# GRAM ECO $CO_2$ REMOTE

User manual

ECO PLUS, ECO TWIN, ECO EURO, ECO MIDI

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# ENGLISH

Thank you for choosing a quality product from Gram Commercial.

This manual will advise you how to install, use and maintain your new product.

Before our products leave the factory, they undergo a full function and quality test. Should you nevertheless experience problems with the product, then contact your local dealer.

Gram Commercial subsidiaries and dealers placed all over the world are ready to help you.

Products produced by Gram Commercial are covered by different warranty terms related to the country in which the product is sold.
This warranty is subject to correct use according to specifications, where e.g. common maintenance and eventual repairs are carried out by technicians appointed by the dealer and with a general knowledge of the product.

Changes in installation and other use of the product than specified in this manual, might affect the operation and durability of the product.

The manual is written according to our current technical knowledge. We constantly work on updating this information, and we reserve the right to make technical changes.

## Application

This product is designed for storage of foodstuff at a constant temperature. The product may not be used for chilling or freezing of foodstuff.

The product is only to be used for the purpose for which it has been expressly designed. Any other use could cause that the products stored in the product are not kept at the right temperature.

The manufacturer will not be held liable or responsible for any damage caused by improper, incorrect or unreasonable use.

# Safety information

## *Important*

Description of symbols used in this manual.

**Warning** Lacking observation to these instructions might result in accidents with personal injury.

**Important** If these instructions are not observed, the product might be damaged or destroyed.

Be aware that Gram Commercial has taken precautions to ensure that the safety of the product is in order.

## *Please read carefully the following information regarding safety.*

It is important, that everyone who are to use or install the product, to have access to this manual.

This appliance is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

The appliance might contain parts with sharp edges in the compressor compartment, and in the inside compartment.

The appliance is not to be transported on a sack truck, there is a danger of losing the balance, causing danger to persons.

Do not pull the power cord to disconnect the appliance, or when moving the appliance.

# Location

When receiving the product, check the packaging material for damage.

If any damage occurs at the packaging material, it should be considered if the product might have been damaged too. If the damage is substantial, please contact your dealer.

The transport pallet can be removed by loosening the screws that fasten the pallet to the product.

⚠ This task requires at least 2 persons. The heaviest part of the product is at the top. Be aware of this, when removing the transport pallet.

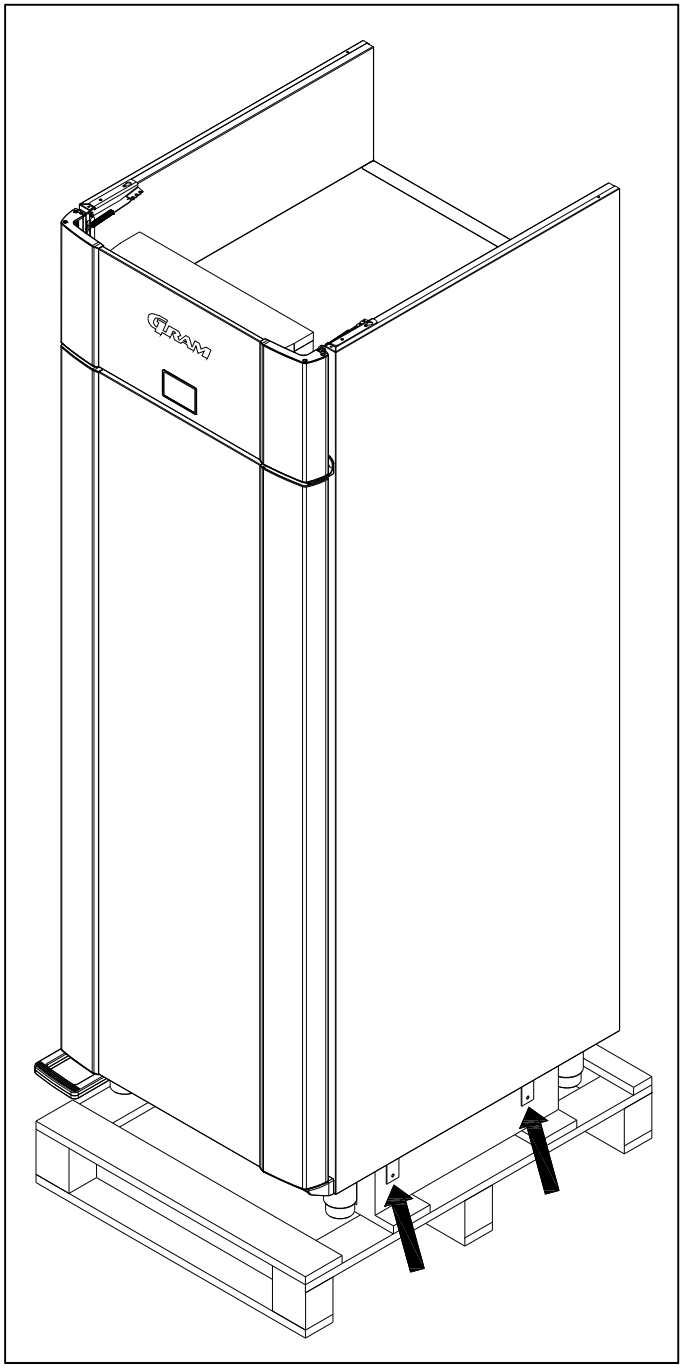


Fig.1

- Because of the heavy weight of the product, the floor might be damaged or scratched when moving the product.
- Correct set up gives the most effective operation.
- The product should be located in a dry and adequately ventilated room.
- To ensure efficient operation, it may not be placed in direct sunlight or against heat-emitting surfaces. The product is designed to operate in an ambient temperature between +16°C and +40°C.
- Avoid placement of the product in a chlorine/acid-containing environment (swimming bath etc.) due to risk of corrosion.
- The product and parts of the interior is equipped with a protecting film, which should be removed before use.
- Clean the product with a mild soap solution before use.

The set up place must be level and horizontal.

For versions with legs, use the adjustable legs to make sure that the product stands level and upright.

For versions with castors, the locking devices of the two front castors must be activated, when the product is in place. The base must be level, and the product may not be placed on frames or the like.

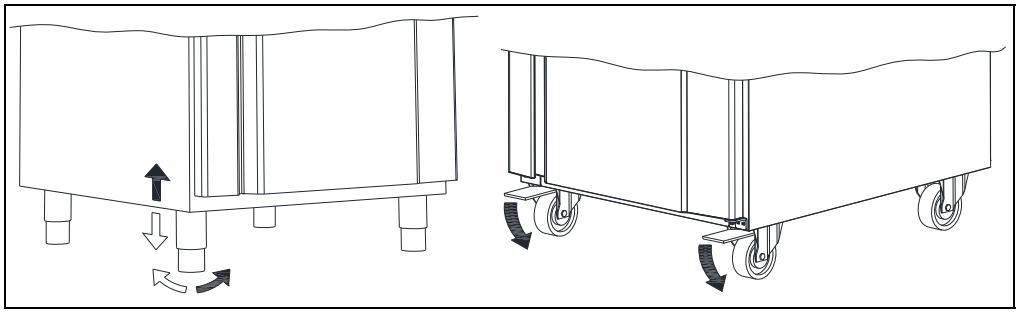


Fig. 2

There must always be 20 cm of free space above the product, to allow for service.

The product should be placed as close as possible up against the wall.

