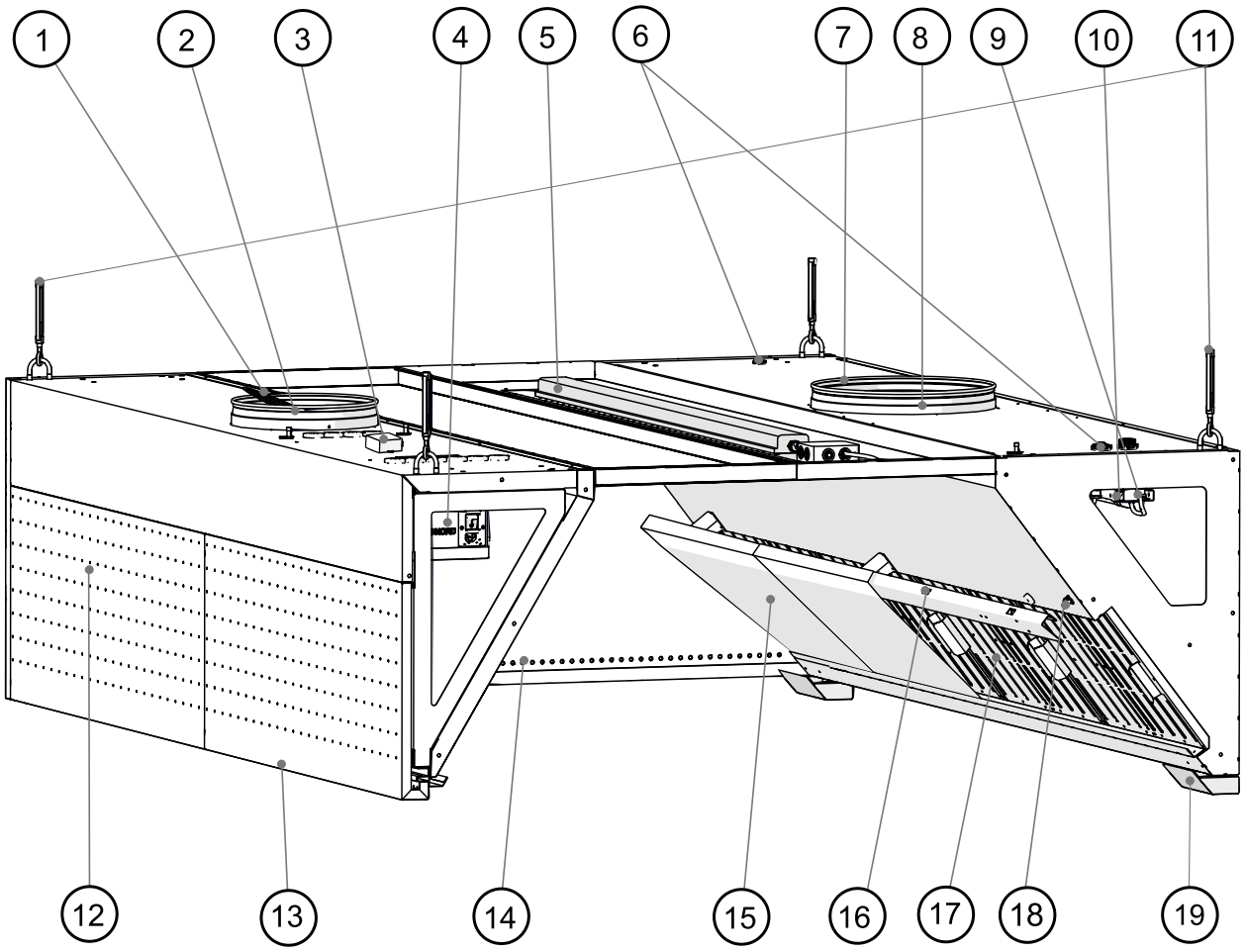
General

This guide contains information for the safe installation of the ETS NORD UV cleaning system.
Read the guide carefully before installing, setting up or performing maintenance!



1 – Supply air adjustment plate
2 – Supply air connection
3 – Pressure sensor
4 – Integrated control unit
5 – Lighting
6 – UV lamp socket
7 – Exhaust air adjustment plate
8 – Exhaust air connection
9 – Canopy safety switch socket
10 – UV lamp
11 – Suspension points
12 – Front panel
13 – Front panel lock
14 – “AirGrip” air nozzle system
15 – UV protection shield
16 – UV protection shield safety switch
17 – HFK grease filters
18 – Airflow measuring nozzle
19 – Grease collection container

Checking the product

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

Make sure that all components are received, matching both the order and delivery confirmation letters. 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.

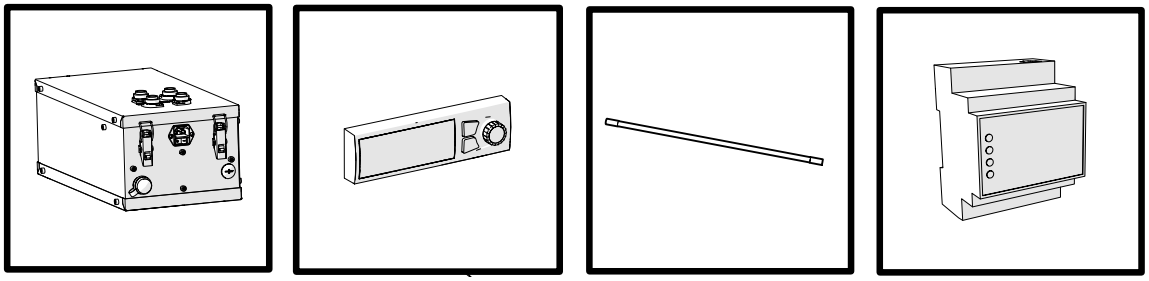
If goods purchased from ETS NORD have defects for which ETS NORD is responsible, ETS NORD will repair or replace the defective goods. If the goods cannot be repaired or replaced, ETS NORD will refund to the buyer all fees for such items resulting from the sales contract.

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

The UV cleaning system consists of four separate components:

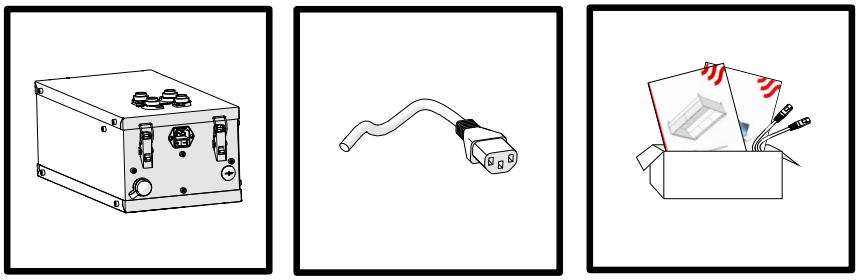
- Control unit
- LCD control panel
- UV lamp*,
- Remote access device M-Link

*There can be 1-4 UV lamps per control unit.



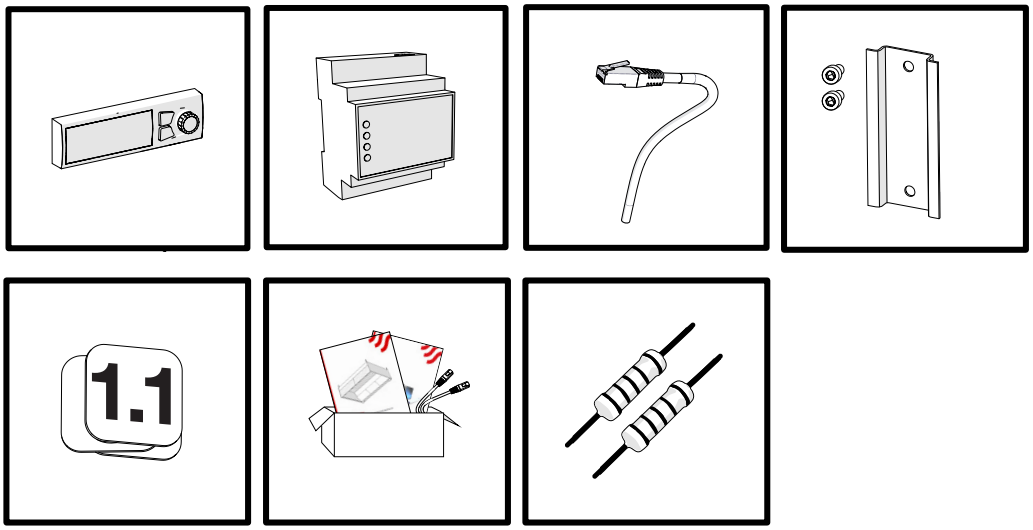
The integrated control unit packaging includes:

- Control unit
- Power cabel IEC C13 with plug (3 m)
- User manual for personnel



The LCD control panel and remote access device packaging include:

- LCD control panel with wall mount
- M-Link remote access device
- LAN cabel for connection between M-Link and LCD control panel (0.5 m)
- DIN rail + 2 × M5 bolts for mounting M-Link
- Canopy section marking stickers
- Installation guide
- Termination resistors 120 ohm 0,5W (2 pcs)



A maximum of 6 control units can be combined under one LCD control panel.

Product safety

Failure to comply with the instructions for the use and safety of the UV (ultraviolet) device or improper use may cause bodily injury.

The UV cleaning system is designed to treat air with UV-C radiation and ozone only as described in this manual. UV reduces odors and breaks down grease, mold and bacteria. ETS NORD AS assumes no liability if the product is not used in accordance with the instructions contained in this guide.

The installation of the integrated control unit may only be carried out by persons trained and authorized by ETS NORD in accordance with international standards and regulations.

Only UV lamps and spare parts supplied by ETS NORD AS may be used in the system.

Ultraviolet radiation and ozone are harmful to health. Prolonged exposure can cause the following damage:

- Skin rashes and burns
- Eye irritation, retinal burn and loss of vision
- Respiratory irritation and breathing problems

Remove canopy grease filters only after the UV lamps have been powered off from the LCD control panel.

When installing the lamps, always wear goggles and protective gloves to protect against quartz fragments in case of UV lamp breakage.

WARNINGS!

This device emits ultraviolet radiation and ozone!
Prolonged exposure to ozone and ultraviolet radiation can cause bodily injury.

When removing grease filters, make sure that the lamps are not turned on!

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

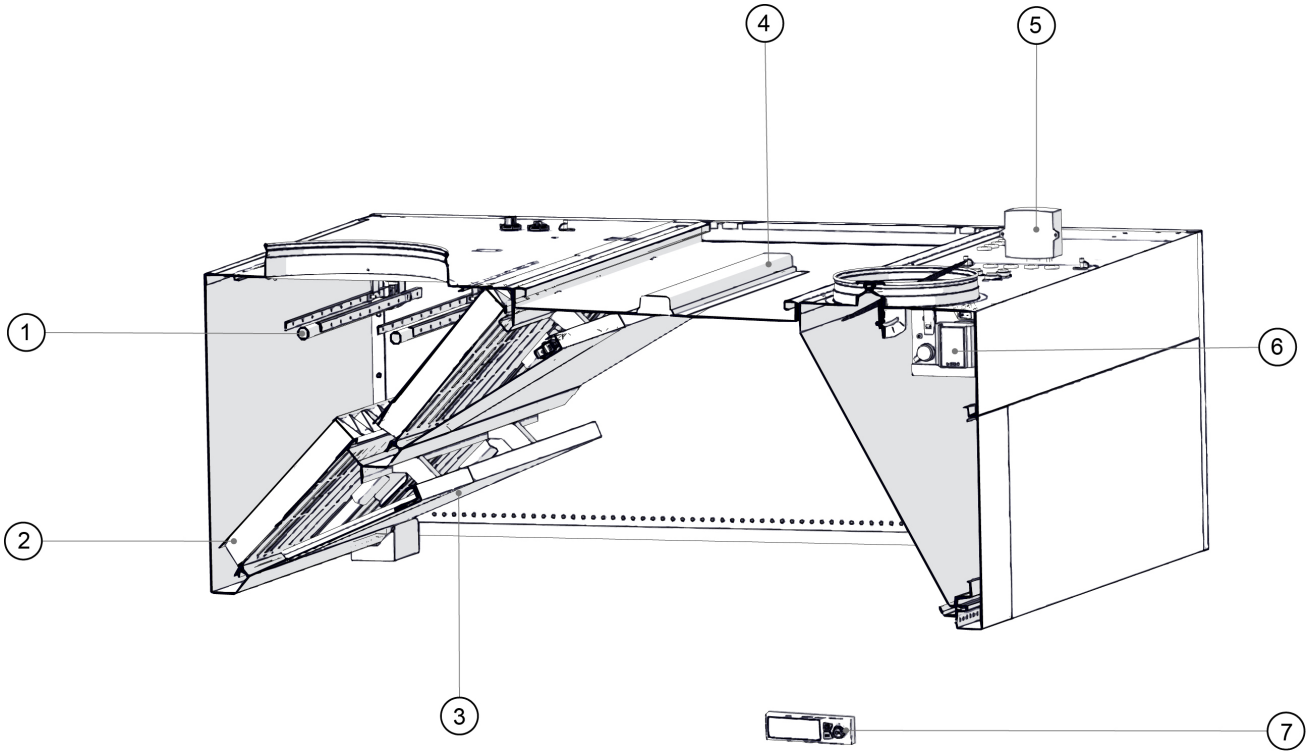
Use protective glasses and gloves during installation and maintenance!

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

Always power off the system and disconnect (by the plug) from the mains before any maintenance work!

Only original spare parts and UV lamps purchased from ETS NORD may be used in the UV 1.1 control unit!
UV lamps can be ordered from the sales office.