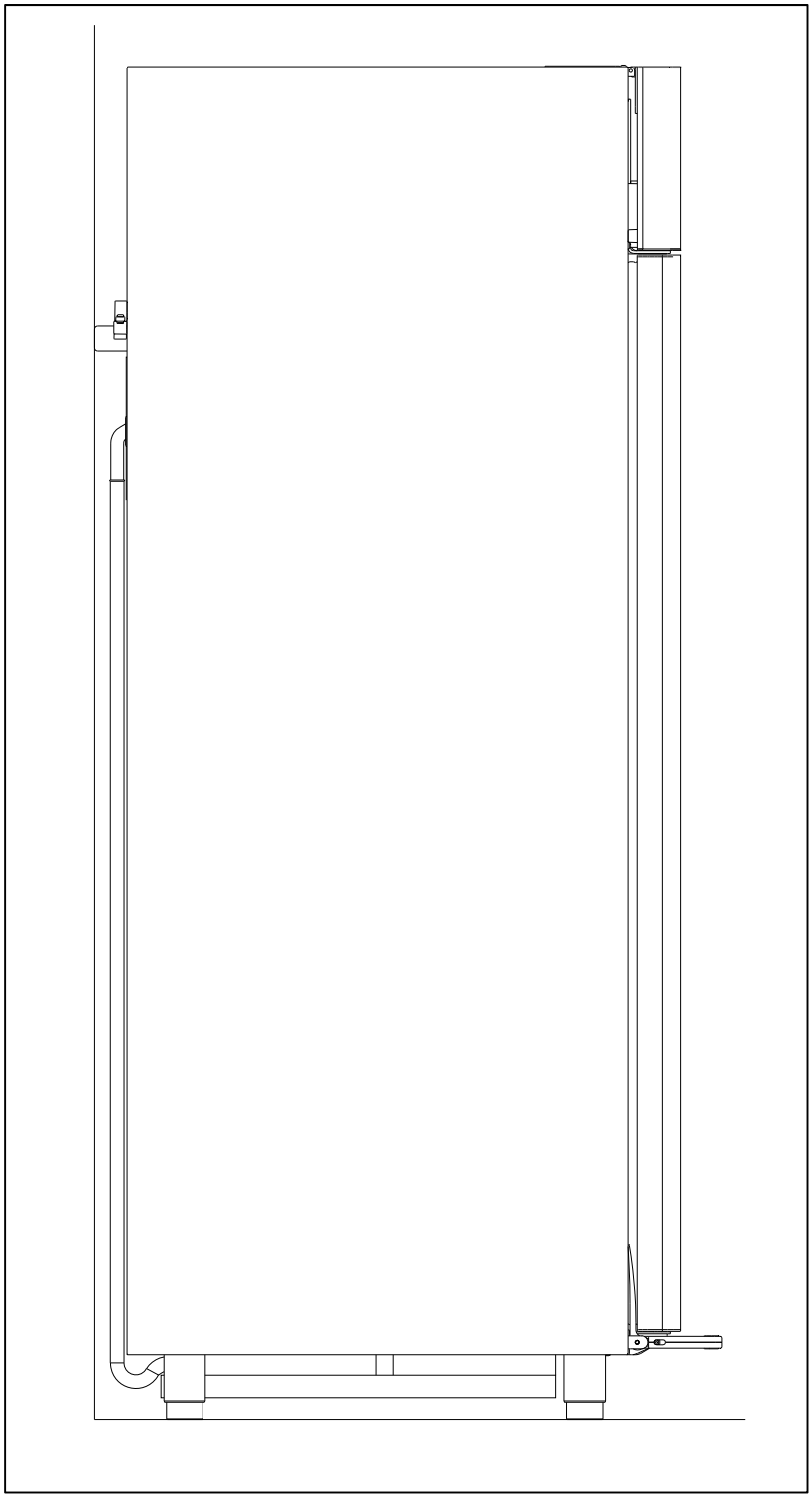


Fig. 3

# General description

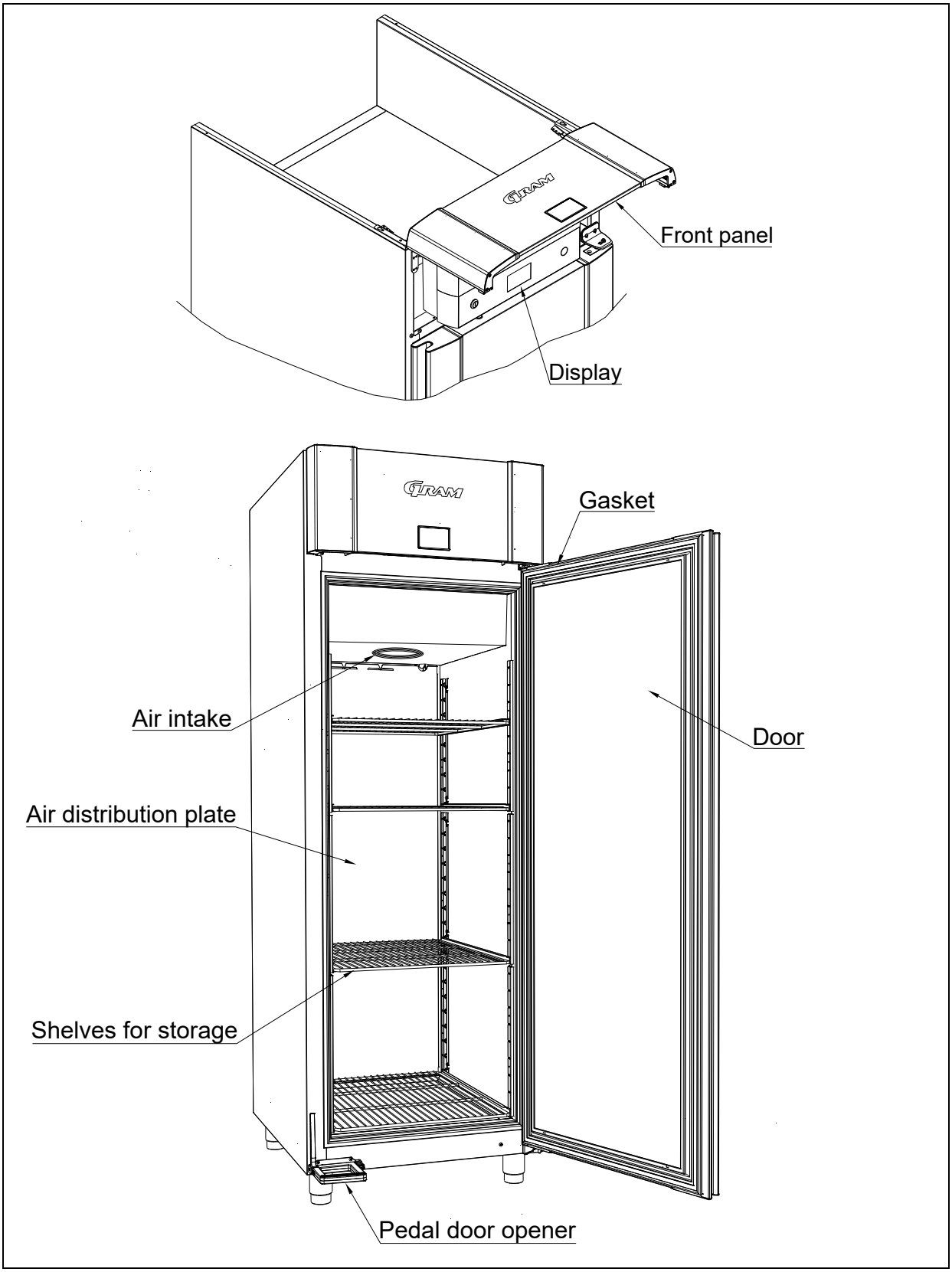



Fig. 4

# Electrical connection

Read the text below thoroughly before electrical connection.

The product is intended for connection to alternating current. The connection voltage (V) and frequency (Hz) are shown on the name plate in the cabinet (see Fig. 8). Only the supplied cord is to be used.

Never use an extension cord for this appliance!
If a wall socket is placed in a longer distance than the length of the supplied power cord, contact an electrician to establish a wall socket within the range of the supplied power cord.

If the product is defective, it must be examined by a skilled service technician knowing the installed controller and experienced in servicing a CO2 cabinet.

In general, it must be examined by the company who has connected the product.

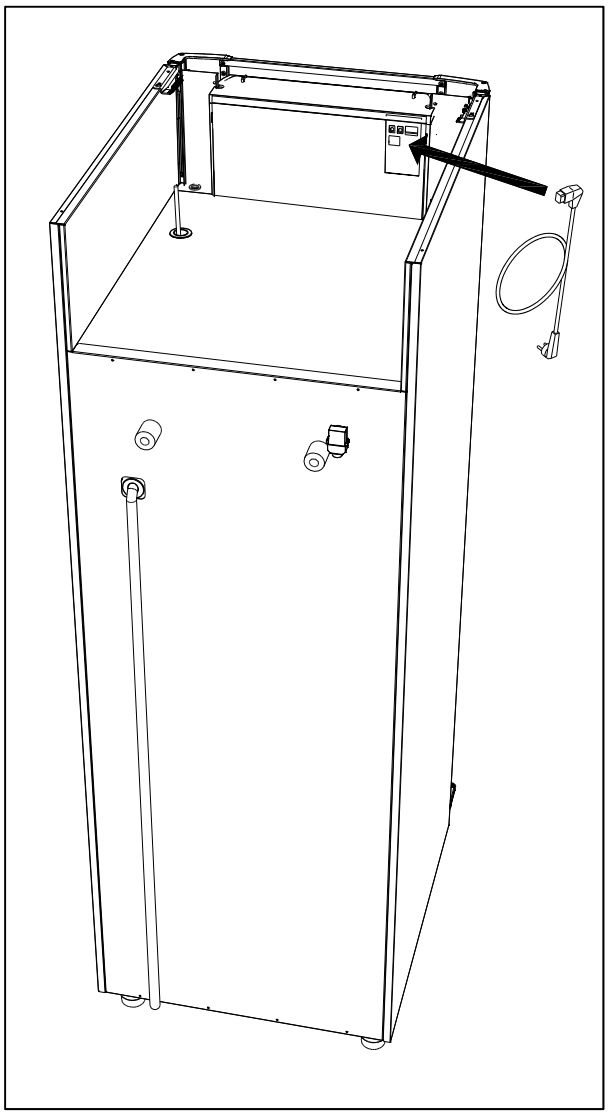


Fig. 5

Always disconnect the power if interruptions in power supply occur, and when electrical parts are removed/put on, and before cleaning and maintenance of the product.

Do not use the product before all coverings are installed, so that live or rotating machine parts cannot be touched.

The product is not to be used outdoor.

All earthing requirements stipulated by the local electricity authorities must be observed. The plug and wall socket should then give correct earthing. If necessary, contact an electrician.

⚠ Make sure the product is switched off at the socket or that the kettle plug is disconnected, before service is performed on electrical parts. It is not sufficient to switch off the product at the controller.

## General use

⚠ Do not damage the refrigeration system parts.

⚠ If the product is fitted with a re-evaporation tray underneath the cabinet it is important not to service/clean the tray or the heater, before the cabinet has been turned off long enough to make sure that the re-evaporaton heater has cooled off, in order to prevent the risk of burns.

Do not use electrical devices inside the product.

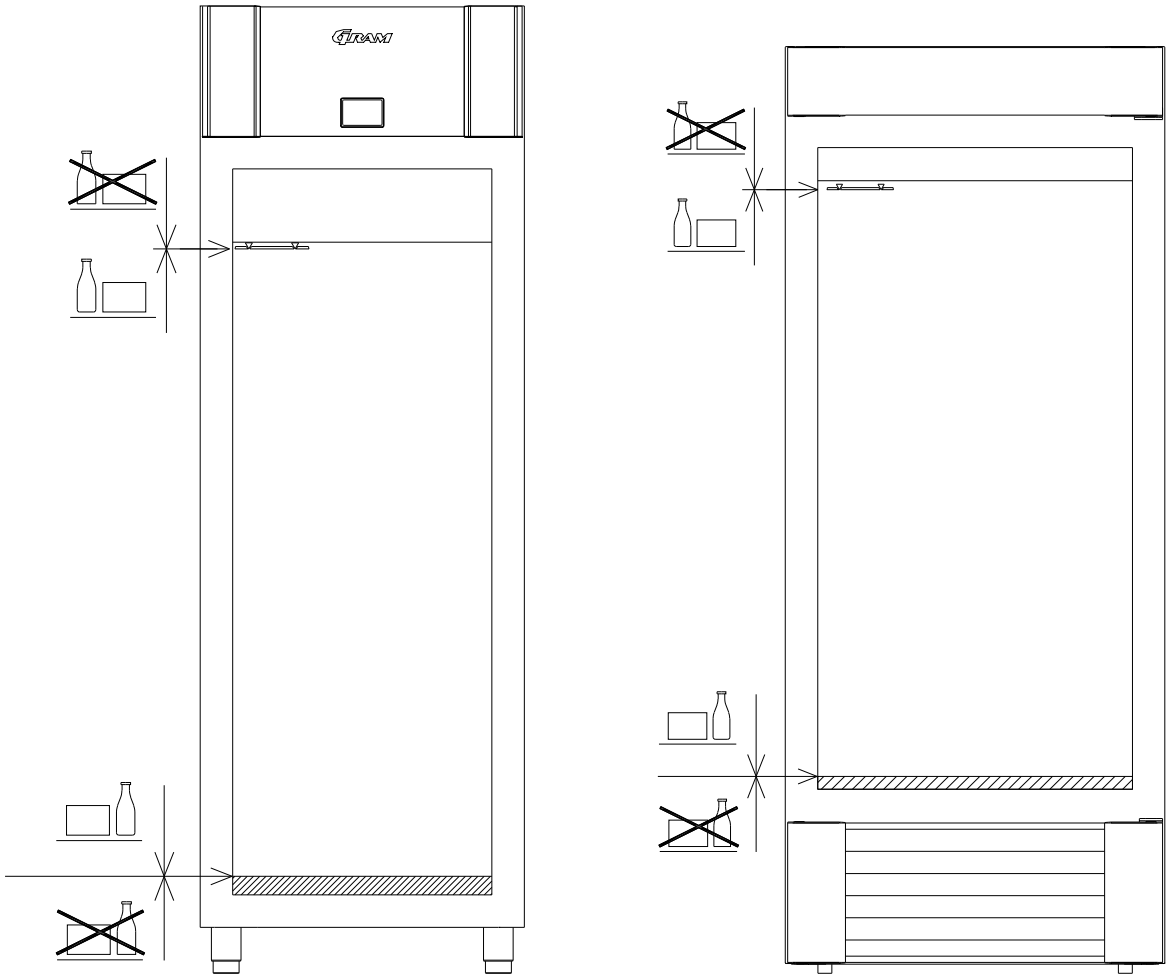
To ensure correct and efficient air flow in the cabinet, the shaded areas must be kept free of items. (see Fig. 6)

All items to be stored, that are not wrapped or packed, must be covered in order to avoid unnecessary corrosion of the inner parts of the cabinet.

If any controller parameters are changed from default, this could cause that the product is not functioning normally, and harmful temperatures could damage items that are kept inside the product.

Maximum loading of wire shelf: 40 kg

Do not store explosive substances such as aerosol cans with flammable propellant in this appliance.



Do not place any products below the bottom shelf support or above the upper load line marking

Fig. 6

# Operating the product (Danfoss Controller AKCC 550A)

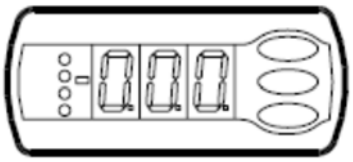
**Starting up**:

Plug in the appliance.

Make sure that the 2 - pole main switch is turned on.

The display part is placed behind the top panel and can be accessed by opening the top panel.

Display explanation:



The above shown display part has a three digit read-out.

On the left side of the read out, three LEDs are placed. These three LEDs have the following purpose.

= Cooling on (when this LED is lid, the cooling is on)

= Defrost on (when this LED is lid, a defrost cycle is ongoing)

= Inside fan running (when this LED is lid, the internal fan is on)

If all three LEDs are flashing, this is an indication for an ongoing alarm or error.