System overview

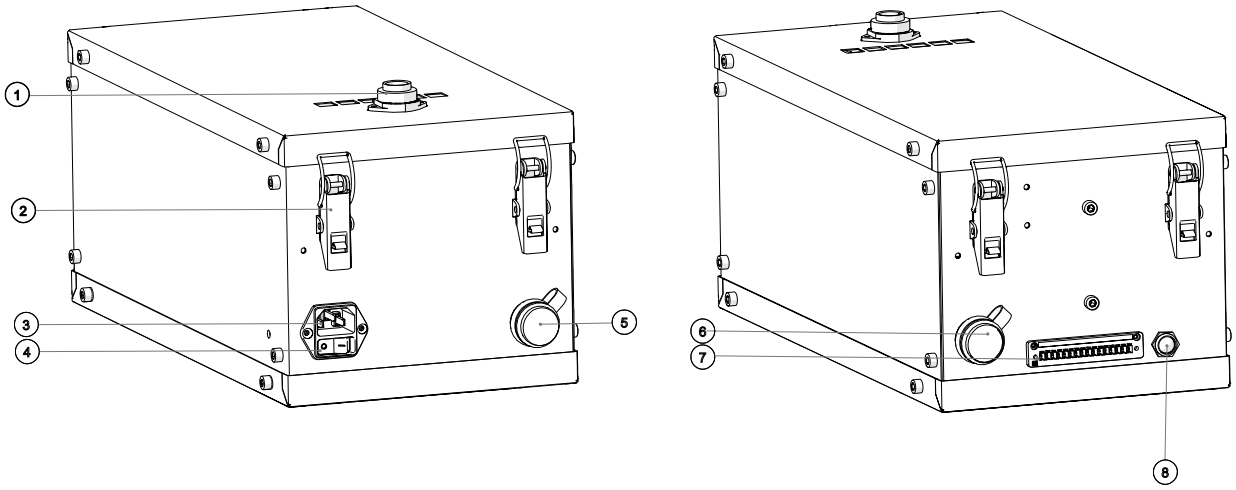


1 – UV lamp
2 – HFK grease filter
3 – UV protection shield
4 – LED light
5 – Pressure sensor
6 – Integrated control unit
7 – LCD control panel

1. Control unit overview and installation

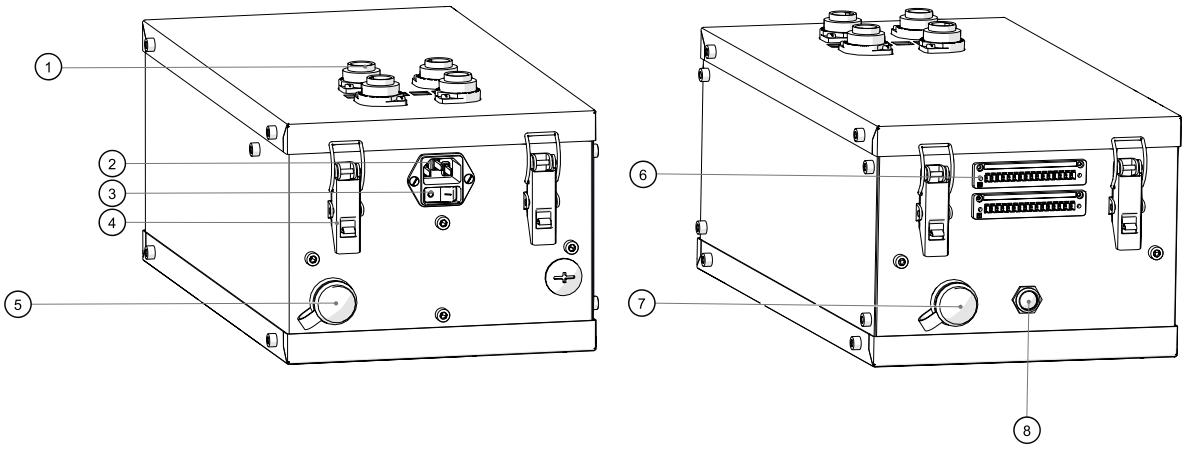
ETS NORD offers two different UV control units to operate the UV cleaning system. UV-S is for one UV lamp and UV-L is for up to four UV lamps. All control units are integrated into the ETS NORD canopy supply chamber.

1.1 UV-S Control Unit 1.1 185 W



1 – UV lamp power socket
2 – Control unit fastening clamps
3 – Control unit power socket for IEC C13 plug
4 – Control unit power switch
5 – LCD control panel socket
6 – Remote access device M-Link socket
7 – Control unit input connector (Modbus, building automation, AFS/AHU/BMS work permission, external canopy connections)
8 – Alarm LED indicator

1.2 UV-L Control Unit 1.1 750 W

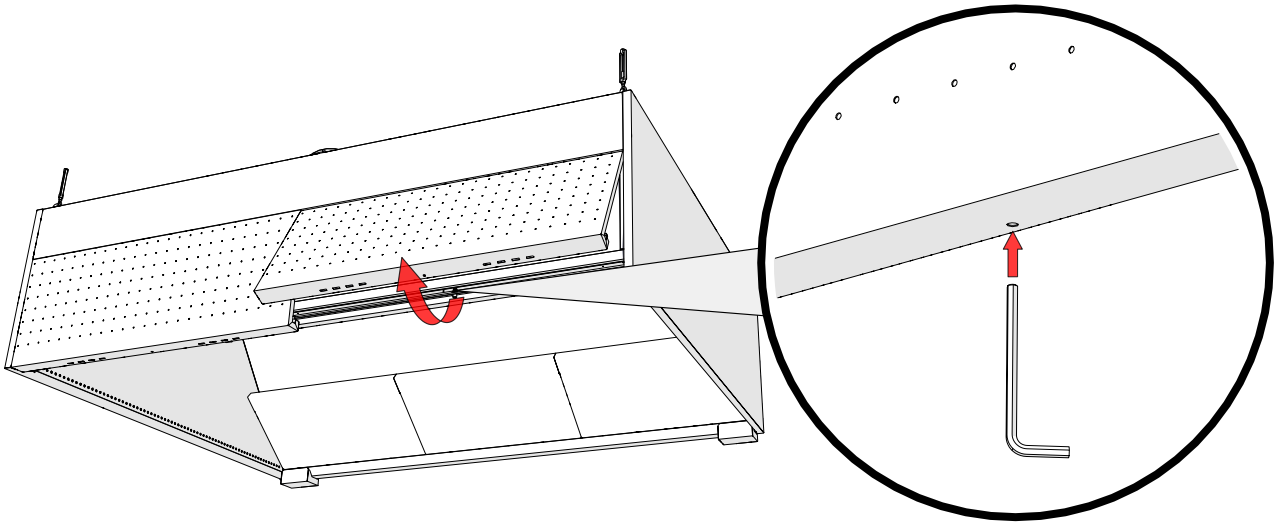


1 – UV lamp power sockets
2 – Control unit power socket for IEC C13 plug
3 – Control unit power switch
4 – Control unit fastening clamps
5 – Remote access device M-Link socket
6 – Control unit input connectors X1 and X2 (ModBus, building automation, AFS/AHU/BMS work premission, external canopy connections)
7 – LCD control panel socket
8 – Alarm LED indicator

1.3 Opening the front panel

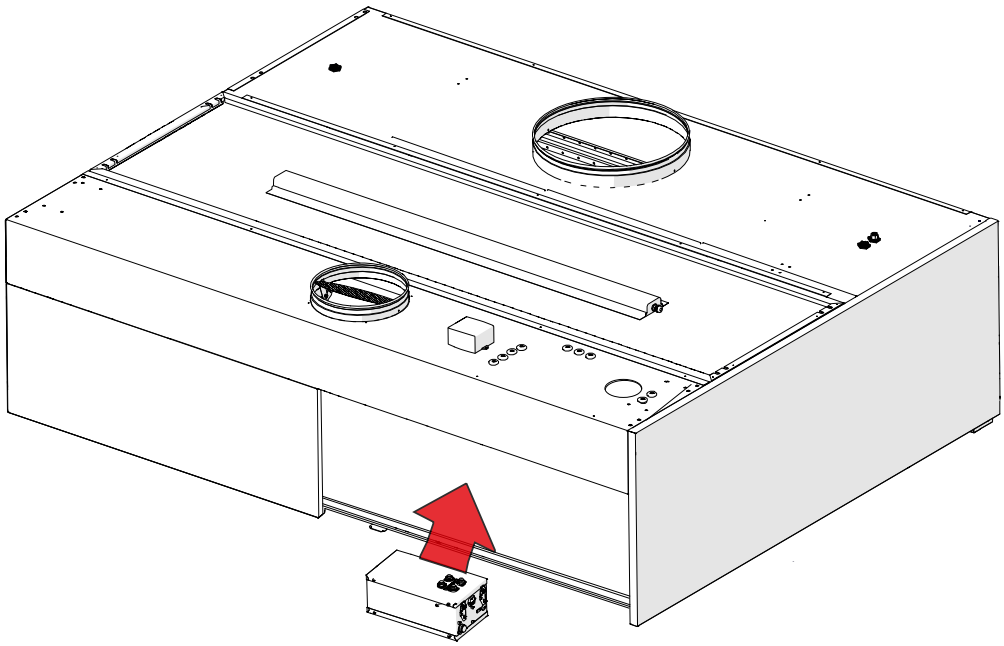
To install the control unit, the supply air panel of the canopy must be removed using a small screwdriver or Allen wrench (as shown in the picture). Press upward to release the internal latch.

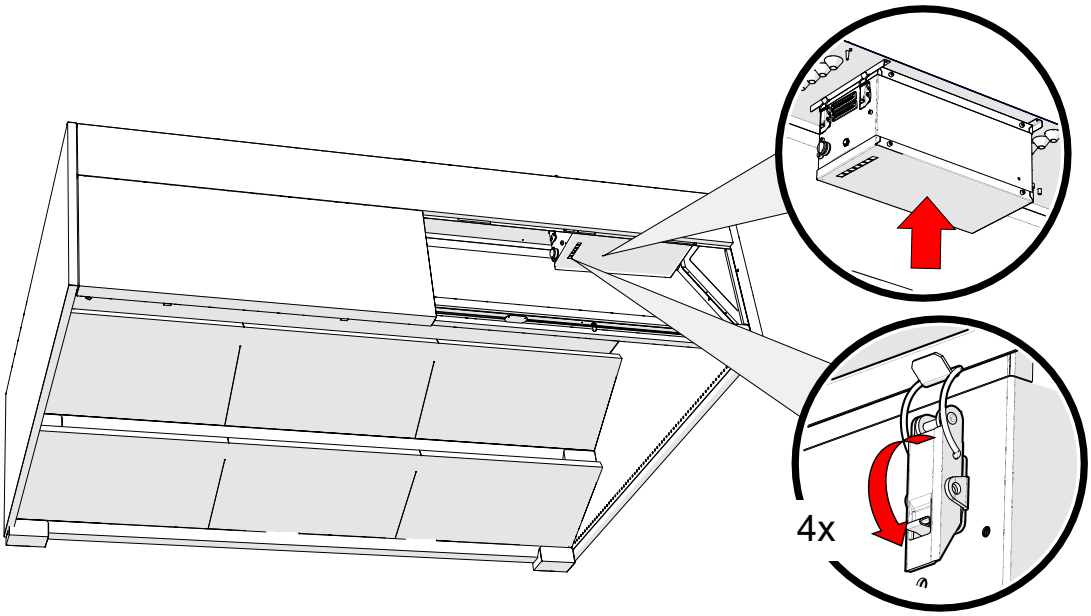
Risk of falling! Make sure installation and service personnel have stable work platforms when installing the device.



1.4 Mounting the control unit to the supply chamber

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



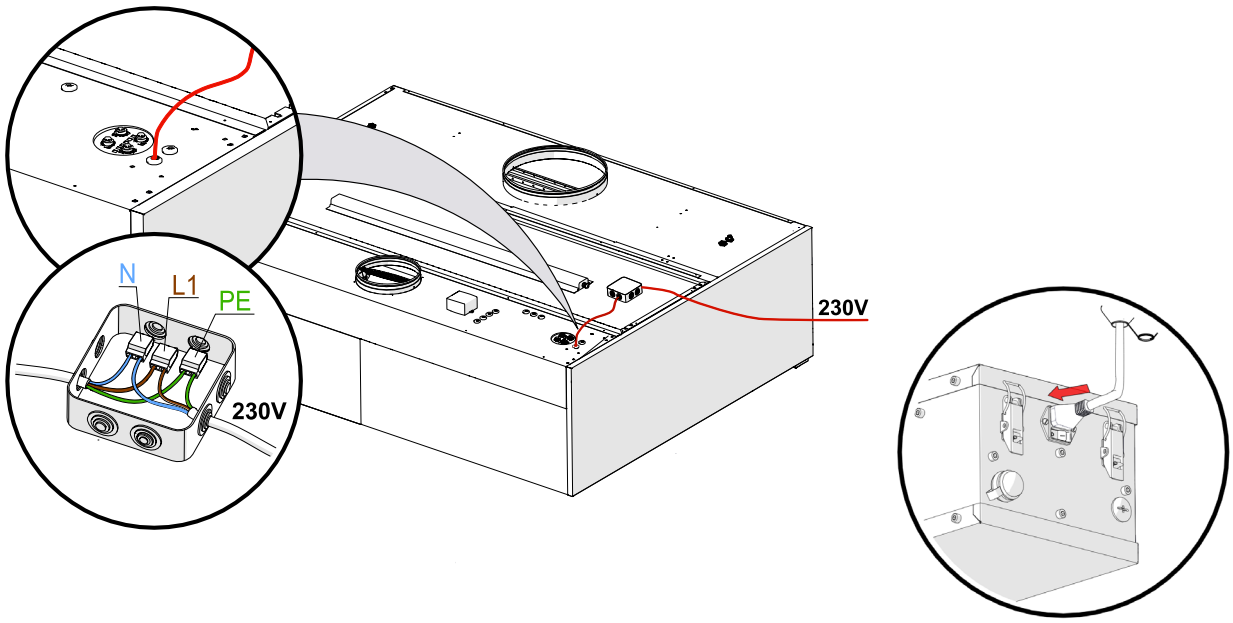


1.5 Control unit power supply

Electrical connections to the system may only be made by an authorized electrician.

One UV control unit can be connected under one C10A circuit breaker. Up to three UV control units can be connected under the C16A circuit breaker. If there are four or more control units in the system, an additional circuit breaker must be placed in the system and the loads must be distributed between different circuit breakers.

The power supply must be brought to the control units with a junction box on top of the UV canopy. If a C10 circuit breaker is used, the cable cross-section must be at least 1.5 mm^2. For the C16 circuit breaker, the cable cross-section must be at least 2.5 mm^2.



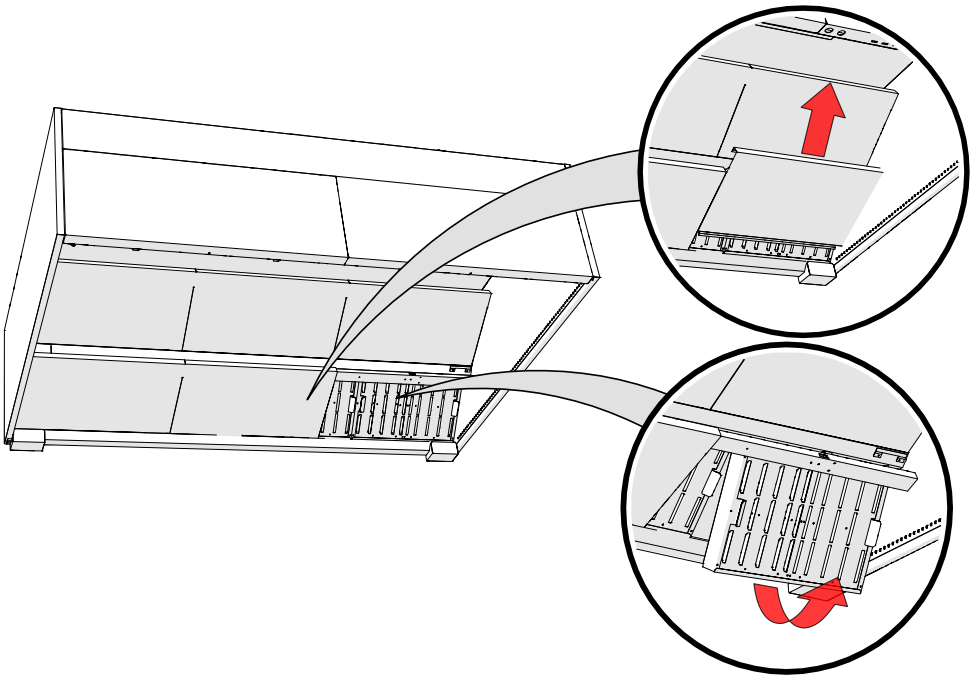
After connecting the power to the control unit, leave the power switch in the OFF position.

2. Installation of UV lamps

Use protective glasses and gloves during installation.