The 3 buttons placed on the right side of the display read-out, are used to access and adjust different parameters.

Buttons:
The upper button:

- if pushed shortly during normal operation the controller will cancel and display any error(s) occurring. If more than one alarm does occur, use the uppermost or lowermost button to scan the different alarms.
- if pushed and kept pushed during normal operation until the display shows r01 the main parameters of the controller are accessed. This is only used by the end-user when switching the controller on and off.
- If pushed being in a set menu (either change of a setting or moving from one parameter to another the value will be increased)

The center button: ***(*Adjusting the cabinet temperature set point)**

- if pushed and kept pushed during normal operation until the display starts flashing, the cabinet temperature set-point can be adjusted using the upper and lower button.
- If pushed after changing a value the controller does save the new value and return to the previous level.

The lower button:

- if pushed shortly during normal operation the controller will display the actual temperature of the evaporator probe.
- if pushed and kept pushed for more than 4 seconds, during normal operation, an ongoing defrost cycle will be canceled or a manual defrost cycle will be started.
- If pushed being in a set menu (either change of a setting or moving from one parameter to another the value will be decreased)

**As end-user it is only possible to make the following adjustments:**

- **Adjusting the cabinet temperature set point (as explained above)**
- **Turning the cabinet controller on/off**
- **Switching the internal light (Only on MIDI KG/FG products)**

**<u>Turning the cabinet on/off</u>**

**As default setting the cabinet controller is delivered turned off.**
**This means that the display will show oFF, when power supply is connected. Please also check that the main switch, placed on the control box is turned on. The following is done in order turn the controller on. The same approach is used when turning the controller off (Setting r12 to 0).**

- Push the upper button and keep it pushed during normal operation until the display does show r01.
- Push the upper or the lower button until r12 is displayed.
- Push the center button.
- Push the lower or the upper button in order to switch between the settings 0 and 1 (-1 is only for service).
    - Setting 0 means the cabinet is OFF.
    - Setting 1 means the cabinet is ON.
- Confirm the new setting by pushing the center button.

**In order to skip the r01 parameter, the controller does only need to be left untouched for approx. 30 seconds. This will make the controller fall back to the normal operation mode, meaning that the cabinet will either be in oFF – mode or be running.**

## Cabinet light

On all cabinets, besides the MIDI glass door cabinets with internal light, the cabinet light is placed on the cabinet outside, above the door. This light is operated by the main controller which means that the way it works cannot be changed.

When the cabinet door is opened the light above the door is turned on. When closing the door again, the cabinet light above the door will remain on for two minutes. These two minutes are a main function in the Danfoss controller which cannot be adjusted. Two minutes after closing the door the light will switch off.

## Switching the internal light (Only on MIDI KG/FG products)

On Midi glass door cabinets the cabinet LED strips are placed inside the cabinet storage room. The light can be operated in two different ways:

1. When the cabinet door is opened the light above the door is turned on. When closing the door again, the cabinet light above the door will remain on for two minutes. These two minutes are a main function in the Danfoss controller which cannot be adjusted. Two minutes after closing the door the light will switch off.

2. By switching the light main switch in the left front of the top control box, placed behind the top panel, to the position showing a light bulb, the internal light will be turned on constantly.

## Errors and alarms

**Fault message**

In an error situation the LED's on the front will flash and the alarm relay will be activated. If you push the top button in this situation you can see the alarm report in the display.
There are two kinds of error reports - it can either be an alarm occurring during the daily operation, or there may be a defect in the installation.
A-alarms will not become visible until the set time delay has expired.
E-alarms, on the other hand, will become visible the moment the error occurs.
(An A alarm will not be visible as long as there is an active E alarm).
Here are the messages that may appear:

| Code / Alarm text via data communication | Description | Alarm relay groups (P41) |
|---|---|---|
| A1/--- High t.alarm | High temperature alarm | 1 |
| A2/--- Low t. alarm | Low temperature alarm | 2 |
| A4/--- Door alarm | Door alarm | 8 |
| A5/--- Max hold time | The "o16" function is activated during a coordinated defrost | 16 |
| A10/--- Inject prob. | Control problem | 64 |
| A11/--- No Rfg. sel. | No refrigerant selected | 64 |
| A13/--- High temp S6 | Temperature alarm. High S6 | 1 |
| A14/--- Low temp S6 | Temperature alarm. Low S6 | 2 |
| A15/--- DI1 alarm | DI1 alarm | 8 |
| A16/--- DI2 alarm | DI2 alarm | 8 |
| A45/--- Standby mode | Standby position (stopped refrigeration via r12 or DI input) | - |
| A59/--- Case clean | Appliance cleaning. Signal from DI input | - |
| --- AD fault | Error in the adaptive defrost function | 16 |
| --- AD Iced | Evaporator is iced up. Reduction of air flow | 16 |
| --- AD not defr. | Defrost of evaporator is not satisfactory | 16 |
| --- AD flashgas | Flash gas is formed at the valve | 16 |
| E1/--- Ctrl. error | Faults in the controller | 32 |
| E6/--- RTC error | Check clock | 32 |
| E20/--- Pe error | Error on pressure transmitter Pe | 64 |
| E24/--- S2 error | Error on S2 sensor | 4 |
| E25/--- S3 error | Error on S3 sensor | 4 |
| E26/--- S4 error | Error on S4 sensor | 4 |
| E27/--- S5 error | Error on S5 sensor | 4 |
| E28/--- S6 error | Error on S6 sensor | 4 |
| E34/--- S3 error B | Error on S3B sensor (appl. 10 only) | 4 |
| E37/--- S5 error B | Error on S5B sensor | 4 |
| ---/--- Max Def.Time | Defrost stopped based on time instead of, as wanted, on temperature | 16 |

**Data communication**
The importance of individual alarms can be defined with a setting. The setting must be carried out in the group "Alarm destinations"

| Settings from System manager | Settings from AKM (AKM destination) | Log | Alarm relay | | | Send via Network |
|---|---|---|---|---|---|---|
| | | | Non | High | Low-High | |
| High | 1 | X | | X | X | X |
| Middle | 2 | X | | | X | X |
| Low | 3 | X | | | X | X |
| Log only | | X | | | | |
| Disabled | | | | | | |

## User menu

User menu overview:

For information on user menu please see manual over the selected CO2 controller

# Operating the product (Carel MPXpro controller)

**Starting up**

Plug in the appliance

Default setting of the cabinet controller is that it is delivered turned on.
This means that the controller will start regulating, when power supply is connected, and the main switch is in the on position.

Turning the cabinet on/off

To turn the cabinet on/off the 2-pole main switch, on the left side of the main control box, placed in “the compressor compartment” is used.

**The display**

The display, used for adjusting settings and displaying temperature or alarm codes, is placed behind the top panel and can be accessed by opening the top panel.

Display layout/explanation:

The above shown display has a three-digit read-out.

Within the read-out area, several LEDs are placed. These LEDs give the following indications.

In general = When a LED is flashing the activation is delayed or limited.

= Cooling on (when this LED is lit, cooling is on)

= Inside fan running (when this LED is lit, the internal/evaporator fan is on)

= Defrost on (when this LED is lit, a defrost cycle is ongoing)

= If the LED is flashing, this is an indication for the door being open or an ongoing alarm or error.

**HACCP** = When this LED is lit, a HACCP alarm is ongoing. When this LED is flashing there is a saved HACCP alarm.

**Buttons:**

The 4 buttons placed on the right side of the display, are used to access and adjust different parameters. These buttons can be pressed alone or in combination in order to operate the controller.

The below explained settings are the only once which should be changed by the end user. The end user should not modify any parameters which are not explained here. All other settings should be done by a skilled technician.

## USER SETTINGS

### Adjusting the cabinet temperature set-point

- Press and hold Set [Set] during normal operation until the display starts flashing, the cabinet temperature set-point can be adjusted using up [▲ aux] and down [def ▼].
- When the set point has been adjusted to the desired temperature, Set [Set] is pressed briefly, in order to save the new value and to return to normal operation.

### How to perform a manual defrost

- Press and hold def [def ▼] for more than 5 sec. during normal operation, in order to perform a manual defrost, if the evaporator probe temperature is cold enough.
- When the defrost symbol is lit, it does indicate that a defrost is ongoing.
- if def [def ▼] is pressed and held for more than 5 seconds when a defrost cycle is ongoing, the defrost will be deactivated.

### How to mute acoustic alarms

- When the controller is in alarm mode, you will hear an acoustic signal. The alarm can be muted by pushing Prg/mute [Prg mute].

**Setting the temperature alarm limits**

- Press and hold Prg/mute Prg/mute for more than 5 sec. during normal operation, in order to open the parameter list. The display will show **/c1**
- Press Prg/mute Prg/mute. The first category of parameters, “Pro”, is shown
- Press UP ▲/aux until reaching category “ALn”, indicated by the ⚠ icon being lit on the display.
- Press Set Set parameter AA will be displayed.
- Press UP ▲/aux until reaching A1
- Press Set Set in order to adjust if AL (**A**larm **L**ow temperature threshold) and AH (**A**larm **H**igh temperature threshold) settings shall be (0 = relative to the cabinet temperature setpoints) or (1 = absolute) default setting = 1
- Press Set Set in order to store the chosen setting and return to A1
- Press UP ▲/aux until reaching AL (**A**larm **L**ow temperature threshold)
- Press Set Set to make it possible to adjust AL using up ▲/aux and down def/▼ (adjustable between -50 and +50) Default setting = -50°C
- press Set Set in order to store the chosen setting and return to AL
- press UP ▲/aux until reaching AH (**A**larm **H**igh temperature threshold)
- press Set Set to make it possible to adjust AH using up ▲/aux and down def/▼ (adjustable between -50 and +50) Default setting = +50°C
- press Set Set in order to store the chosen setting and return to AH
- press UP ▲/aux until reaching Ad (**A**larm **D**elay time for AL and AH)
- press Set Set to make it possible to adjust Ad using up ▲/aux and down def/▼ (adjustable between 0 and 240 minutes) Default setting = 120 minutes.
- press Set Set in order to store the chosen setting and return to Ad
- Push and hold Prg/mute Prg/mute for more than 5 sec. in order to save changes, and the revert to the main menu.

In order to create temperature alarm thresholds and alarm delay time suitable for a refrigerator or a freezer the below alarm setting examples can be suggested:

| | Setpoint | A1 | AL | AH | Ad |
|---|---|---|---|---|---|
| Refrigerator | +5° C | 1 | +1° C | 8° C | 120 minutes |
| Freezer | -18° C | 1 | -50° C | -15° C | 120 minutes |

**How to display the alarm log**

• Press Prg/mute [Prg mute] and Set [Set] and hold for 5 seconds;
• enter the password: 44
• Press Set [Set] to access a submenu where UP [▲ aux] and DOWN [def ▼] are used to scroll the various alarms, HS0 to HS9;

• Select an alarm and press Set [Set] to display the code, hour, minutes and duration;

• From any of the sub parameters, pressing Prg/mute [Prg mute] wil make the controller return to the
parent parameter “HSx”;
• Press Prg/mute [Prg mute] for 5 seconds to return to the standard display.

Example :
‘HI’ -> ‘h17’ -> ‘m23’ -> ‘65’
indicates that alarm ‘HI’ (high temperature alarm) was activated at 17:23 and lasted 65 minutes.

**HACCP ALARMS**

Two types of HACCP events are managed:
• type HA alarms, high temperature during the operation;
• type HF alarms, high temperature after power failure (blackout).

When an alarm is recorded, the HACCP LED flashes, the display shows the alarm code, the alarm is saved, and the alarm relay and buzzer are activated.

**How to display the HA and HF alarms**

• Press Prg/mute Prg/mute and DOWN def ▼ simultaneously

• Scroll the list of alarms pressing UP ▲ aux and DOWN def ▼

• Press Set Set to select the required alarm

• Use UP ▲ aux or DOWN def ▼ to see the description of the alarm: year, month, day, hours, minutes and duration in minutes of the selected alarm

• Press Prg/mute Prg/mute again to return to the previous list.