2.1 Removing the UV shield and grease filter

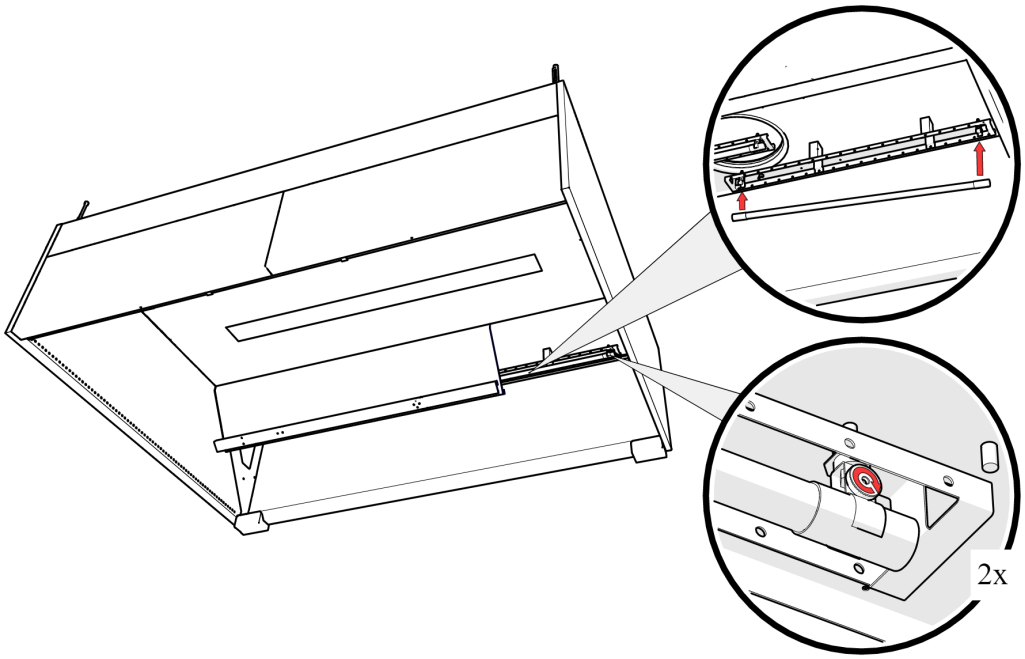
The canopy safety switches are located under the UV protection shields. When removing the UV protection shield, always make sure that the safety switch is not damaged.



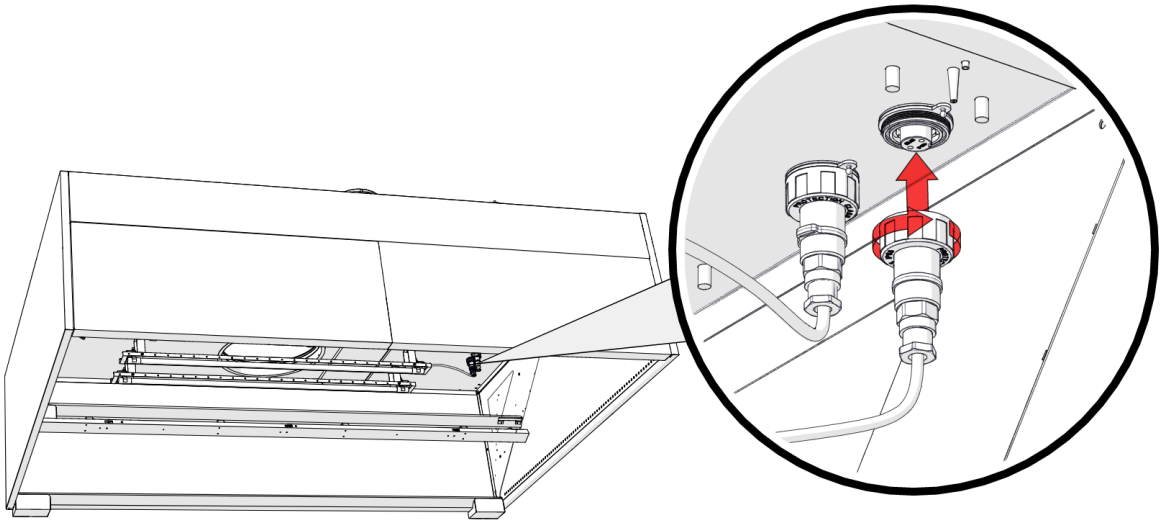
2.2 Mounting UV lamp to the exhaust chamber

Carefully attach each UV lamp to the ceiling of the extraction chamber so that the blue plastic part of the lamp remains between the clamps and not the glass portion. After the correct installation of the UV lamp, fix the mounting bracket with its screw lock.

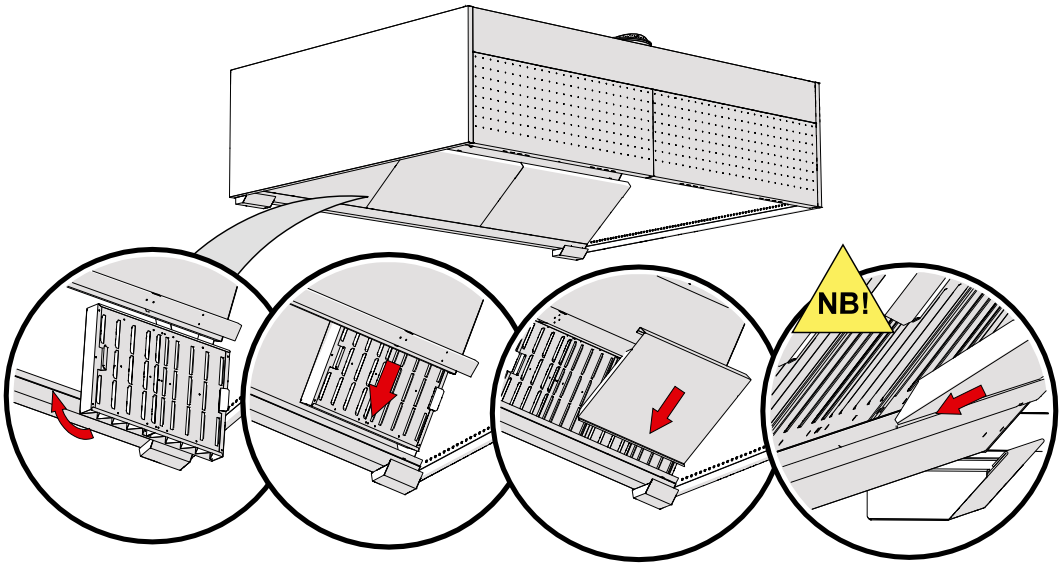
Make sure that the lamp is properly installed and secured.



Connect the power plug of each UV lamp to the socket on the ceiling of the extraction chamber.



2.3 Putting back the UV protection shield and grease filter



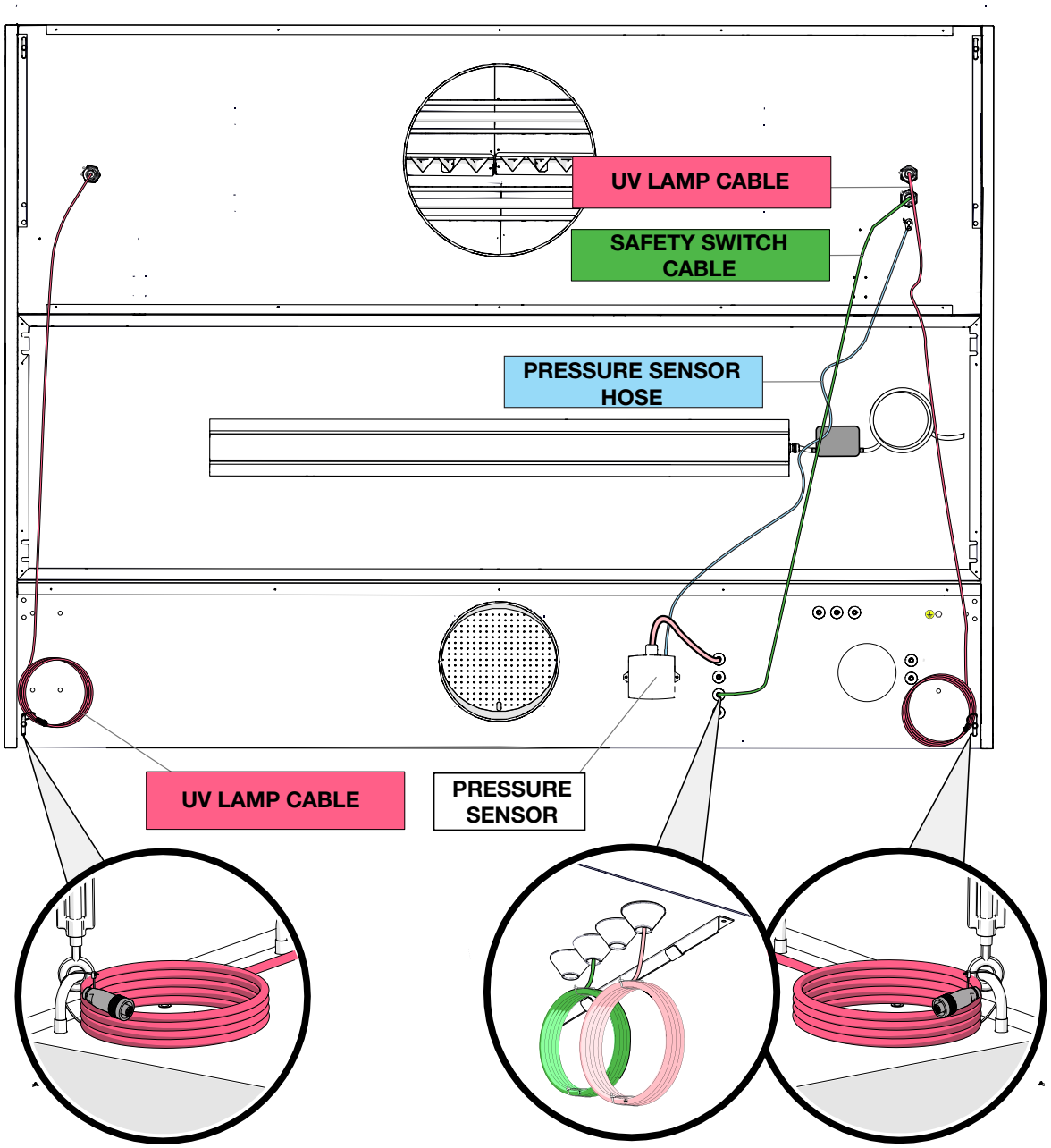
NB! When putting the UV protection shield back on, make sure it stays in place and the safety switch is pushed down.

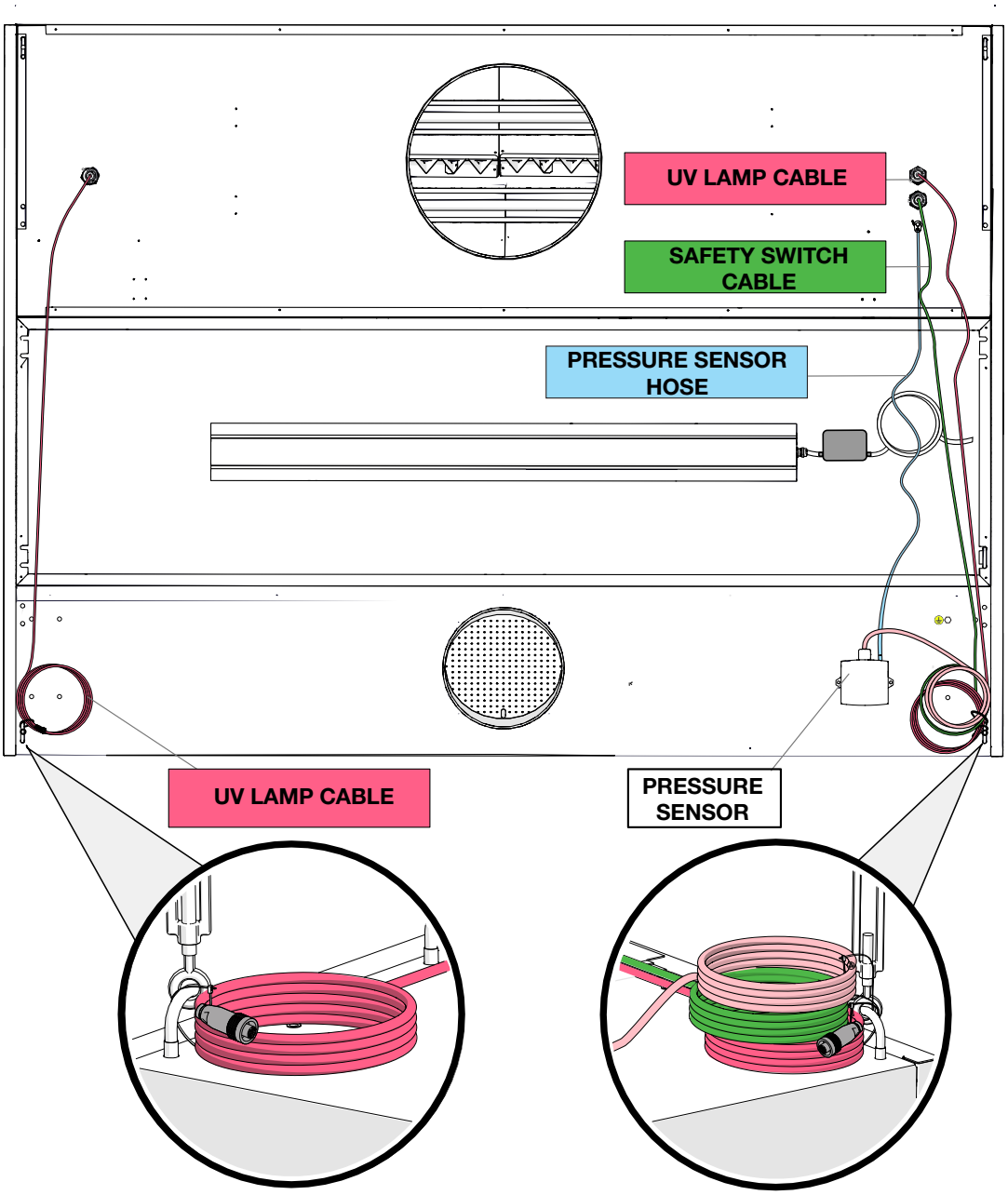
3. Electrical installation

Electrical connections to the system may only be made by an authorized electrician.

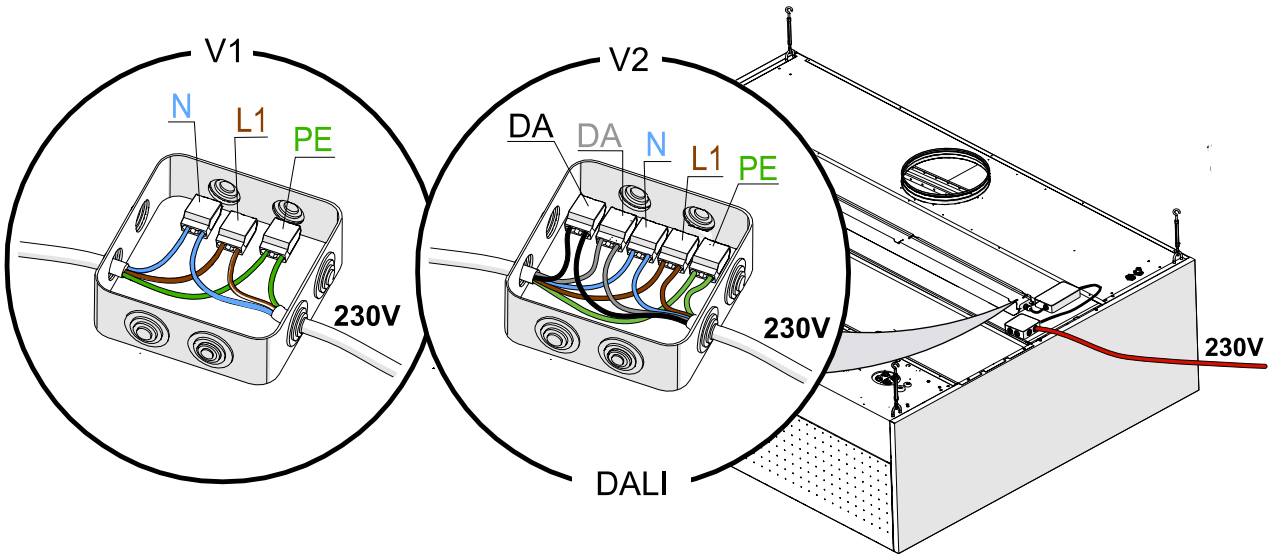
All the cablings and electrical installations indicated in the following chapters must be compiled by an electrician of the site.

3.1 Top view of UV canopies during transport



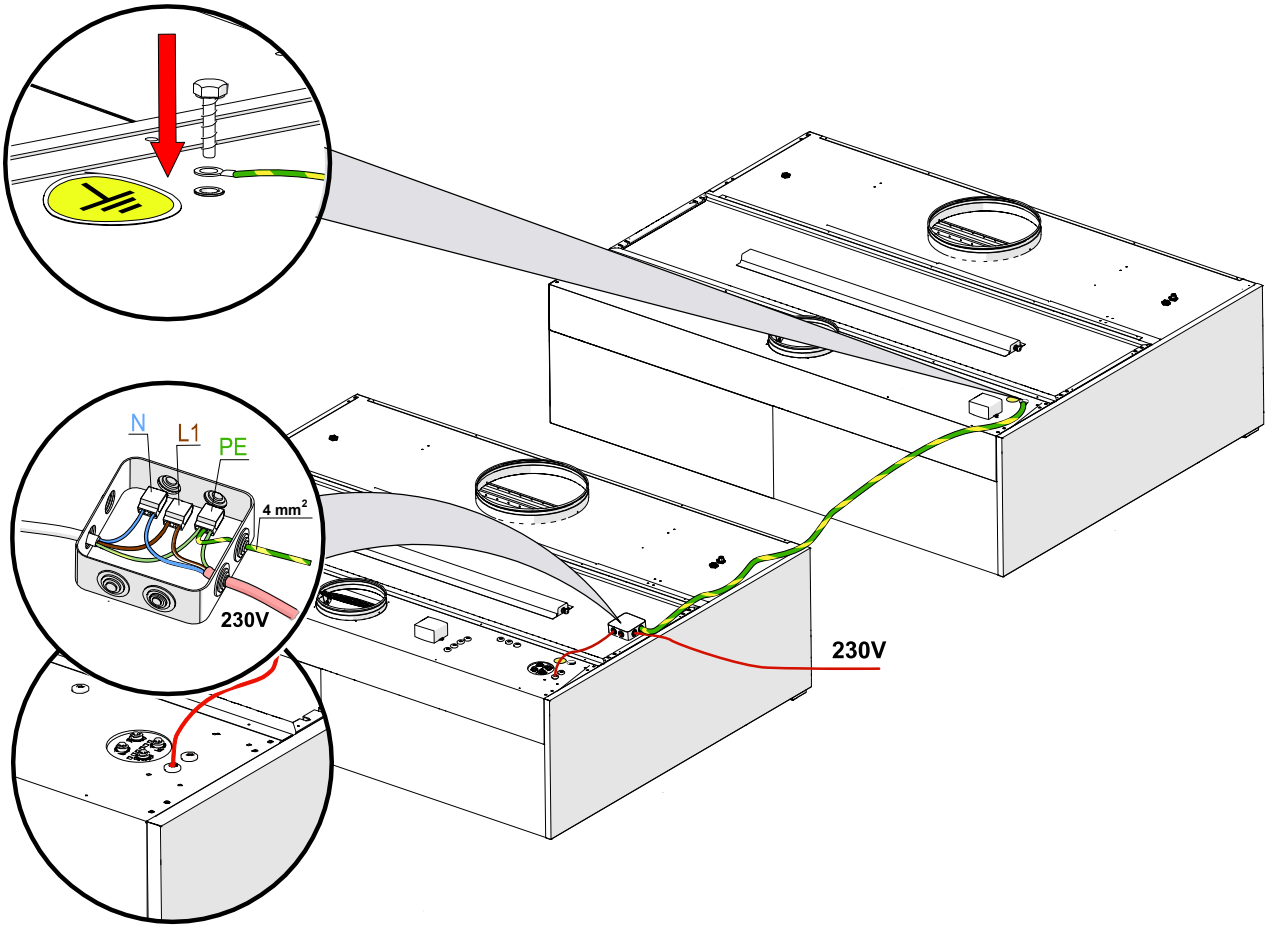


3.2 Lighting power supply connections



3.3 Grounding the canopy

All canopies where there is no UV control unit inside but there are UV lamps must be grounded with the grounding of the control unit's power supply.

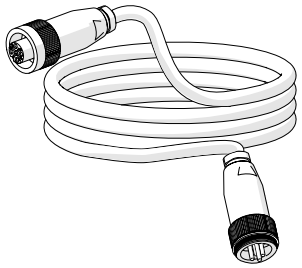


3.4 Connecting the UV lamps with the control unit

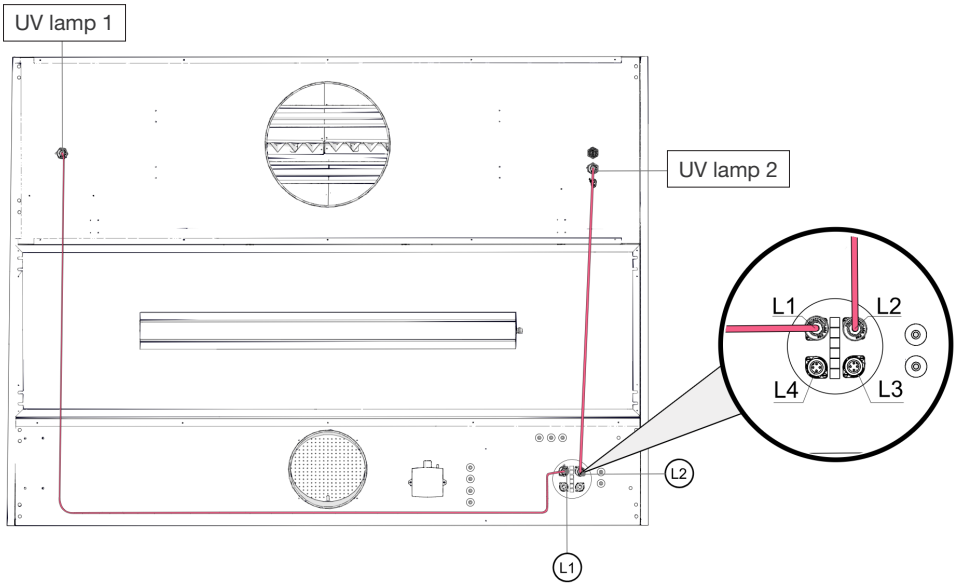
All sections of the UV canopy are always equipped with a 5-meter UV lamp cable, which can be connected directly from the UV lamp connector to the UV control unit (plug-in). UV canopies or sections where there is no control unit are equipped with a 10-meter UV lamp cable.

If any canopy or section is more than 10 meters away from the control unit, an additional cable must be ordered from ETS NORD to extend the existing UV lamp cable. The maximum cable length between the UV lamp and the control unit can be 25 meters.

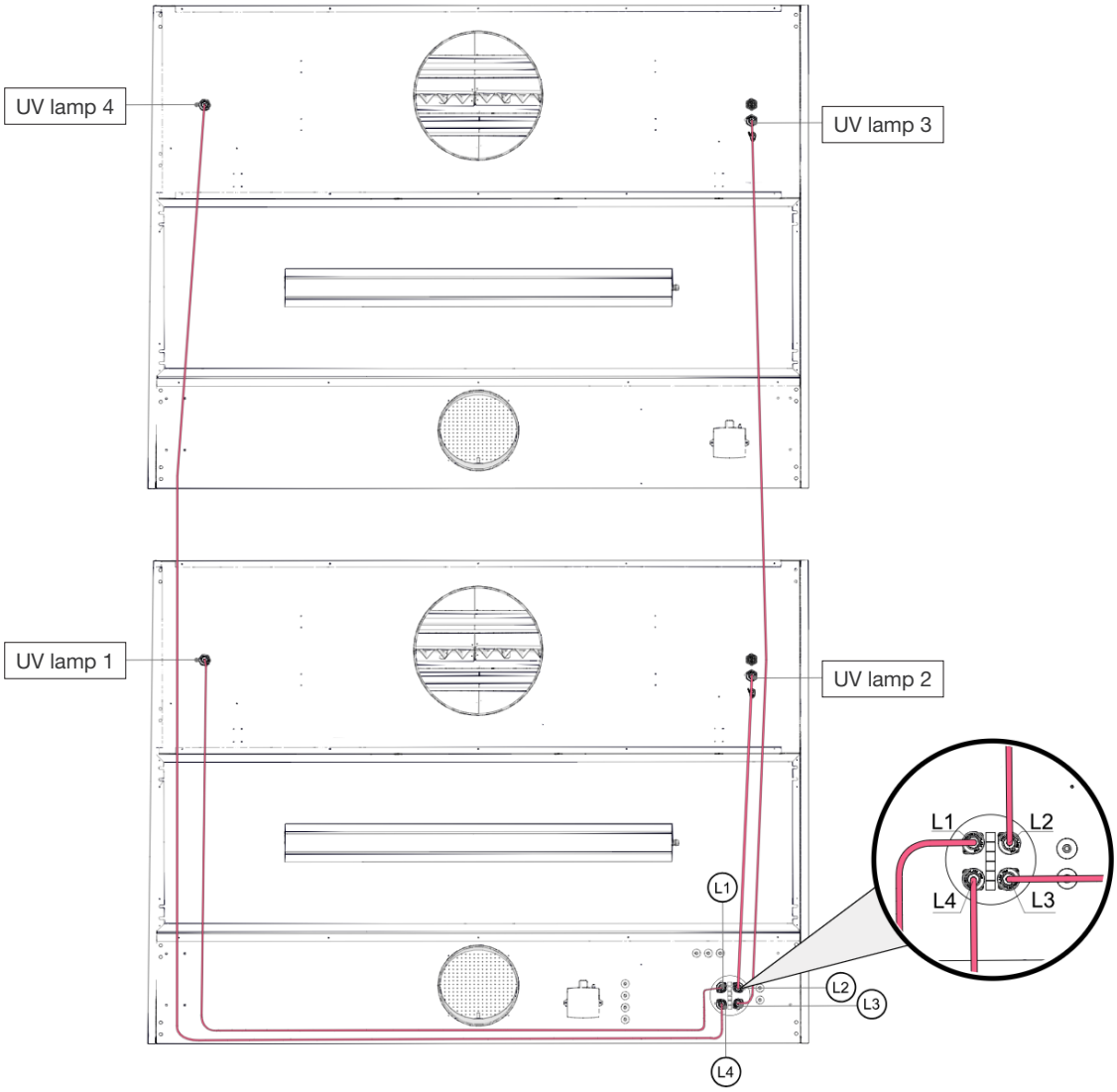
UV lamp extension cables from ETS NORD are 3, 5 and 15 meters.



Connect the canopy UV lamps to the control unit in numerical sequence. In other words, in the case of one section with a control unit and two UV lamps, connect them to sockets L1 and L2.

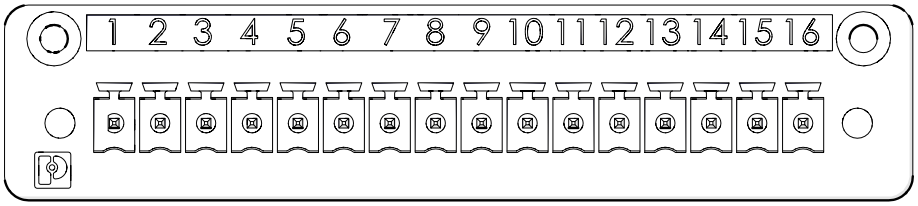


If there is more than one section or UV canopy behind one control unit, connect the UV lamps to the following connector numbers.



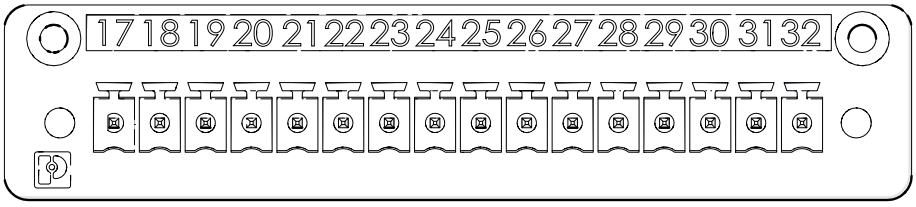
The part of the cable that is left over must be rolled up and left on top of the canopy ceiling.

3.5 External UV system connections to connector X1 on control units UV-S and UV-L



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		PE	Modbus shielding
5	(BMS) Building managment system	BIT 0	Building automation
6		BIT 1	Building automation
7		BIT 2	Building automation
8		COM	Common 24V for building automation
9	AFS/BMS (Work permission)	AFS/BMS +	Fire alarm system or ventilation device operating permit
10		AFS/BMS -	Fire alarm system or ventilation device operating permit
11	ssw1	Safety switch 1 24V	Canopy section safety switch 24V
12		Safety switch 1 GND	Canopy section safety switch GND
13	dif1	Pressure sensor 1 24V	Canopy section pressure sensor 24V
14		Pressure sensor 1 GND	Canopy section pressure sensor GND
15		Pressure sensor 1 Y	Canopy section pressure sensor control 0-10V measurement value
16	-	-	-