In addition, the HACCP alarm menu allows the following operations:

**How to delete a HACCP alarm**

• Press Set Set & DOWN def ▼ for 5 seconds when displaying the list of alarms.

This causes the HACCP to flash, the display shows the message rES and the monitoring of HACCP alarms is reinitialised

**How to delete the entire memory of HACCP alarms**

• Press Set Set & UP ▲ aux & DOWN Set for 5 seconds.
This procedure displays the message rES, deletes the entire memory of alarms and reinitialises the monitoring of the HACCP alarms.

In order to be able to use the HACCP alarms, it is necessary that the real time clock has been adjusted by the installing company prior to handing over the cabinet to the end user. These adjustments are protected by an access code and can therefore not be made by the end user.

## Cabinet light

On all cabinets, besides the MIDI glass door cabinets with internal light, the cabinet light is placed on the cabinet outside, above the door. This light is operated by the main controller which means that the way it works cannot be changed.

When the cabinet door is opened the light above the door is turned on. When closing the door, the cabinet light above the door will turn off.

## Switching the internal light (Only on MIDI Glass door products - KG/FG)

On Midi glass door cabinets, the cabinet LED lights are placed on the left and the right front wall rails inside the cabinet storage room. The light can be operated in two different ways:

3. When the cabinet door is opened the internal light is turned on. When closing the door again, the internal cabinet light will be turned off.

4. By switching the light toggle switch in the left front of the top control box, placed behind the top panel, to the position showing a light bulb, the internal light will be turned on constantly (not affected by opening and closing the door).

# Errors and alarms

Table of alarms

| Display code | Cause of the alarm | Icon flash on display | Alarm relay | Buzzer | Reset | Compressor | Defrost | Evaporator fans | Continuous cycle | Signalled on tLAN | Network solenoid valve |
|---|---|---|---|---|---|---|---|---|---|---|---|
| rE | Control probe fault | | ON | ON | automatic | duty setting(c4) | unchanged | unchanged | unchanged | √ | - |
| E1 | Probe S1 fault | | OFF | OFF | automatic | duty setting(c4) | unchanged | unchanged | unchanged | √ | - |
| E2 | Probe S2 fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| E3 | Probe S3 fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| E4 | Probe S4 fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| E5 | Probe S5 fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| E6 | Probe S6 fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| E7 | Probe S7 fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| E8 | Serial probe S8 not updated | | OFF | OFF | automatic | duty setting(c4) | unchanged | unchanged | unchanged | √ | - |
| E9 | Serial probe S9 not updated | | OFF | OFF | automatic | duty setting(c4) | unchanged | unchanged | unchanged | √ | - |
| E10 | Serial probe S10 not updated | | OFF | OFF | automatic | duty setting(c4) | unchanged | unchanged | unchanged | √ | - |
| E11 | Serial probe S11 not updated | | OFF | OFF | automatic | duty setting(c4) | unchanged | unchanged | unchanged | √ | - |
| LO | Low temperature alarm | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| HI | High temperature alarm | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| LO2 | Low temperature alarm | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| HI2 | High temperature alarm | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| IA | Immediate alarm from external contact | | ON | ON | automatic | duty setting(A6) | unchanged | unchanged | unchanged | √ | - |
| dA | Delayed alarm from external contact | | ON | ON | automatic | duty setting(A6) if A7≠0 | unchanged | unchanged | unchanged | √ | - |
| dor | Door open for too long alarm | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| Etc | Real time clock fault | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| LSH | Low superheat alarm | | OFF | OFF | automatic | OFF | unchanged | unchanged | unchanged | √ | √ |
| LSA | Low suction temperature alarm | | OFF | OFF | automatic / manual | OFF (paragraph 6.10) | unchanged | unchanged | unchanged | √ | √ |
| MOP | Maximum evaporation pressure alarm | | OFF | OFF | automatic | OFF | unchanged | unchanged | unchanged | √ | √ |
| LOP | Low evaporation temperature alarm | | OFF | OFF | automatic | unchanged | unchanged | unchanged | unchanged | √ | √ |
| bLo | Valve blocked alarm | | OFF | OFF | manual/ disabled with P14=0 | unchanged | unchanged | unchanged | unchanged | √ | - |
| Edc | Communication error with stepper driver | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| EFS | Stepper motor broken/not connected | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | √ | - |
| EE | Flash unit parameter error | | OFF | OFF | automatic | OFF | not performed | OFF | not performed | √ | - |
| EF | EEPROM operating parameter error | | OFF | OFF | automatic | OFF | not performed | OFF | not performed | √ | - |
| HA | Type HA HACCP alarm | HACCP | OFF | OFF | manual | unchanged | unchanged | unchanged | unchanged | √ | - |
| HF | Type HF HACCP alarm | HACCP | OFF | OFF | manual | unchanged | unchanged | unchanged | unchanged | √ | - |
| MA | Communication error with Master (only on Slave) | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | - | - |
| u1...u5 | Communication error with Slave (only on Master) | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | - | - |
| n1...n5 | Alarm on unit 1 to 5 in the network | | ON | ON | automatic | unchanged | unchanged | unchanged | unchanged | - | - |
| up1...up5 | Upload procedure with errors on unit 1 to 5 | | OFF | OFF | - | unchanged | unchanged | unchanged | unchanged | - | - |
| GPE | Error in custom gas parameters | | ON | ON | automatic | OFF | not performed | OFF | not performed | √ | - |

## Appendix:

<u>Additional settings for the technician:</u>

For information on additional menus and settings please look in the manual related to the selected CO2 controller
Carel MPXpro, on the Carel webside.

## User menu

User menu overview:

For information on user menu please see manual over the selected CO2 controller

# Operating the product (no controller)

Please see the manual supplied with the installed controller.

# Troubleshooting

### Noise:

- If abnormal noise occurs, request service assistance.
- Operating sounds from the interior fan are normal.
- If sheet metal parts, front panels or panels in front of the compartment are making noise, these might be open. Close the panels.

### Frosting inside compartment:

- Ambient humidity too high.
- The door is opened too often.
- The door is left open for too long.
- Damaged door gasket. Check it thoroughly for damages.

### Poor cooling performance:

- Ambient temperature too high.
- The door is opened too often and/or open for too long.
- The door is left open.
- Damaged door gasket.
- Temperature setting too high.
- Product too packed with foods - air inlet/outlet blocked.
- Warm or hot foods inside the product.
- Defrost in progress. The cabinet temperature may rise temporarily during the defrost cycle, but it will not affect the foods inside. The defrost LED is lid.

### Some of the foods are frozen:

- Product too packed with foods - air inlet/outlet blocked.
- Temperature setpoint too low.
- Evaporator fan might be defective.

### Condensation around the door:

- Ambient humidity too high.
- The door is not closed tightly.
- Damaged door gasket.
- Parameter related to door frame heater has not been adjusted correctly.

**Too high energy consumption:**

- Ambient temperature too high.
- The door is opened too often and/or open for too long.
- The door is left open.
- Damaged door gasket.
- Temperature setpoint too low.
- Product is too packed with foods - air inlet/outlet blocked.
- Warm or hot foods are brought into the product.
- Product is placed in direct sunlight or close to heat-emitting surfaces.
- The default settings have been changed.

## Defrost water

PLUS, TWIN, EURO
The product produces water during defrosting, which is led into a tray under the bottom of the cabinet. The water is re-evaporated with an electrical heating element. In rare cases the use pattern of the cabinet creates more water than the product is capable of re-evaporating, which means that overflow of water can occur. If this happens the electrical heating element can changed to run 100% or alternatively be disconnected and instead connect the water pipe on the back to a drain. These changes must be carried out by a skilled service technician.

MIDI
The product produces water during defrosting, which is led into a tray inside the bottom compartment. The water is re-evaporated with an electrical heating element.

It is recommended to clean the tray at least once a year.
Remember to disconnect the cabinet before cleaning.
Be careful not to damage parts and heating element during cleaning.

## Door closing mechanism

The door is equipped with a self-closing system. If the door is opened less than 90°, it will close by itself. If the door is opened more than 90°, it will stay open.

The door can be opened by using the foot pedal. This leaves both hands free when placing foodstuffs the cabinet. There is no foot pedal on MIDI products.

## Power failure

In the event of a power failure, the control remembers the temperature setting and restarts the product when power is restored.

## Cleaning

Insufficient cleaning will cause that the product will not work at optimum performance, or eventually it will be defective.

Before cleaning, the product should always be disconnected.

Do not flush the product with water, do not use water jet or steam hose as this may cause short-circuits in the electrical system.

Cleansing agents containing chlorine or compounds of chlorine as well as other corrosive means, **are not to be used**, as they might cause corrosion to the stainless panels of the cabinet and the evaporator.

The product must be kept free from dust and dirt. This is best done with a vacuum cleaner and a brush.

For the external maintenance – use stainless steel polish.

The product should be cleaned internally with a mild soap solution at suitable intervals and checked thoroughly before it is put into operation again.

## Door gaskets

This chapter deals with the importance of a well-functioning door gasket.

Gaskets are an important part of a refrigerator/freezer. Gaskets with reduced functionality, reduces the tightness of the cabinet. Reduced tightness might cause increased humidity, internal icing, an iced up evaporator (leading to reduced refrigeration capacity), and in worst case reduced lifecycle of the cabinet.

Therefore it is important to be aware of the condition of the gasket. Regular inspection is recommended.

The gasket should be cleaned regularly with a mild soap solution.

If a gasket needs replacement, contact your supplier.

## Long term storage

If the product is taken out of operation, and need to be prepared for long-term storage, clean the inside compartment, the door and door gasket thoroughly with a hot soapy damp cloth.
Eventual remnants of food could create mold.

# Service

If refrigeration fails, first investigate whether the unit has been unintentionally disconnected or switched off at the socket, or whether a fuse has blown.

If it is not possible to find the cause of the refrigeration failure, please contact the installer of the unit.

When contacting GRAM or the Installer please inform us the name and serial number (S/N) / (WWYY) of the cabinet. This information is stated on the name plate, see Fig. 8.

Location of the name plate:

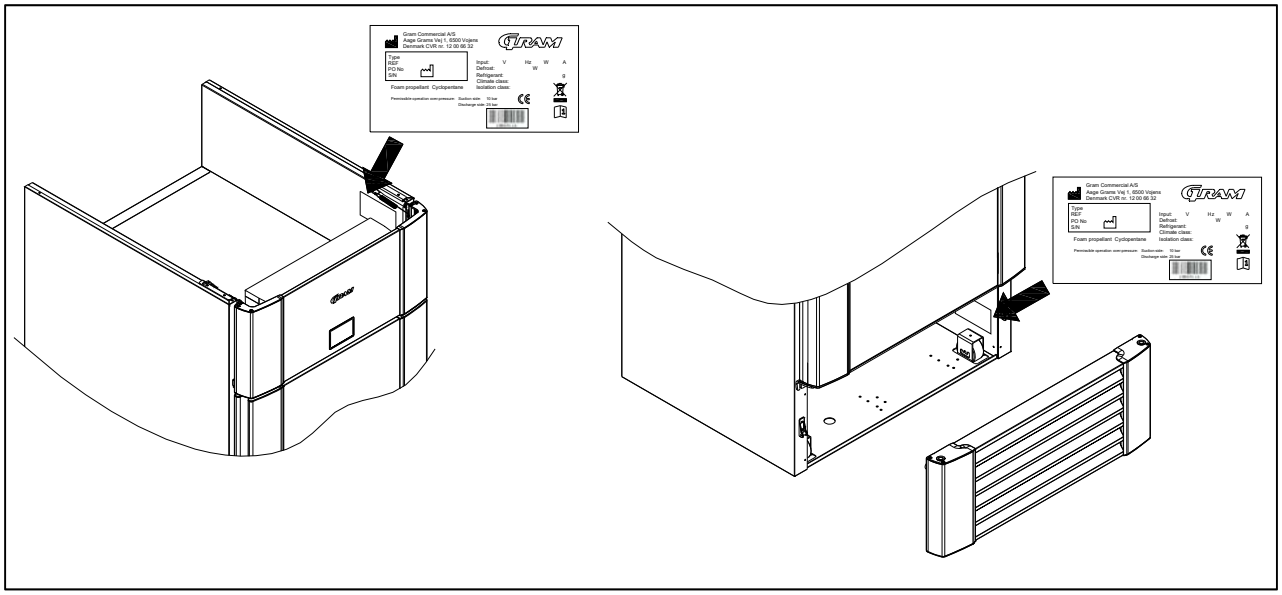


Fig.8

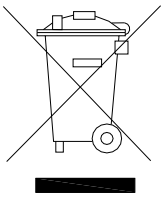
# Disposal

The below only concerns the United Kingdom.