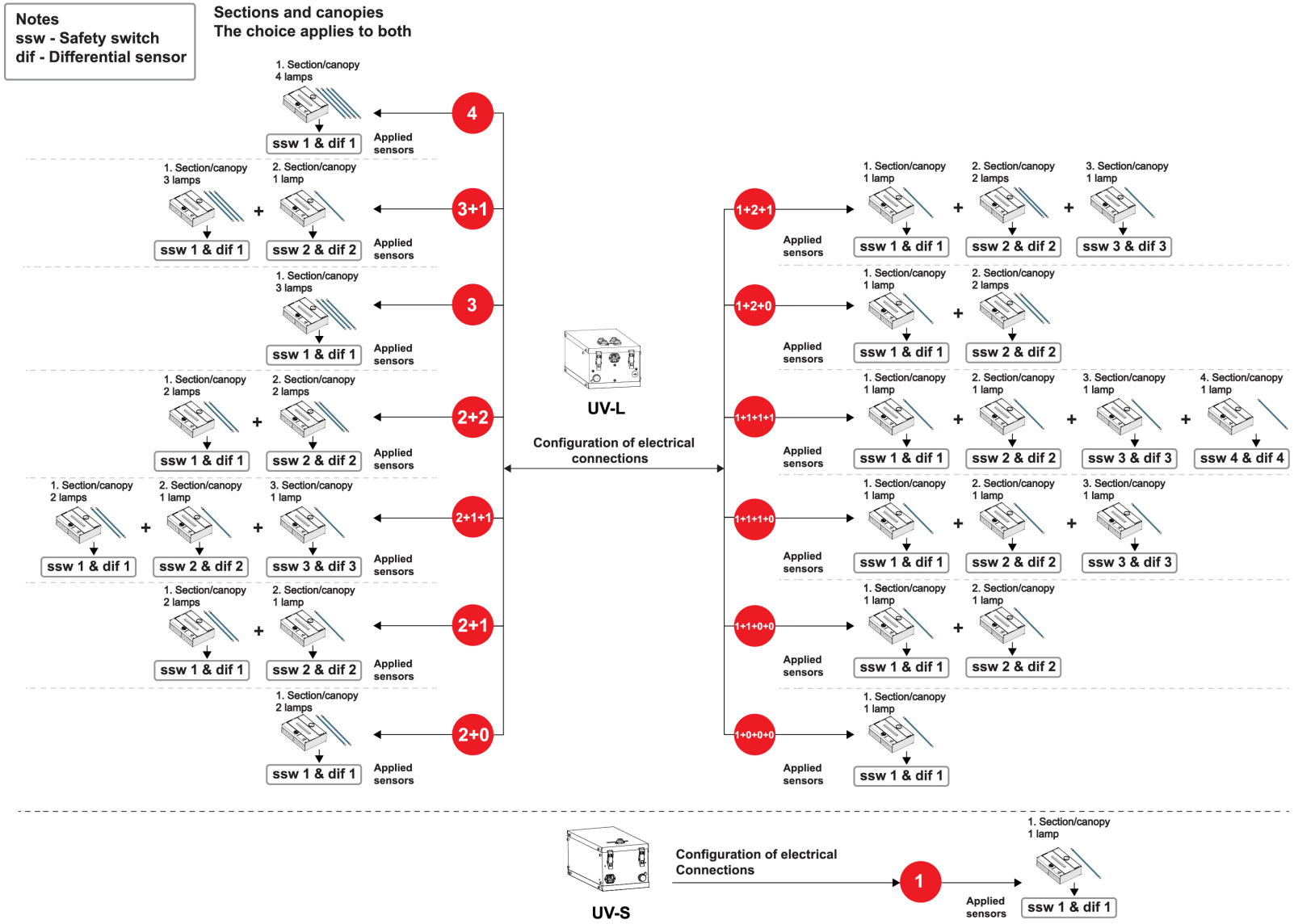
3.6 External UV system connections to connector X2 on control UV-L



Input connector	IO grouping	IO name	Terminological name
17	ssw2	Safety switch 2 24V	Canopy section safety switch 24V
18		Safety switch 2 GND	Canopy section safety switch GND
19	dif2	Pressure sensor 2 24V	Canopy section pressure sensor 24V
20		Pressure sensor 2 GND	Canopy section pressure sensor GND
21		Pressure sensor 2 Y	Canopy section pressure sensor control 0-10V measurement value
22	ssw3	Safety switch 3 24V	Canopy section safety switch 24V
23		Safety switch 3 GND	Canopy section safety switch GND
24	dif3	Pressure sensor 3 24V	Canopy section pressure sensor 24V
25		Pressure sensor 3 GND	Canopy section pressure sensor GND
26		Pressure sensor 3 Y	Canopy section pressure sensor control 0-10V measurement value
27	ssw4	Safety switch 4 24V	Canopy section safety switch GND
28		Safety switch 4 GND	Canopy section safety switch 24V
29	dif4	Pressure sensor 4 24V	Canopy section pressure sensor 24V
30		Pressure sensor 4 GND	Canopy section pressure sensor GND
31		Pressure sensor 4 Y	Canopy section pressure sensor control 0-10V measurement value
32	-	-	-

3.7 UV configuration by sections

The system configuration is established by ETS NORD when creating the order.



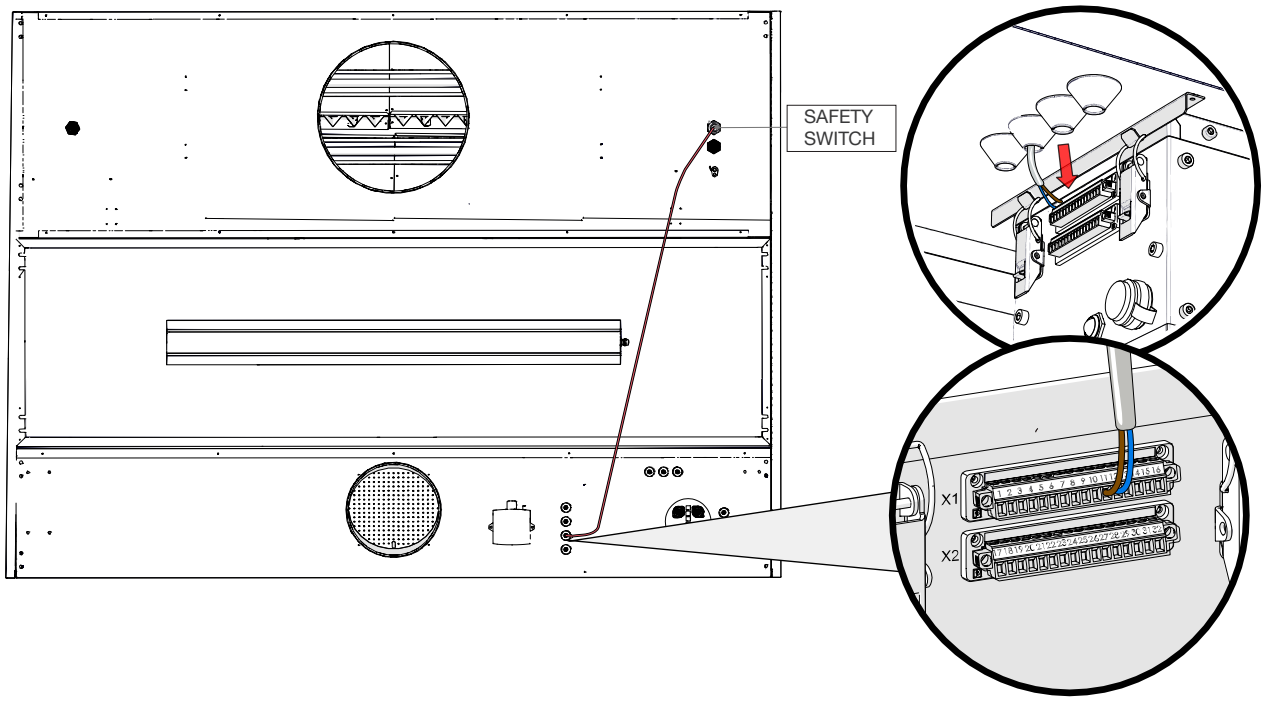
3.8 Connecting the safety switches of the canopy sections

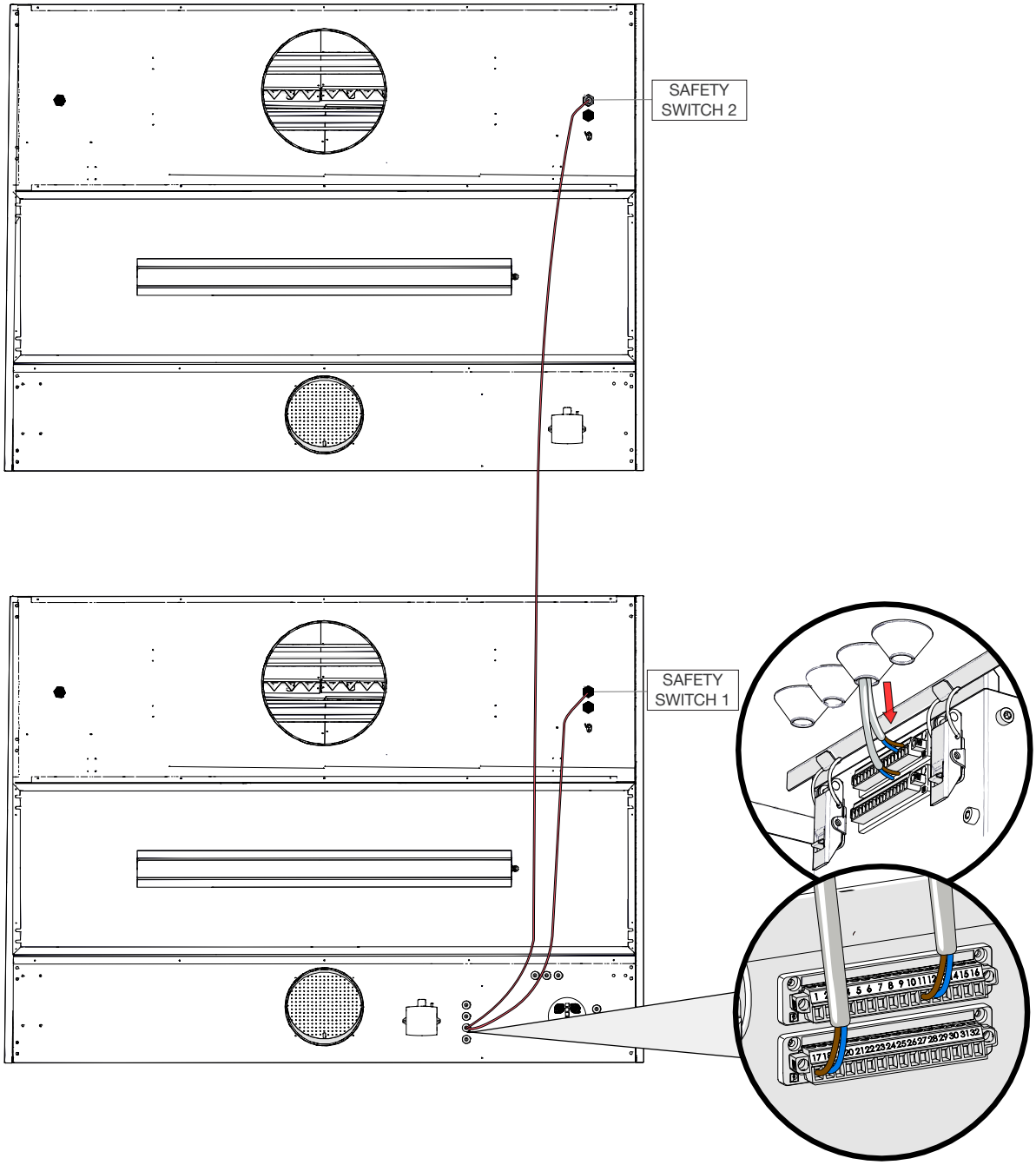
The safety switch cable for the UV protection shields is on top of the ceiling of each section (10 meters) and 5 meters on the section with a control unit, this cable needs to be connected to the UV control unit. In total, safety switches of up to four sections can be connected to one UV-L control unit.

In case a 10-meter cable isn't long enough, it can be extended with a cable with a cross-section of 2×0,5 mm^2.

Connect the safety switches of each section to the input connector of the UV control unit as follows:

Input connector	Input connector number	IO name	Terminological name	Connectable cable color
X1	11	Safety switch 1 24V	Canopy section safety switch 24V	Brown
	12	Safety switch 1 GND	Canopy section safety switch GND	Blue
X2	17	Safety switch 2 24V	Canopy section safety switch 24V	Brown
	18	Safety switch 2 GND	Canopy section safety switch GND	Blue
	22	Safety switch 3 24V	Canopy section safety switch 24V	Brown
	23	Safety switch 3 GND	Canopy section safety switch GND	Blue
	27	Safety switch 4 24V	Canopy section safety switch 24V	Brown
	28	Safety switch 4 GND	Canopy section safety switch GND	Blue





3.9 Connecting the pressure sensors of the canopy sections

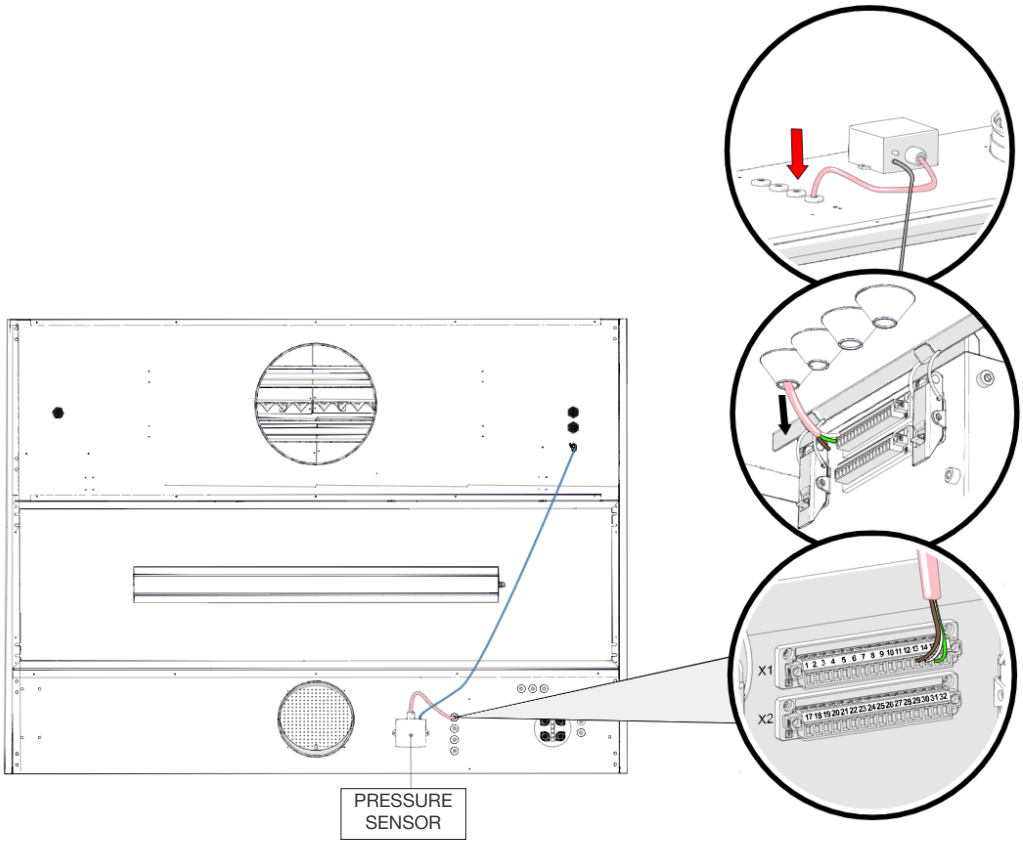
The UV canopy section pressure sensor cable is connected to the pressure sensors on the ceiling of each section and needs to be connected to the UV control unit. A total of up to four section pressure sensors can be connected to one control unit.

In case a 10-meter cable isn't long enough, it can be extended with a cable with a cross-section of 3×0,25 mm^2.

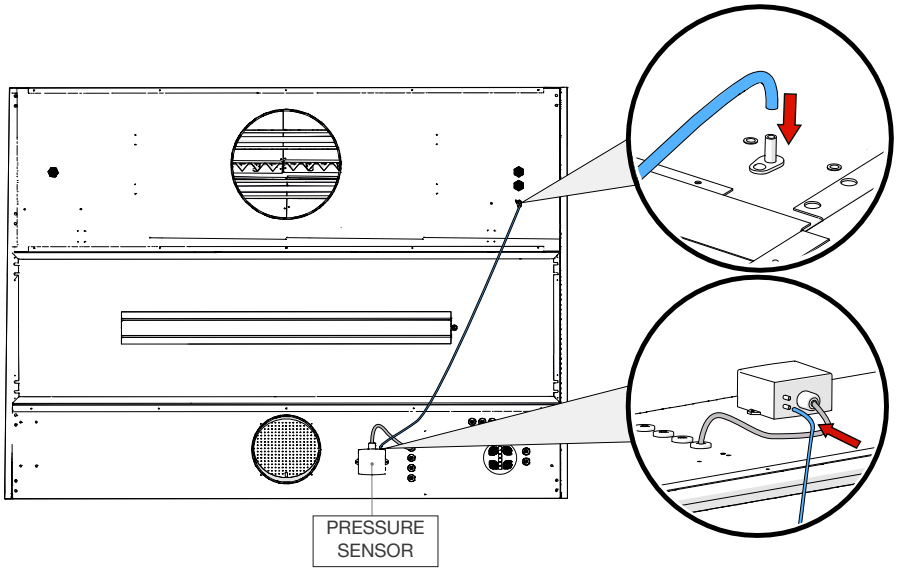
Connect the pressure sensors of each section to the input connector of the UV control unit as follows:

Input connector	Input connector number	IO name	Terminological name	Connectable cable color
X1	13	Pressure sensor 1 24V	Canopy section pressure sensor 24V	Brown
	14	Pressure sensor 1 GND	Canopy section pressure sensor GND	White
	15	Pressure sensor 1 Y	Canopy section pressure sensor control 0-10V measurement value	Green
X2	19	Pressure sensor 2 24V	Canopy section pressure sensor 24V	Brown
	20	Pressure sensor 2 GND	Canopy section pressure sensor GND	White
	21	Pressure sensor 2 Y	Kubu sektsiooni rõhuanduri juhtimine 0-10V mõõteväärtus	Green
	24	Pressure sensor 3 24V	Canopy section pressure sensor 24V	Brown
	25	Pressure sensor 3 GND	Canopy section pressure sensor GND	White
	26	Pressure sensor 3 Y	Canopy section pressure sensor control 0-10V measurement value	Green
	29	Pressure sensor 4 24V	Canopy section pressure sensor 24V	Brown
	30	Pressure sensor 4 GND	Canopy section pressure sensor GND	White
	31	Pressure sensor 4 Y	Canopy section pressure sensor control 0-10V measurement value	Green

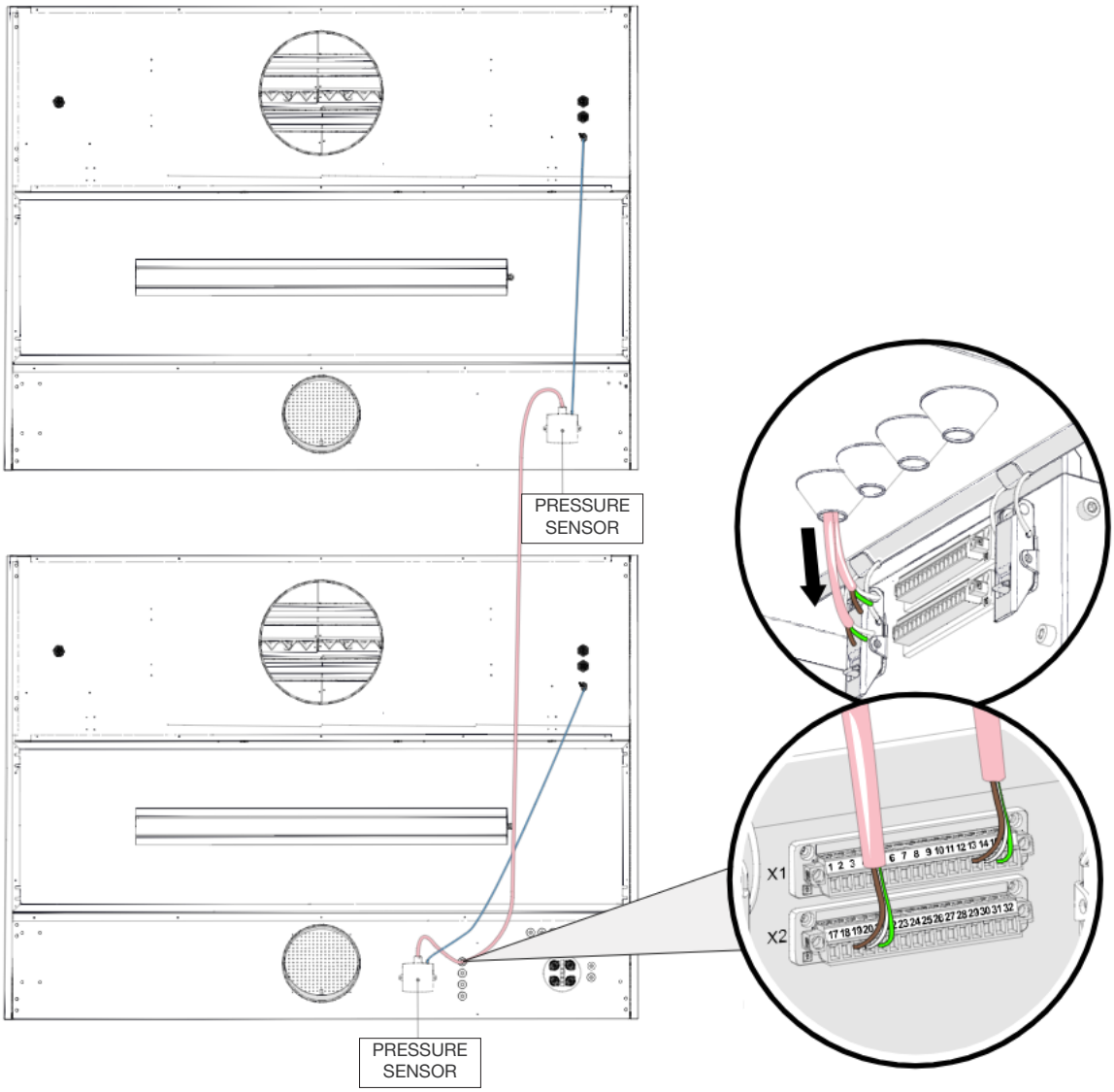
The pressure sensors (10 meters) cable and hose are already in place on the ceiling of the UV canopy inlet chamber and ready for connection.



If the pressure sensor hose has come loose during transport at the sensor or pressure measurement point place then it should be reconnected as indicated in the figure.



Connect each pressure sensor of the next section to the same control unit, similarly to the safety switches.



3.10 Control units Modbus data connection

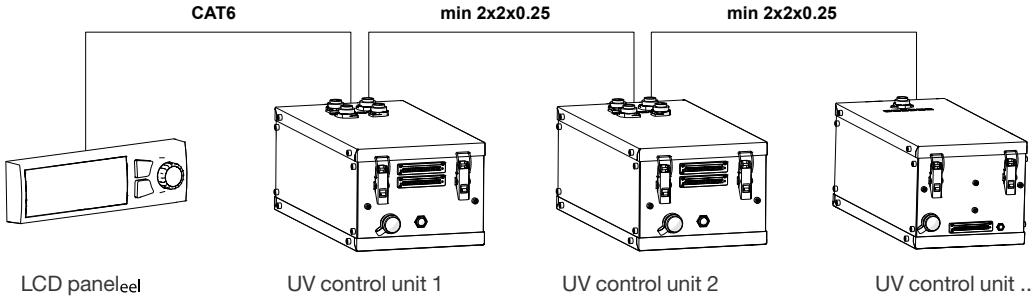
If there is more than one UV control unit in the kitchen, it must be connected in parallel directly to the next UV control unit.

The first control unit from which the cable passes to the next device must be the Master control unit, i.e. both the UV LCD control panel and the remote monitoring device M-Link must be connected to this device in the future.

Use a 2×2×0,25 mm² twisted pair cable for Modbus connection between devices. A specific type of cable characterized by the following characteristics:

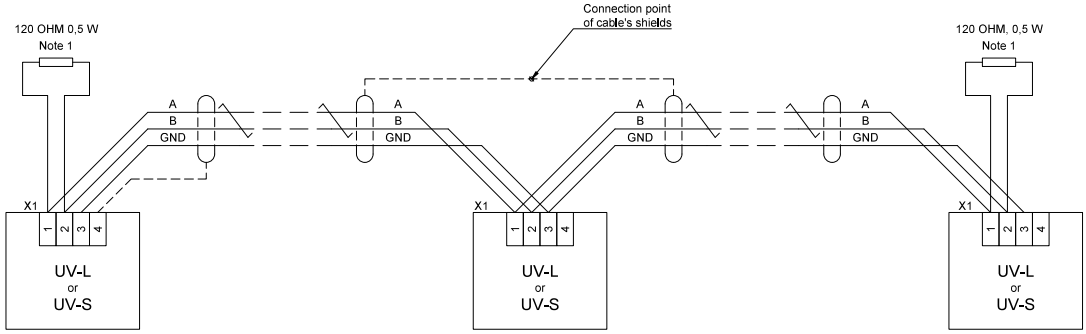
1. **Number and size of twisted pairs:**
   - 2×2 – Means that the cable contains two pairs of wires, for a total of four wires.
   - 0,25 mm² – Each wire has a cross-sectional area of 0.25 mm², which refers to the dimensions of the wires and usually refers to the diameter of the wires and their ability to carry electrical current.
2. **Twisting:**
   - Twisted pair cable consists of wires twisted in pairs, where each pair is tightly twisted to avoid electro-magnetic interference and suitable signal integrity.
3. **Connecting:**
   - First twisted pair - connect to X1 slot input connector numbers 1(A) and 2 (B).
   - Second twisted pair - connect X1 slot to input connector number 3 (GND).
4. **Recommended cable options:**
   - CAT5E; CAT6; NOMAK 2×2×0,5+0,5; JAMAK 2×(2+1)×0,5).
   - In the case of a cable with more twisted pairs, isolate the free twisted pairs - no application can be found (e.g. CAT5E). **When choosing a cable, strictly use a fiber cable!**

Input connector	IO grouping	IO name	Terminological name
X1	1	A	Modbus data (A)-
	2	B	Modbus data (B)+
	3	GND	Modbus grounding
	4	PE	Modbus shielding



Termination resistors must be added to the beginning and end of the Modbus network to get a stronger signal. Resistors can be found from the package of LCD control panel and M-Link.

Size of the termination resistors is 120 ohms 0,5 W.



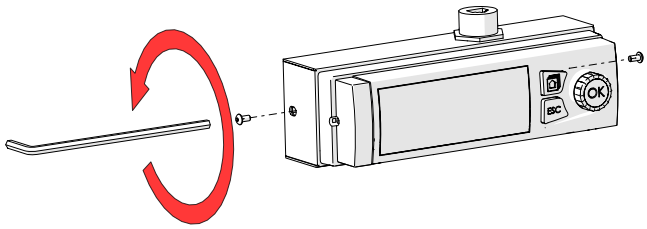
Note 1. Termination resistors must be added to the both ends of the network.

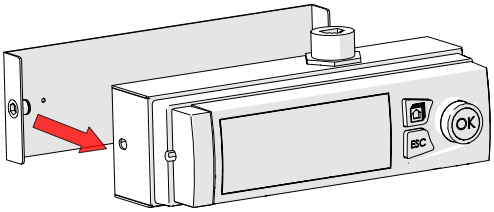
4. LCD control panel installation

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

4.1 Attaching the mounting frame and connecting the LAN cable

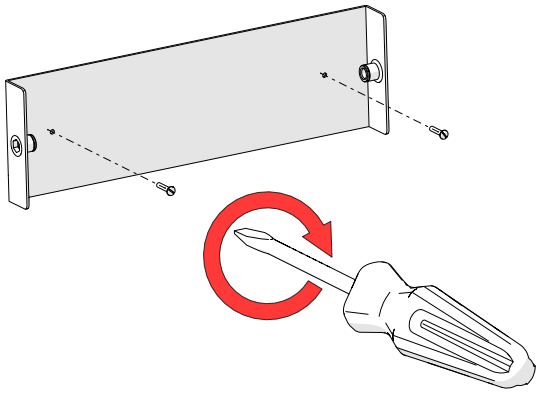
First, remove the rear bezel of the control panel by removing the two bolts on each side.



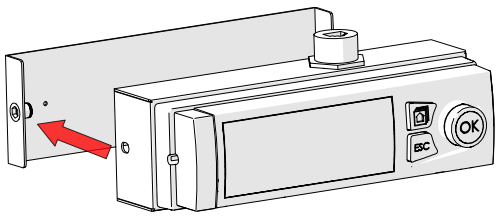


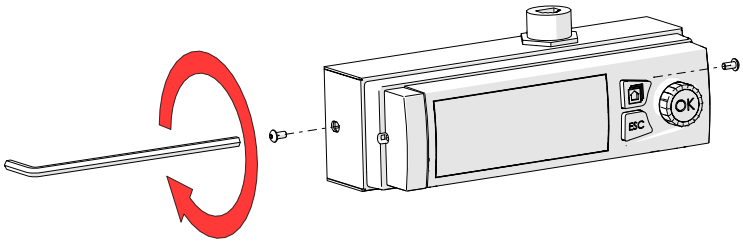
Attach the mounting frame to the wall or the side of the canopy so that the user always has free access to it.

Avoid installing the control panel in a greasy area.

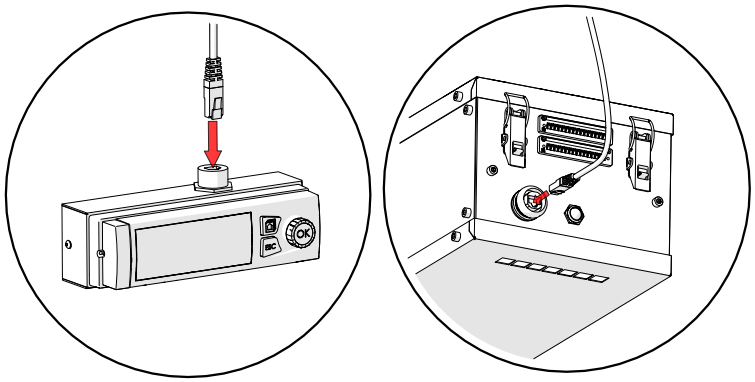


Reattach the control panel to the mounting frame and fix it with bolts on both sides.





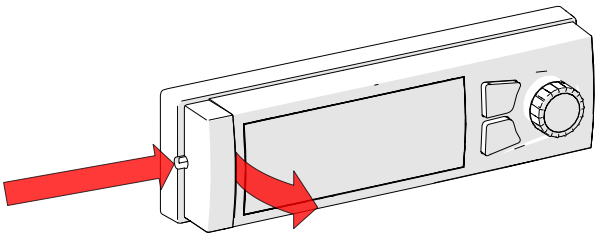
Connect the LAN cable from the control panel to the UV control unit's "LCD" socket. If there is more than one UV control unit in the system, connect the control panel to the closest control unit, which must be the Master control unit equipped with M-Link. LAN cable for the control panel is not included with the UV system and it must be installed by the electrician.

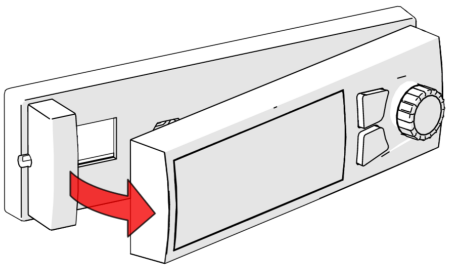


4.2 Fixing the control panel to the wall without a metal case

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.

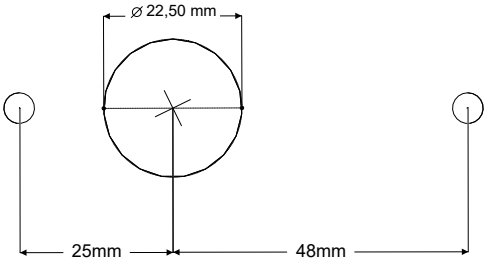
The control panel can be removed from the mounting frame by pressing the hole on the side with a screwdriver or other object.