Disposal of an old cabinet is only available when we are delivering a new one at the same time. Cabinets must be fully defrosted and emptied prior to collection.

Gram recognizes that our products for the catering market are considered as WEEE when they become obsolete. To ensure that Gram's responsibilities are handled correctly and environmentally friendly, we are signed up the largest Business to Business compliance scheme in the UK – B2B Compliance
http://www.b2bcompliance.org.uk

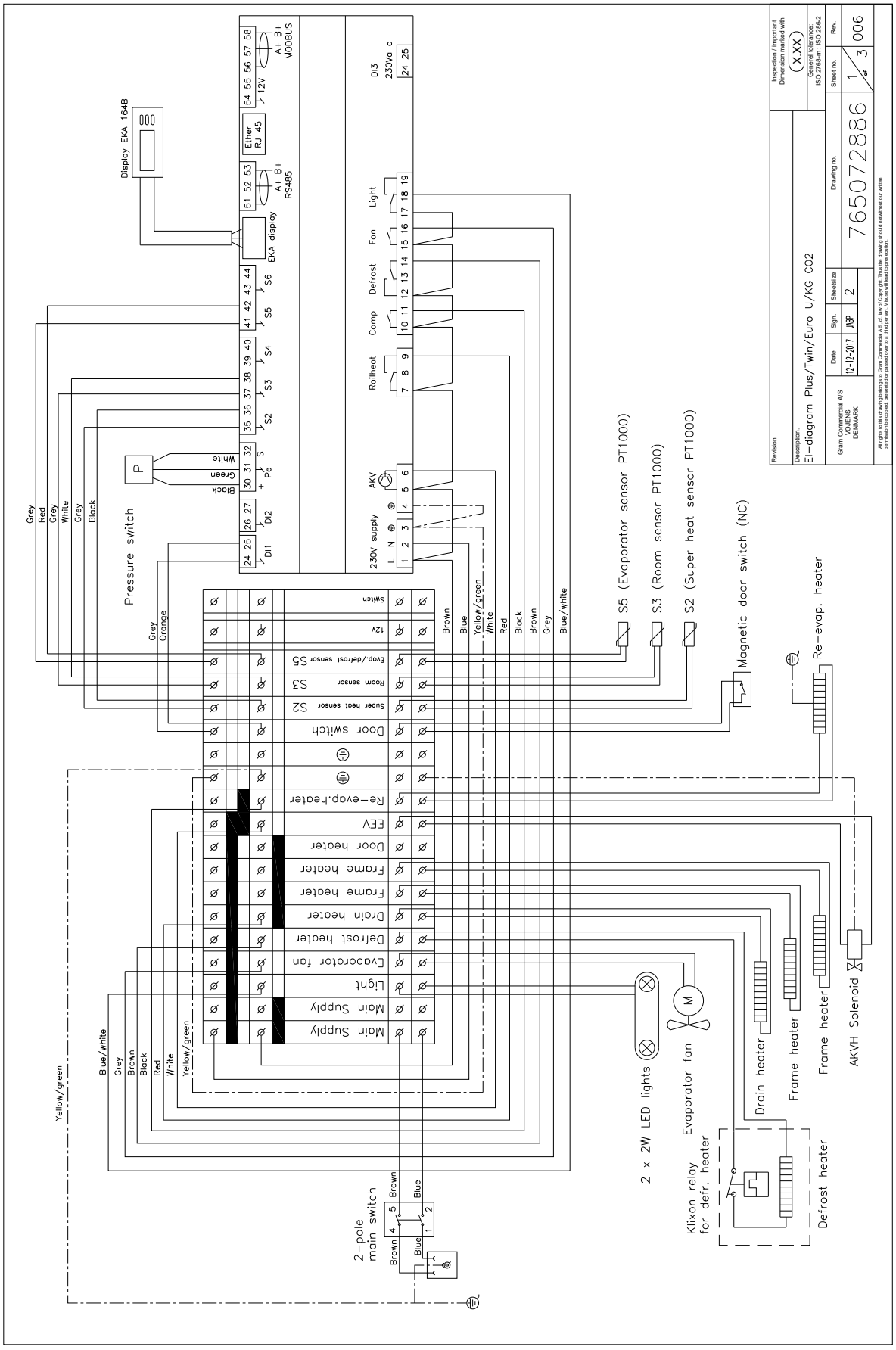
B2B Compliance will on our behalf deal with all areas of our responsibilities when collecting and disposing of equipment which fall under the UK WEEE regulations. B2B Compliance can be contacted on telephone number 01691 676124.

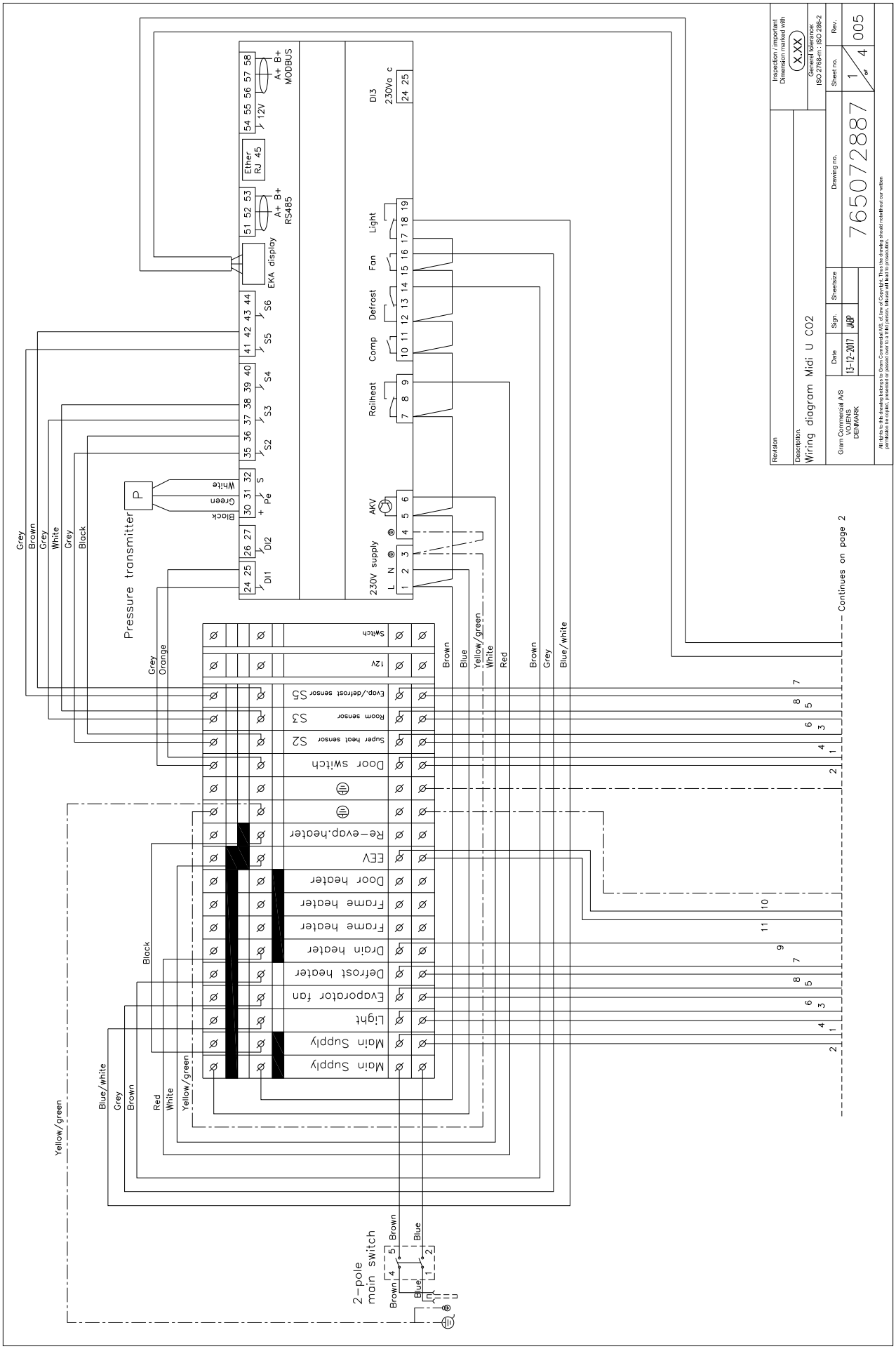


# Declaration of incorporation of partly completed machinery

| | | |
|---|---|---|
| **ProduceR** | Name:<br>Adress: | Gram Commercial A/S<br>Aage Grams Vej 1, 6500 Vojens |
| | Tel.: | +45 73 20 12 00 |
| **Product** | Model: | Eco Plus U/KG 70, Eco Twin U/KG 82, Eco Euro U/KG 60<br>Eco Midi U/KG/FG 82 |
| | Refrigerant: | R744 (CO2) |
| | PS: | $HP_{side}$: 90 bar<br>$LP_{side}$ : 60 bar |
| | Year: | December 2017 |
| **Directives** | The product is in compliance with all the essential health- and safety requirements and provisons in:<br><br>**Directive for Machinery 2006/42/EF (MD)**<br><br>**Pressure Equipment 97/23/EF (PED)**<br><br>The product is where relevant in compliance with the following other directives:<br><br>**FCM regulation 2002/72/EF**<br>**RoHS - 2011/65/EU** | |
| **Standards** | The following standards are used to the extent necessary to comply with the relevant directives:<br><br>**DS/EN 12100:2011** - Safety of machinery -- General principles for design -- Risk assessment and risk reduction<br>**DS/EN 60335-1:2012** – Household and similar electrical appliances. Safety. General requirements<br>**DS/EN 60335-2-89:2010** – Household and similar electrical appliances. Safety. Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor | |
| **Documentation** | Refer to the name plate of the product and operating instructions.<br><br>Further documentation will be sent on request by relevant authorities. | |
| **Commisioning** | The product must not be used until the finished machine for which it is to be incorporated in, has been declared as complying with the relevant provisions of the Machinery Directive. | |
| **Person responsible for technical dossier** | Company: Gram Commercial A/S<br>Adress: Aage Grams Vej 1<br>Name: John Lund | |
| **Signature** | Vojens 11/12-2017 | R&D Manager |