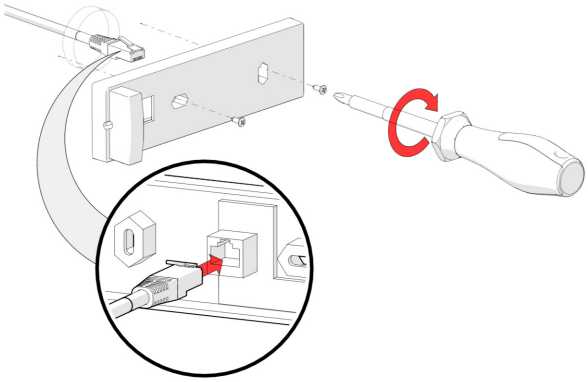




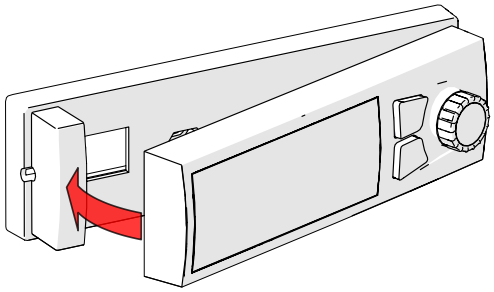
Attach the mounting frame to the wall so that the LAN cable can come through the wall from the back.

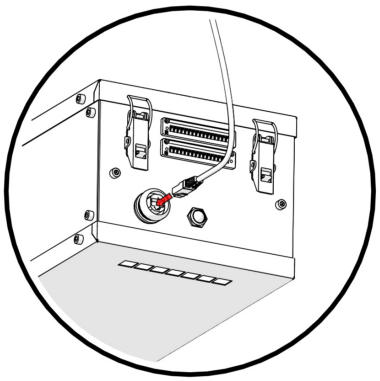
The drawing shows the mounting holes in the mounting frame.





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



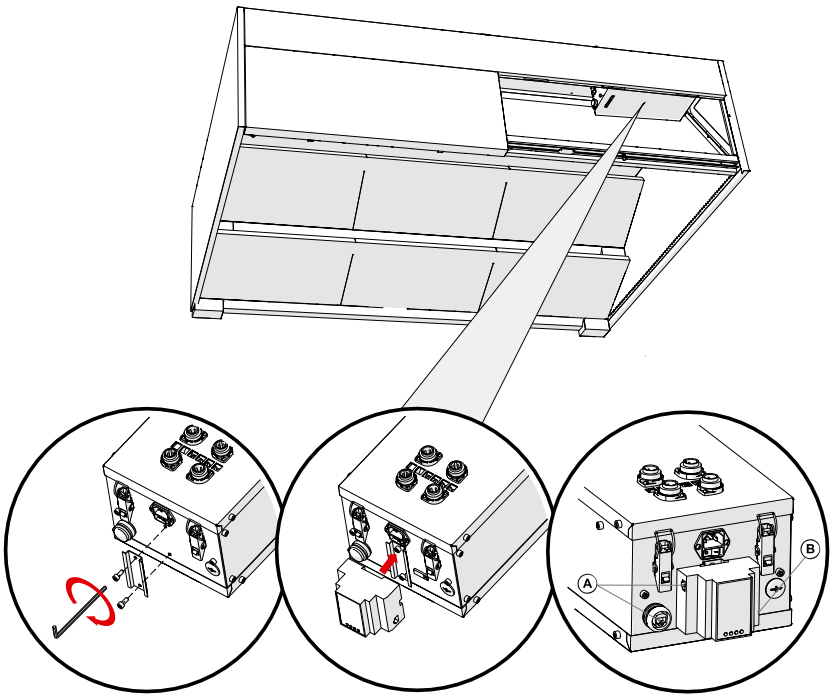


5. Connecting the remote access device M-Link

M-Link and LCD control panel are delivered in a separate package.

This device must be connected to the UV control unit. If there is more than one control unit in the system, the M-Link must be installed on the Master control unit in the system. **The master control unit is the one with the LCD control panel.**

To install the M-Link, attach the DIN rail to the control unit in a predetermined place. Next, firmly attach the device to the DIN rail as indicated in the figure.



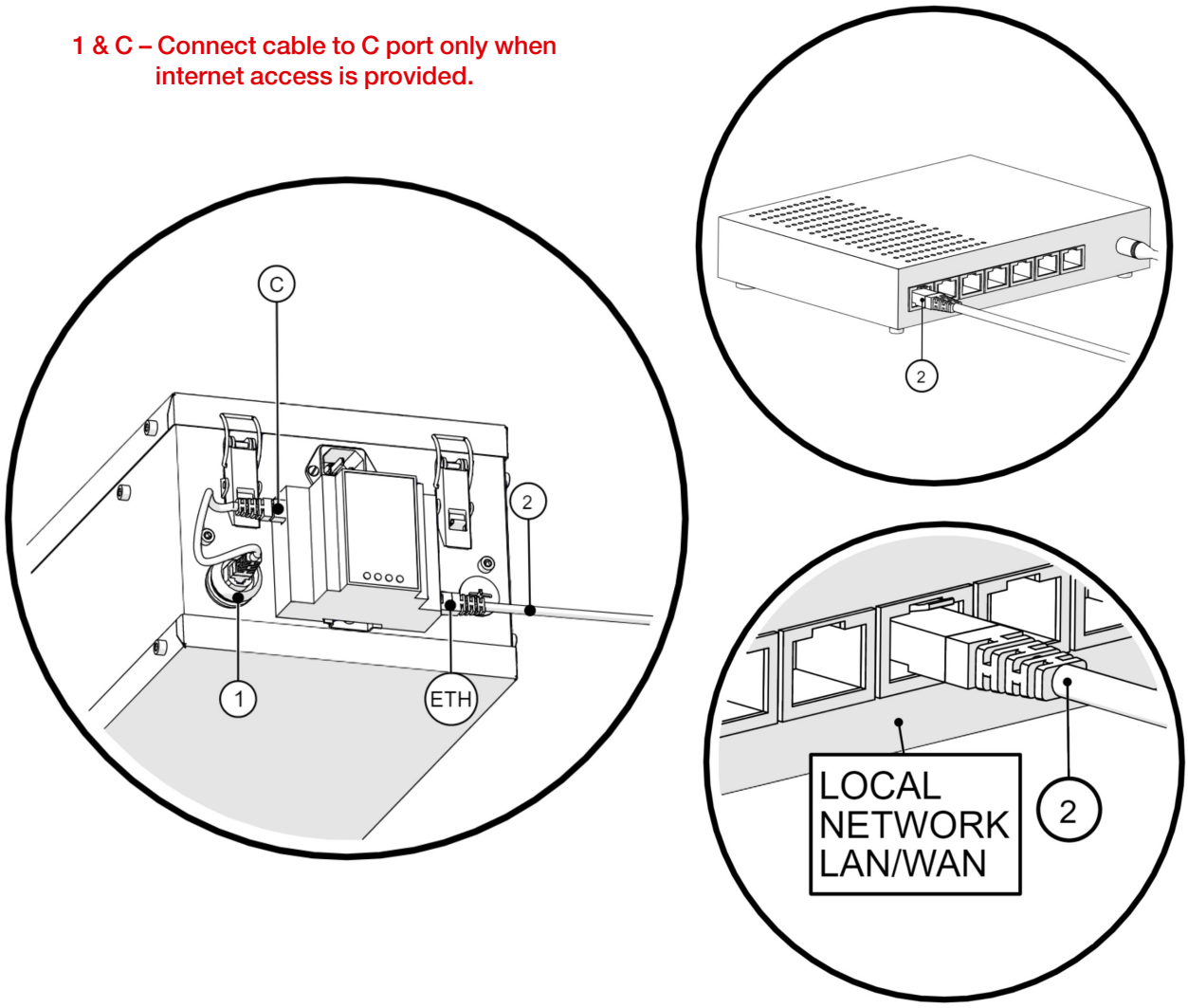
A – LAN cable connection between the device and the control unit

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

1 & C – Connect cable to C port only when internet access is provided.



1	–	LAN connector on the UV control 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 control unit

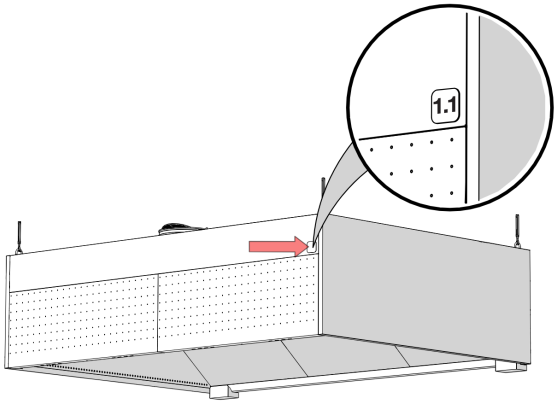
A local network is required and it must be possible to connect the M-Link to it. If the customer does not want to connect the remote access device to their local network, there is also the option of using a 4G router. The router can be purchased through the ETS NORD sales department, and additional costs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

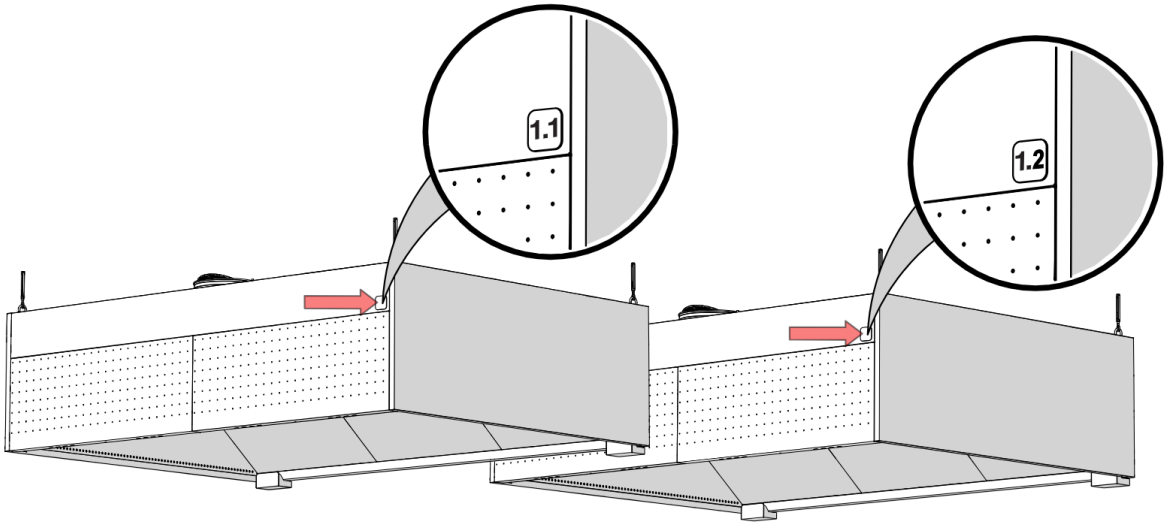
When using a router, an electrical connection must be provided by an electrician via an additional plug so that the router can be connected to the mains.

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 and the UV lamp is replaced in time.

6. Marking the canopy's sections with stickers

Canopy marking stickers are delivered in the package of the LCD control panel and M-Link. Stickers should be installed on the sections of the canopies where the UV lamps are located, depending on what configuration the UV system is configured in. For possible UV configurations, see chapter 3.7 "UV configuration by sections".
Once the control unit type has been determined, the marking of the canopies with stickers must also be carried out. With a single UV-S control unit use sticker 1.1 and with a single UV-L control unit mark the canopy with sticker 1.1 and empty canopies or sections under the same control unit with stickers 1.2, 1.3, 1.4.





If there is more than one control unit in the system, use sticker 1.X for the sections going under the Master control unit, and for the rest of the control units, mark the sections going under the Slaves according to the Modbus address of this Slave.

A maximum of three UV-L Slave control units with addresses 2, 3 and 4 and a maximum of two UV-S Slave control units with addresses 5 and 6 can be added to the system.

An example of using the stickers: There are four UV lamps under the Master control panel and they are divided between two sections. In this case, the first section with a control unit uses sticker 1.1 and the other section 1.2.

If there are two more UV-L control units in the system with Modbus addresses of 2 and 3, then they are the Slave control units and then we must use stickers 2.X and 3.X.

7. Building management system (BMS)

The ETS NORD UV cleaning system can be connected to building automation via I/O status signals, Modbus 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 center, ventilation unit or fire alarm system (FAS).

Automation guide for automation engineers can be found on ETS NORD's website.

7.1 Compatibility with building automation through status signals

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

If there is more than one UV control panel in the system and they are connected through Modbus, the I/O signals of 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
5	BIT 0	BMS
6	BIT 1	BMS
7	BIT 2	BMS
8	COM	Common 24V for BMS

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

The status table is given in the table:

Status	BIT 0	BIT 1	BIT 2
System OFF – no alarms.	0	0	0
System ON – the system is working. No alarms.	1	0	0
Maintenance – maintenance time is 10 000 h. The alarm is active, the system is working.	1	1	0
Maintenance – maintenance time is 10 000 h. The alarm is active, but the system is not working.	0	1	0
UV lamp error. The alarm is active, the system is working.	1	0	1
UV lamp error, needs maintenance. The alarm is active, the system is working.	1	1	1
Lamp maintenance time is full, pressure error, safety switch or lamp error. Alarms are active, the system is not working.	0	1	1
Pressure, safety switch or lamp error. Alarms are active, the system is not working.	0	0	1

7.2 BMS through Modbus TCP/IP

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

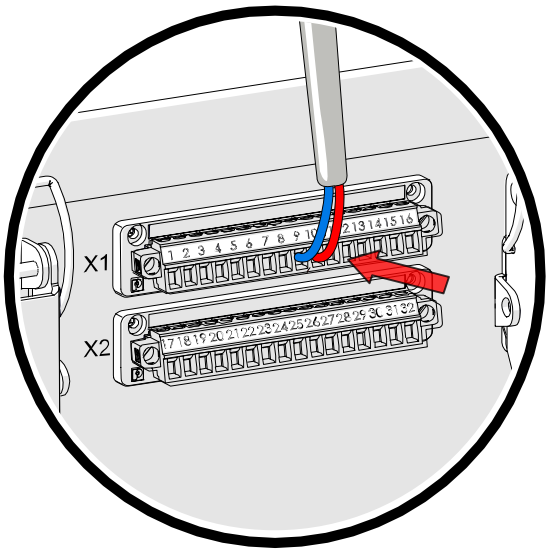
For building automation via Modbus you can find the UV 1.1 cleaning system guide for automatics on the ETS NORD website under UV cleaning system.