# Wiring diagram Danfoss AKCC 550A

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VOJENS
DENMARK
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RJ 45
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MODBUS
230V supply
AKV
Railheat
Comp
Defrost
Fan
Light
DI3
230Va c
DI1
DI2
S2
S3
S4
S5
S6
Continues on page 2
Main Supply
Light
Evaporator fan
Defrost heater
Drain heater
Frame heater
Frame heater
Door heater
EEV
Re-evap.heater
Door switch
Super heat sensor S2
Room sensor S3
Evap./defrost sensor S5
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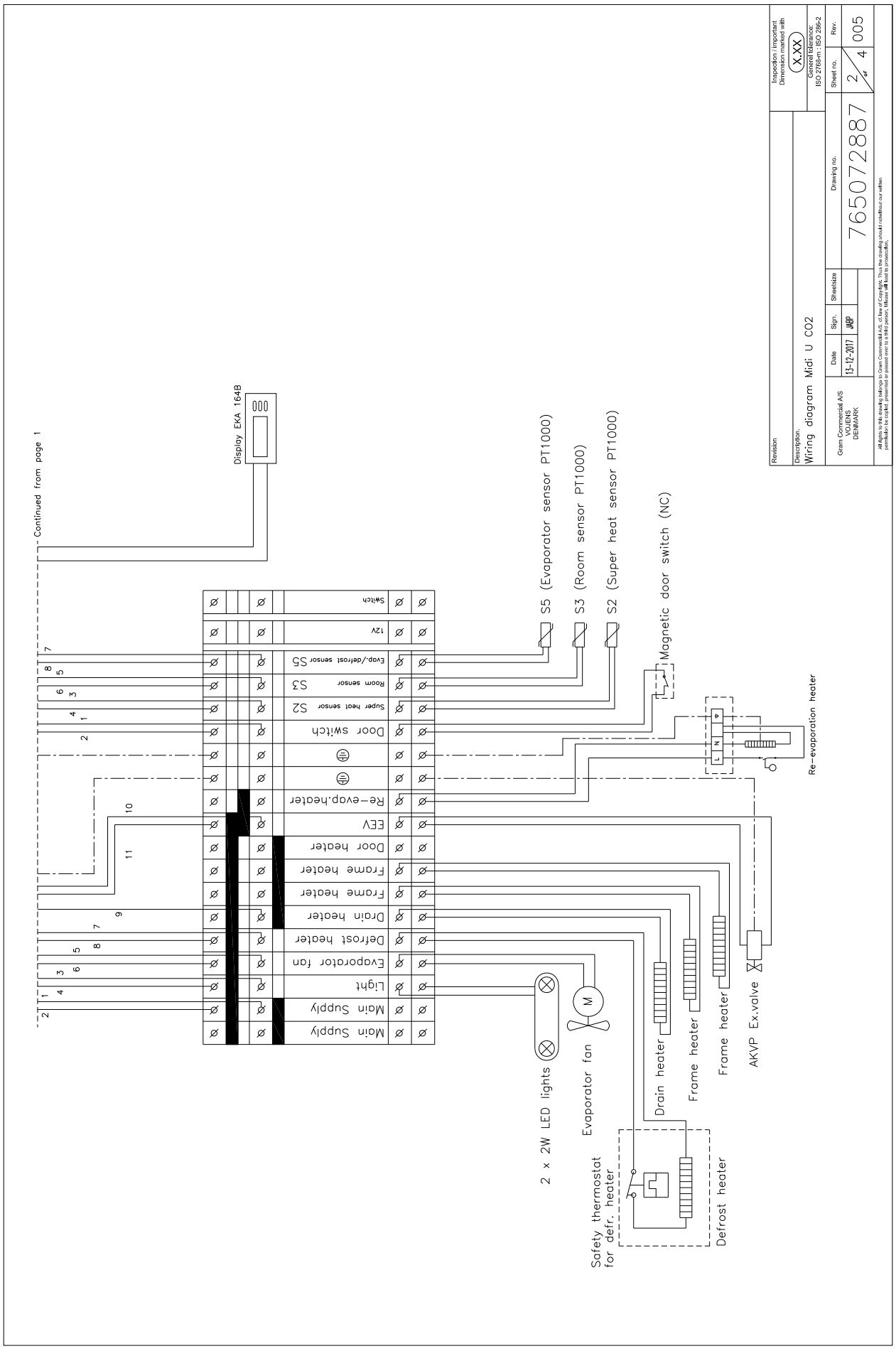
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Room sensor S3
Evap./defrost sensor S5
12V
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S5 (Evaporator sensor PT1000)
S3 (Room sensor PT1000)
S2 (Super heat sensor PT1000)
Magnetic door switch (NC)
Re-evaporation heater
2 x 2W LED lights
Evaporator fan
Drain heater
Frame heater
Frame heater
AKVP Ex.valve
Safety thermostat for defr. heater