7.3 AFS/BMS permission and compatibility

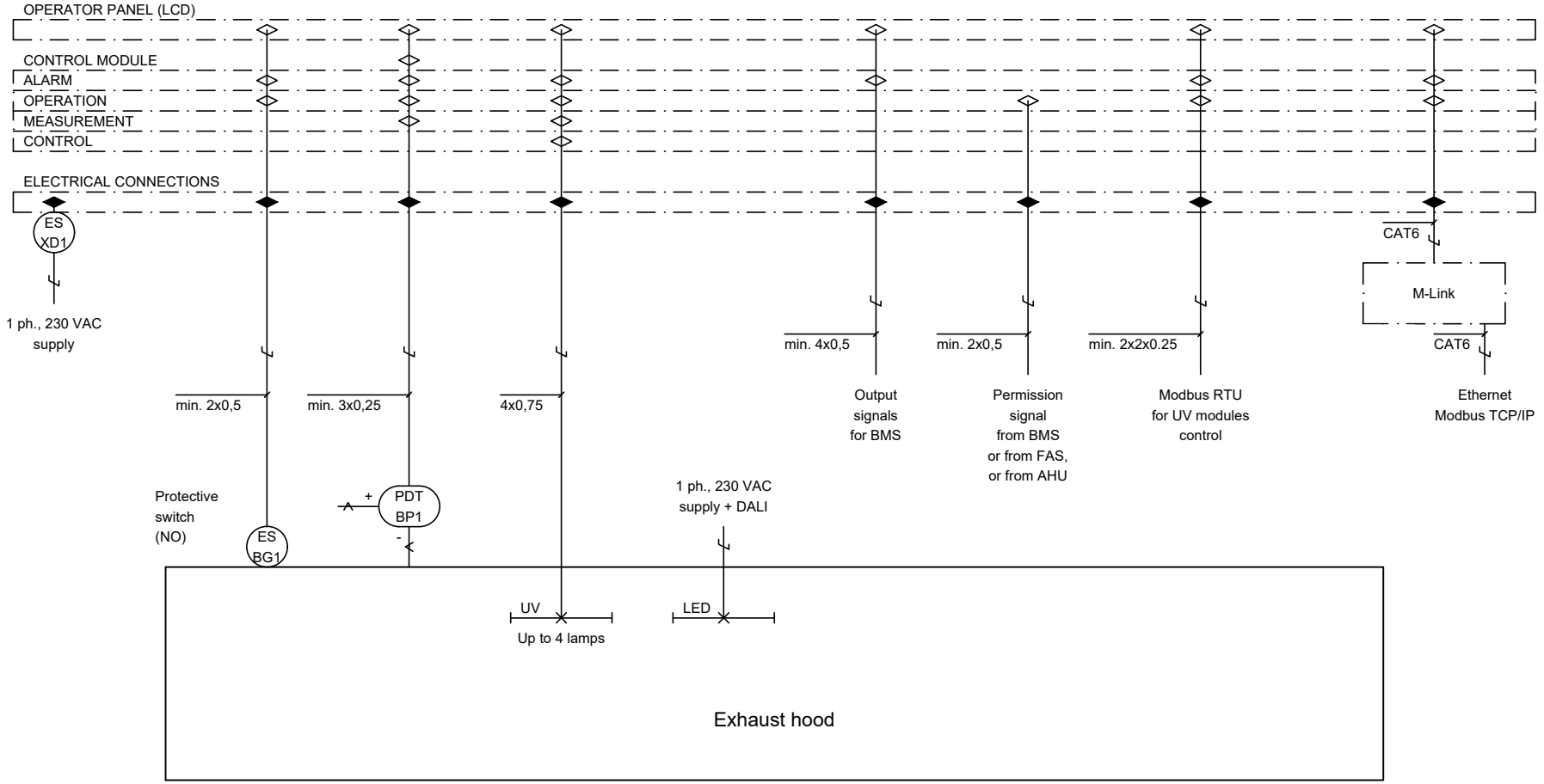
In the case of the UV system, it is possible to integrate it with an automatic fire system (AFS) or to give the system a work permit by building automation. The connection must be made to the input of the Master control unit through a potentially free NO or NC contact.

X1 input connector connections:

Input connector	IO name	Terminological name
9	AFS/BMS +	Automatic fire system and work permisison
10	AFS/BMS -	Automatic fire system and work permisison



8. UV cleaning system functional diagram



Used symbol's explanation

ES XD1 — Electric switch, Circuit diagram reference designation

PDT BP1 — Differential pressure transmitter (sensor), Circuit diagram reference designation

UV — UV mercury amalgam discharge lamp

LED — LED luminaire for canopy lighting

Physical value

Virtual value

BMS - building management system
FAS - fire alarm system
AHU - air handling unit

9. Maintenance and replacement of UV lamps

For safe handling, make sure the system is turned off before servicing the UV lamps and wait 3 minutes for the lamps to cool down after turning off the lamps.

Use protective glasses and gloves during maintenance!

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

When maintaining the UV canopy, its filters and protective shields should be washed up to once a week, according to the intensity of use of the canopy. This significantly increases the efficiency of the filters, which means that even less grease reaches the further system.

To wash the grease filters, you have to remove the protective shields from the canopy and then the grease filters. They can be washed in a regular dishwasher.

When performing canopy maintenance, the “Canopy maintenance” mode must always be activated from the UV control panel.

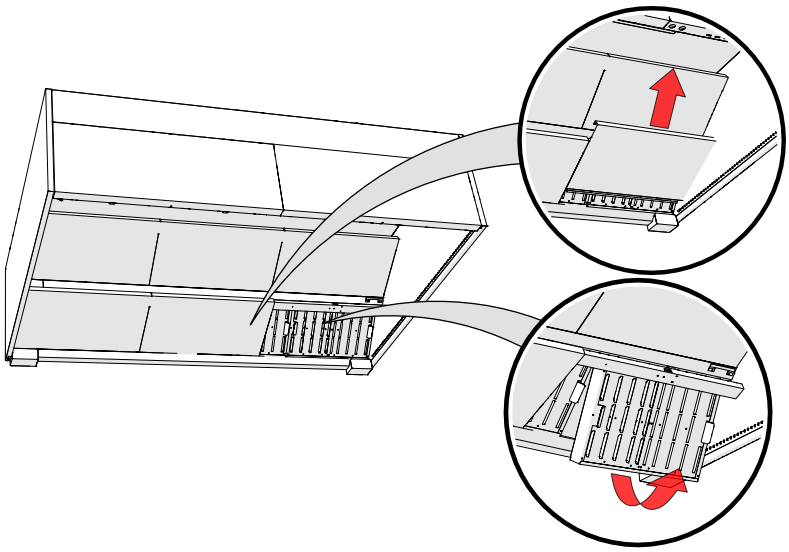
It is possible to clean and check the UV lamp without removing it from the canopy. If the “Canopy maintenance” mode is activated, it is possible to visually check the condition of the UV lamp during this time and, if necessary, clean it.

The lamps must be checked once a week and, in case of visible dirt, clean the glass surface of the UV lamp with a damp cloth. For heavier dirt, use isopropyl alcohol between 90% and 100%.

In the case of a defective lamp, it must be replaced only with an identical product from an ETS NORD sales office. Take the removed and used lamp to the appropriate waste disposal point.

Never remove the UV lamp from the canopy at the same time if you are using the “Canopy maintenance” mode. For this, the supply voltage must always be disconnected from the control unit.

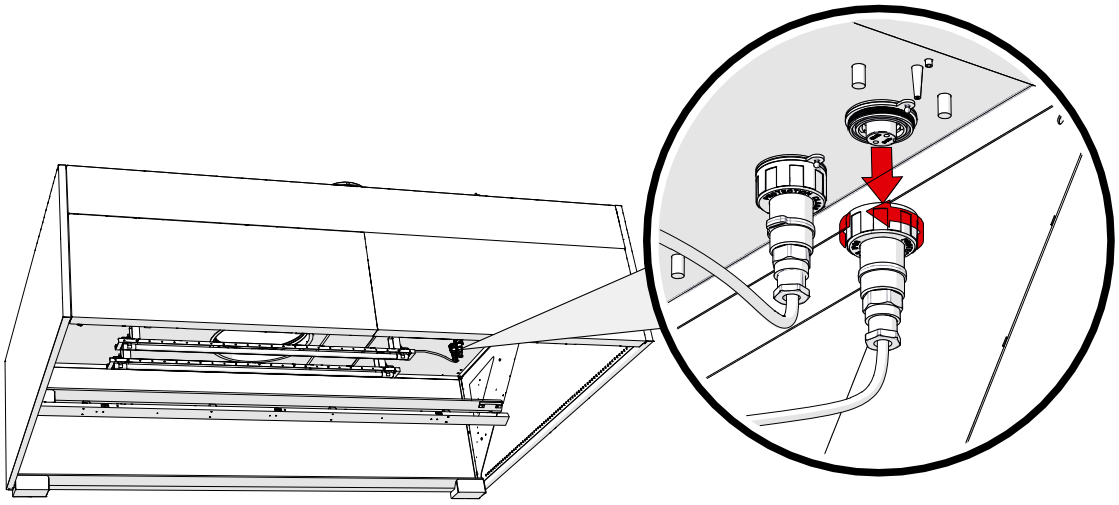
9.1 Removal of the UV protection shield and grease filter



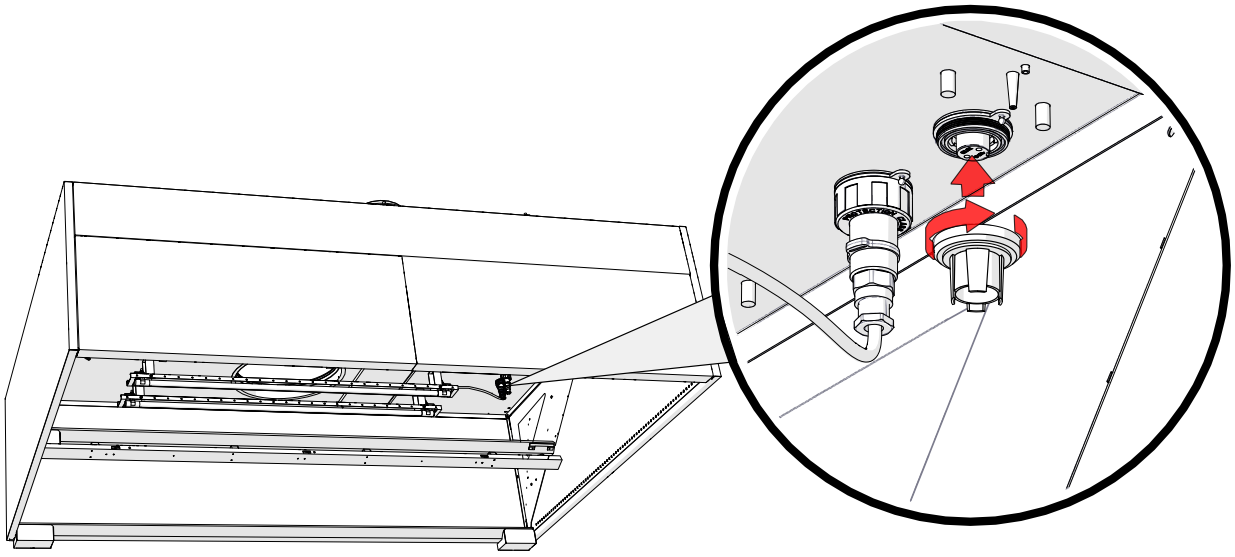
Due to the radiation hazard, the filters of the operating device must not be removed.

9.2 Disconnecting the UV lamp electrical connector

Disconnect the lamp from the power circuit by first turning the locking ring clockwise and then pulling the plug down. Do not pull on the cable, but only on the plug.

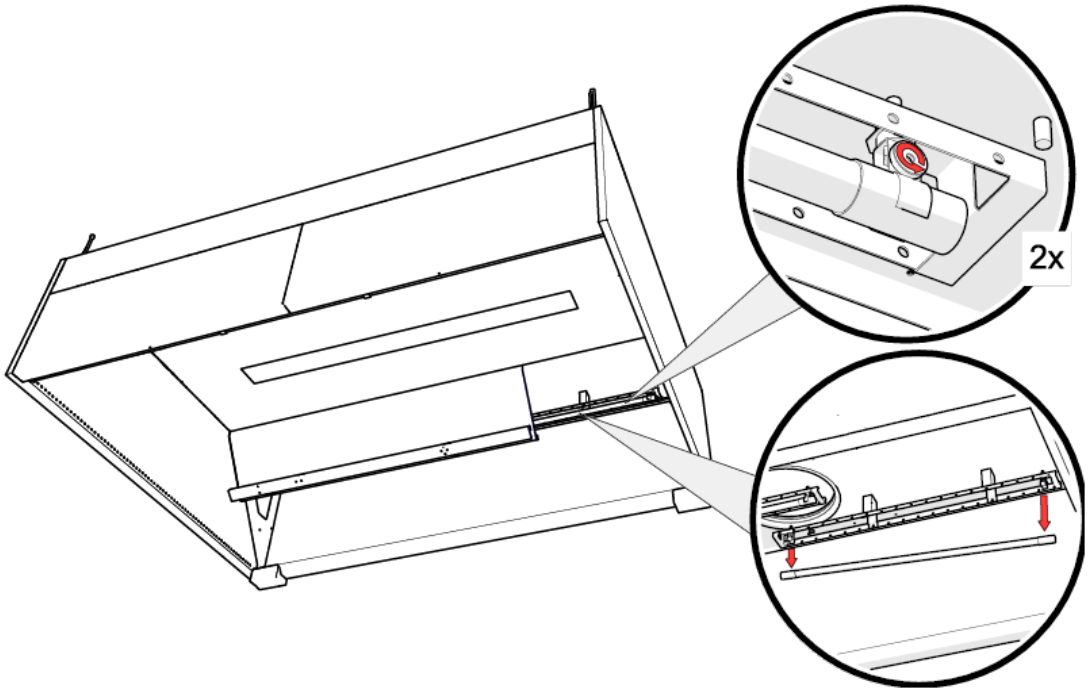


After disconnecting the plug of the UV lamp, screw its protective cap onto the plug that remains open. The protective cap hangs from the end of the plug on the ceiling.



9.3 Removing the UV lamp from the extraction chamber

Use protective glasses and gloves during maintenance!



To install a new UV lamp, see Chapter 2 “Installation of UV lamps”.
After installing the new lamp, restart the system and verify its operation through the control panel.

Facts about UV and ozone

- UV radiation is radiation invisible to the eye, consisting of several sub-rays divided by wavelength. The most dangerous of these are VUV and UVC, which are blocked by the Earth's ozone layer. Only UVB and UVA can escape the ozone layer, the dangerous effects of which are manifested by prolonged exposure.
- In the case of UV radiation, according to EN 16282-8:2017, the maximum effective radiation intensity is 0.5 mW/m^2 measured at 10 cm from the separator. In Estonia, the limit of effective radiation intensity in the working environment is 30 J/m^2 for 8 hours of exposure or 1 mW/m^2 in Annex 1 of VV Regulation No. 47.
- Prolonged exposure to UV radiation can cause the following injuries:
  - On the skin: irritation and burning sensation
  - In the eyes: severe irritation, burns and decreased vision
- Ozone is a colorless gas whose sharp smell can be recognized by a person at a concentration of 0.02 ppm (0,4 mg/m^3).
- Ozone smells similar to chlorine used in swimming pools.
- When using ozone, the current legislation must be observed. In Estonia, the following hygienic limits for ozone have been provided:
  - 0,05...0,2 ppm (during working hours, 8 hours)
  - 0,3 ppm (15 minutes)
- Acute exposure to ozone can cause the following injuries:
  - On the skin: irritation and burning sensation
  - In the eyes: severe irritation, burns and decreased vision
  - Lungs: irritation in the respiratory organs and breathing problems
- If ozone is detected indoors, precautions should be taken.

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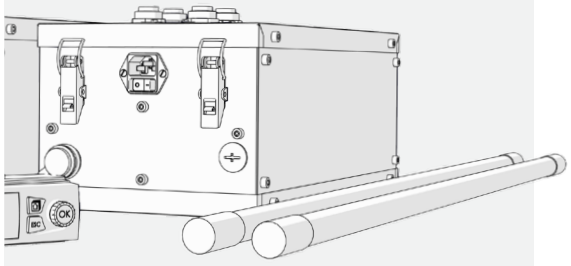

Let's move the air ***together!***