Defrost heater
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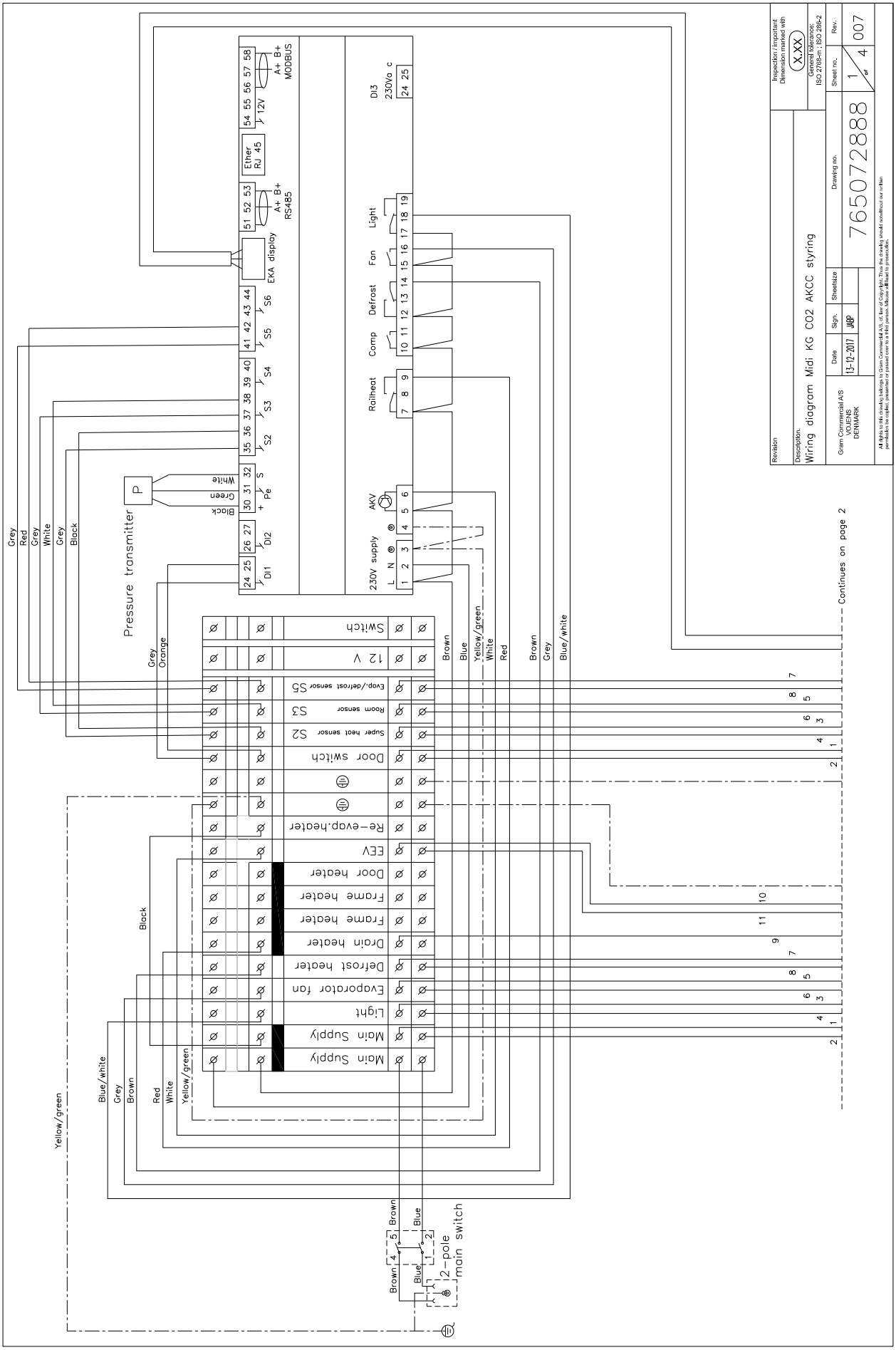
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Frame heater
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Re-evap.heater
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Room sensor S3
Evap./defrost sensor S5
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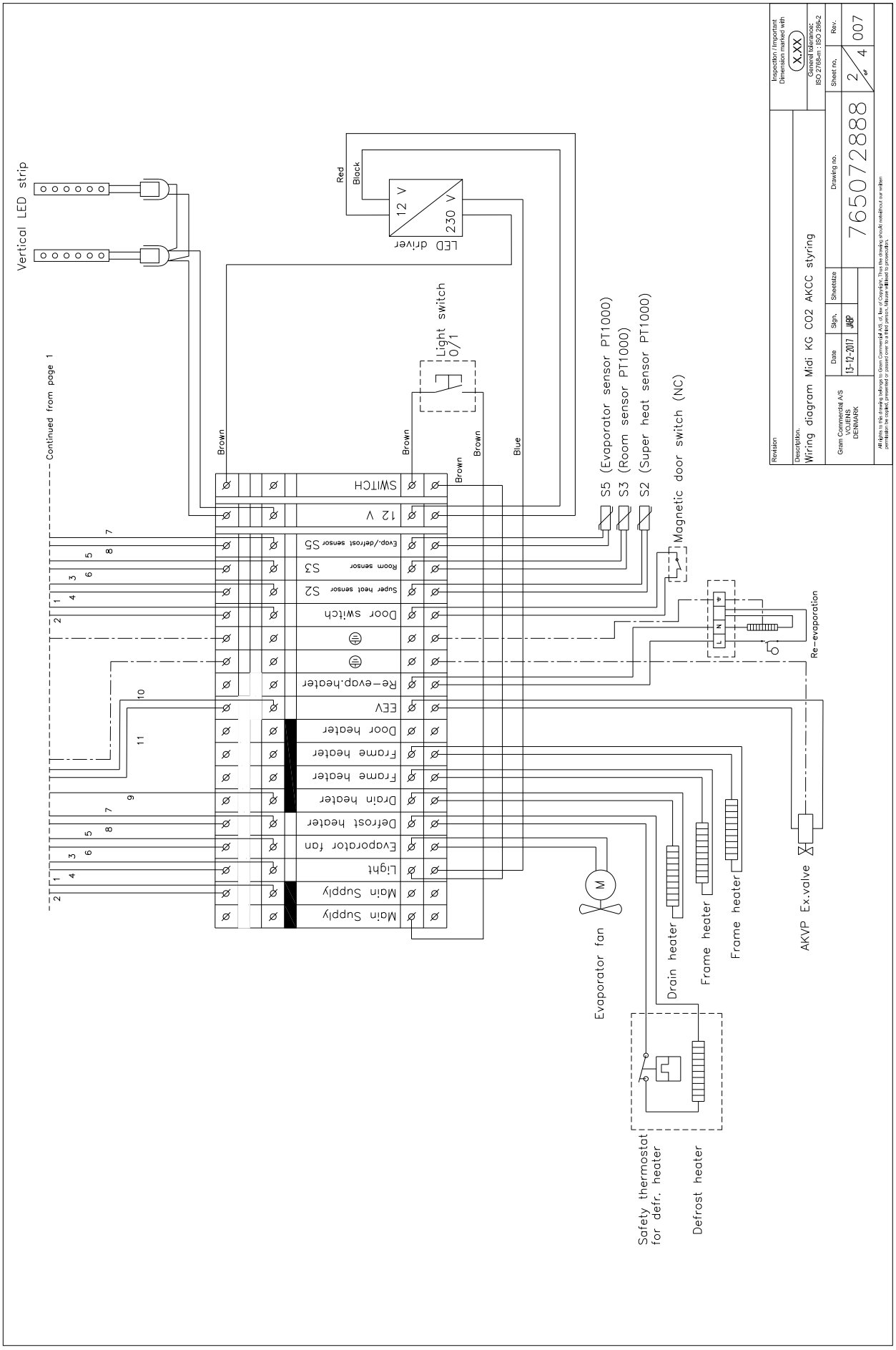
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VOJENS
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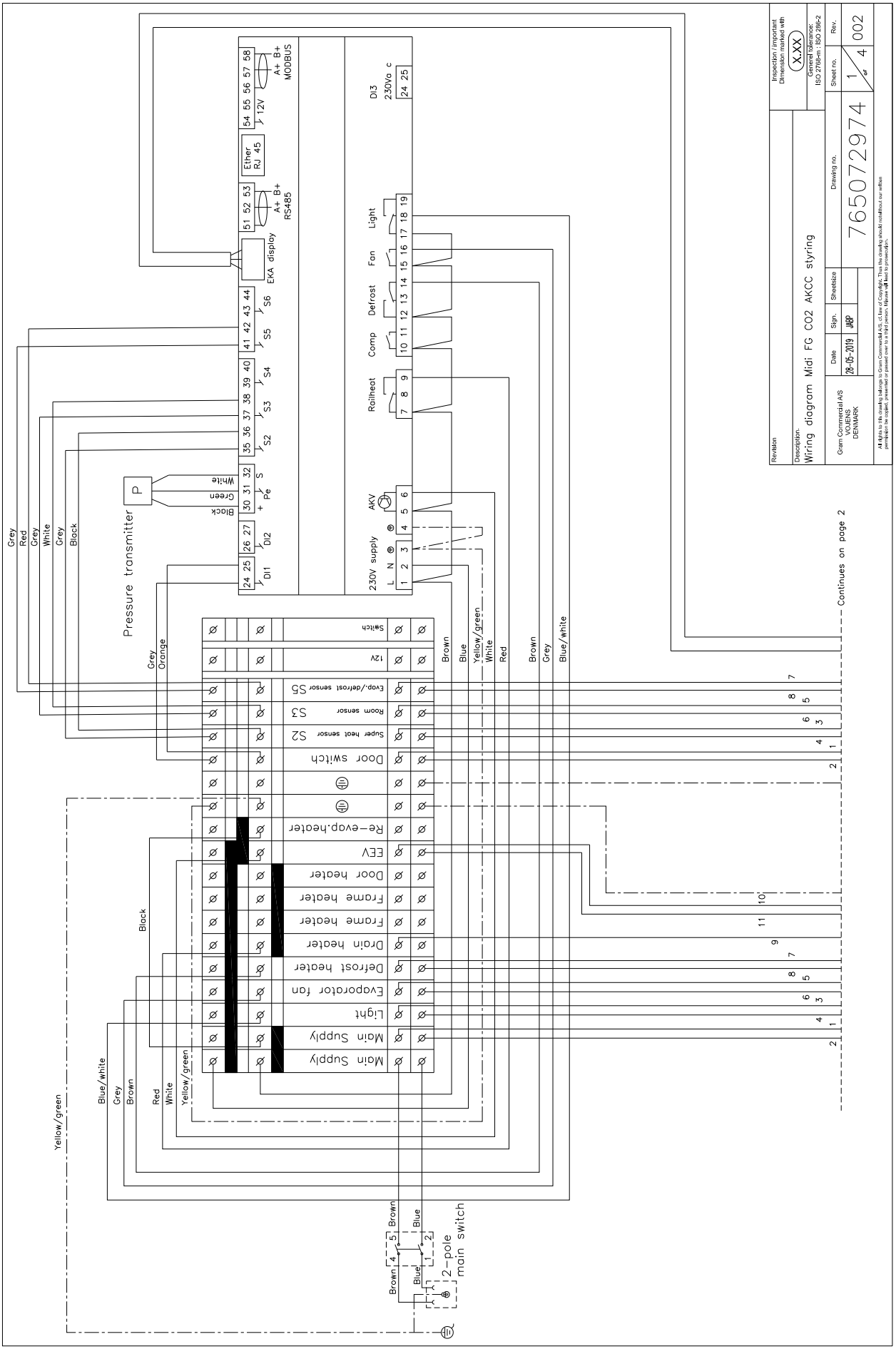
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Drain heater
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Ether RJ 45
A+ B+ MODBUS
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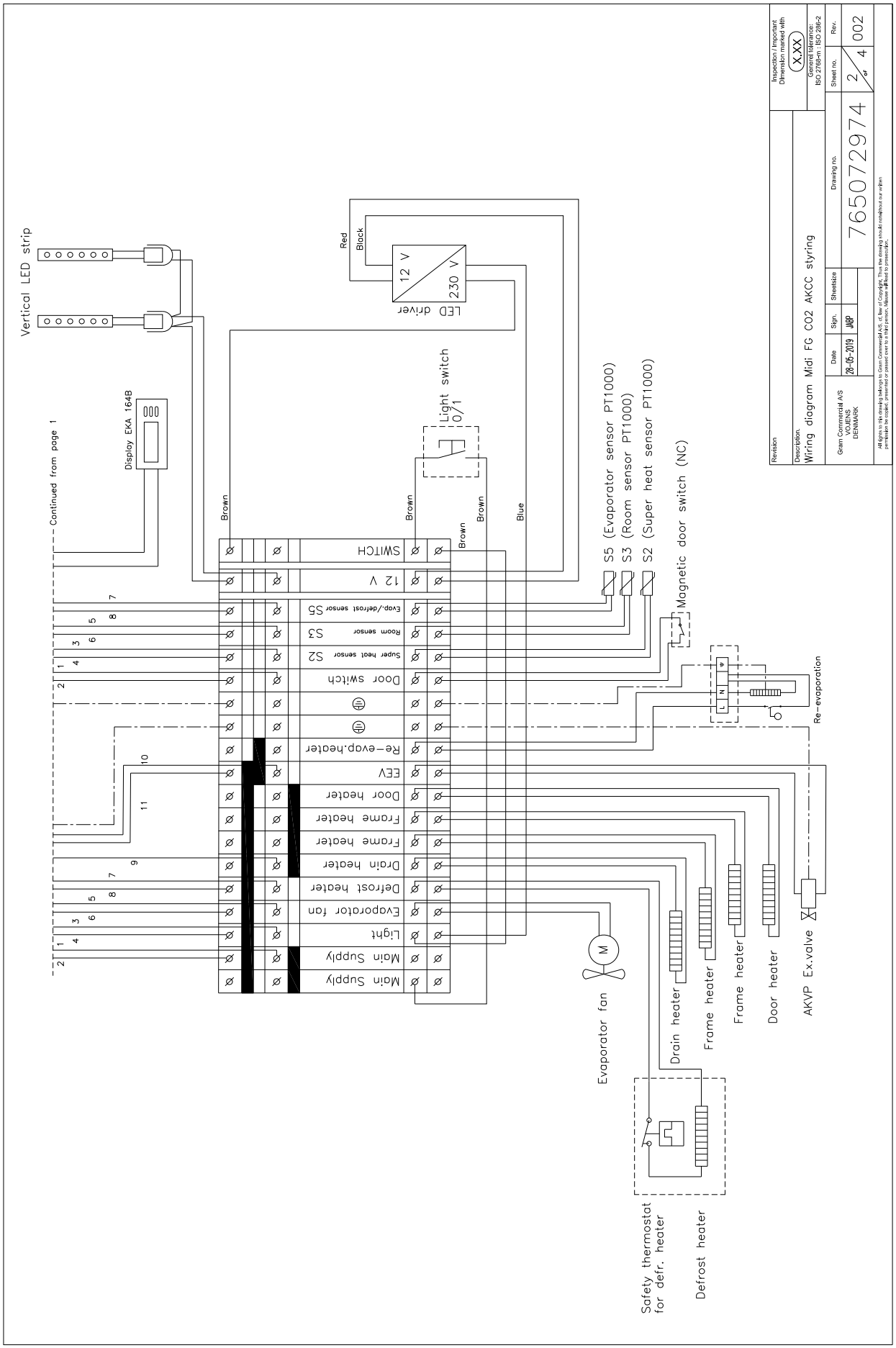
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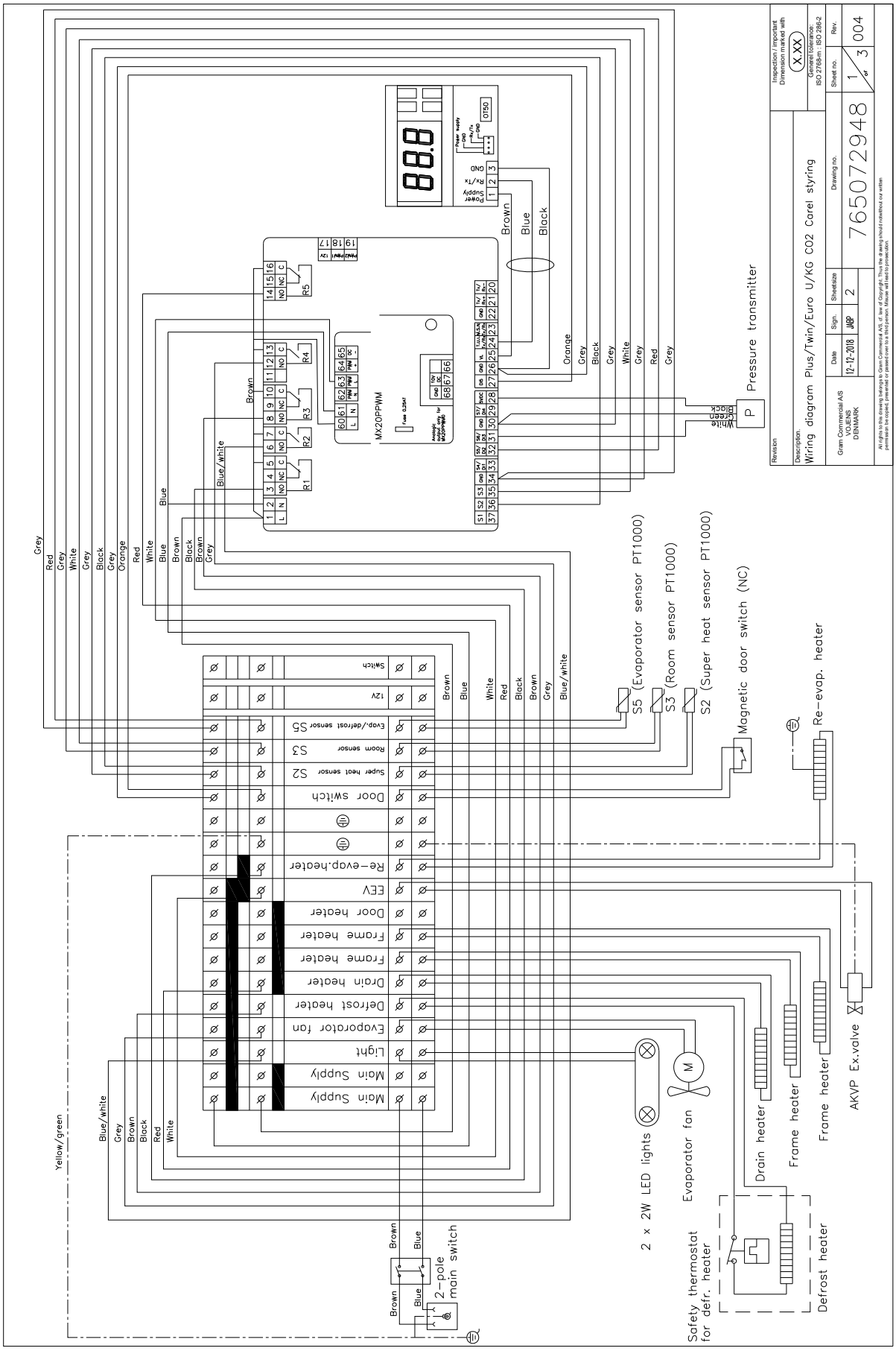
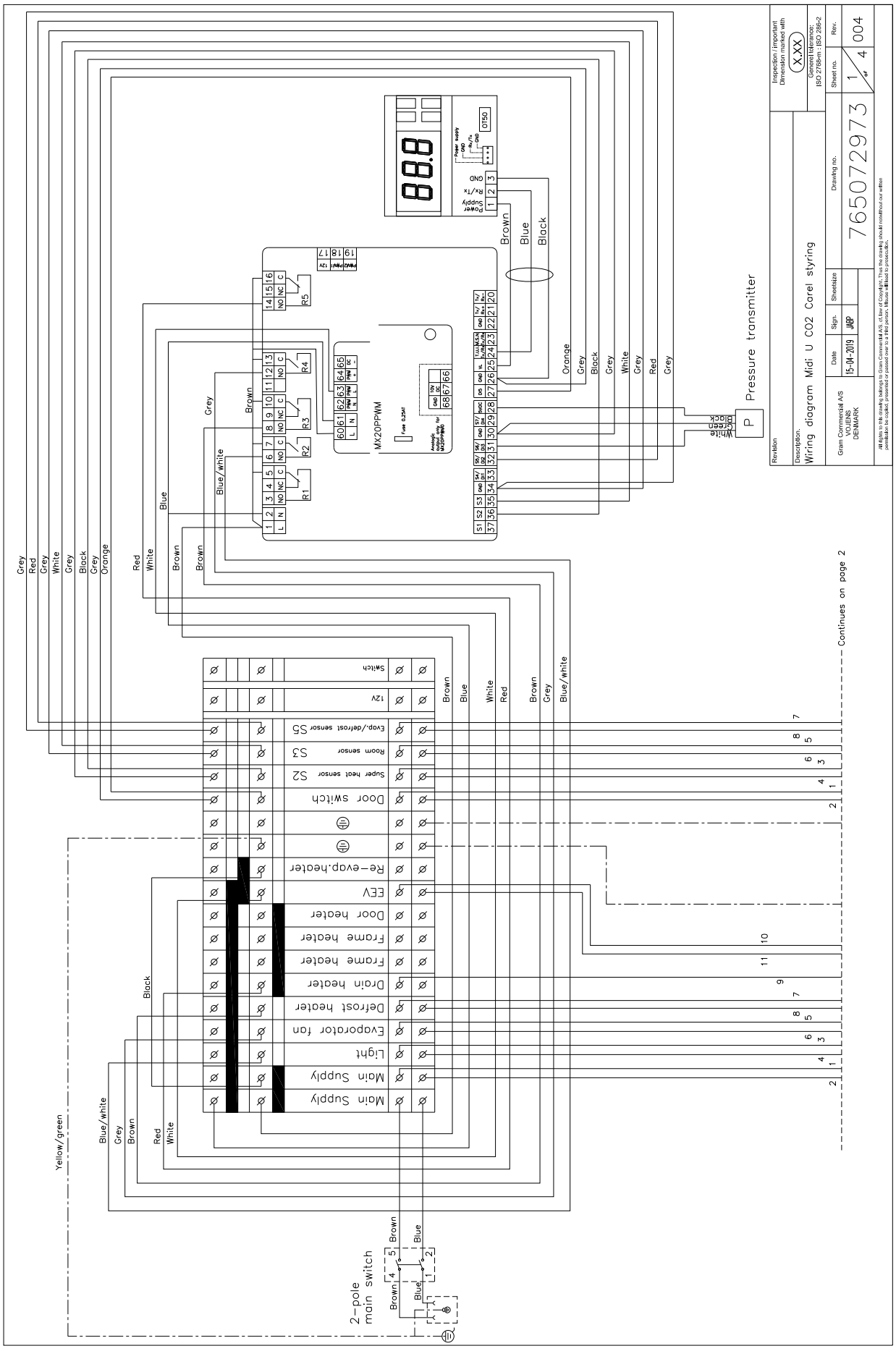
# Wiring diagram Carel MPXpro

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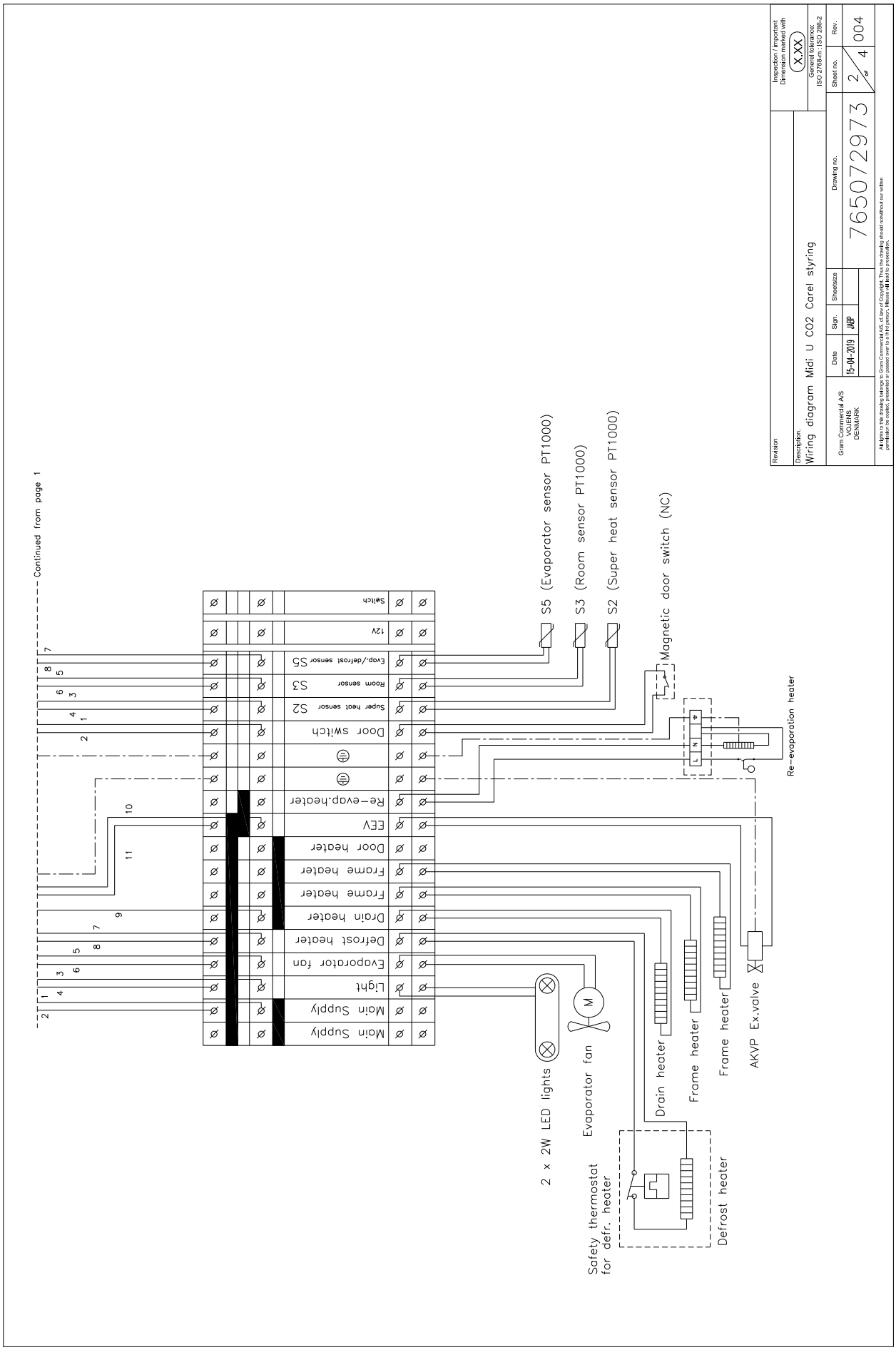
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S2 (Super heat sensor PT1000)
Magnetic door switch (NC)
Re-evaporation heater
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Drain heater
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AKVP Ex.valve
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Defrost heater
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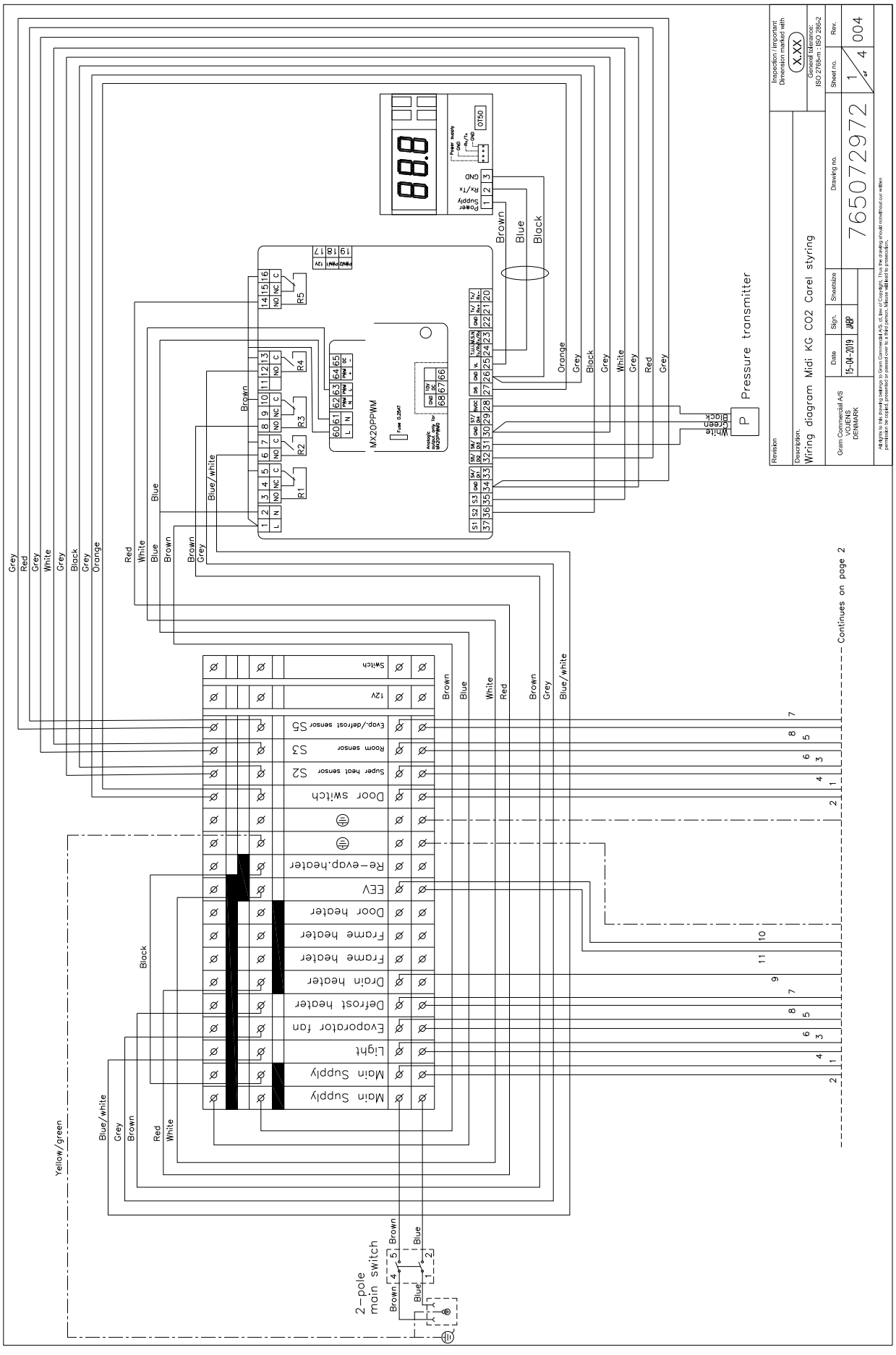
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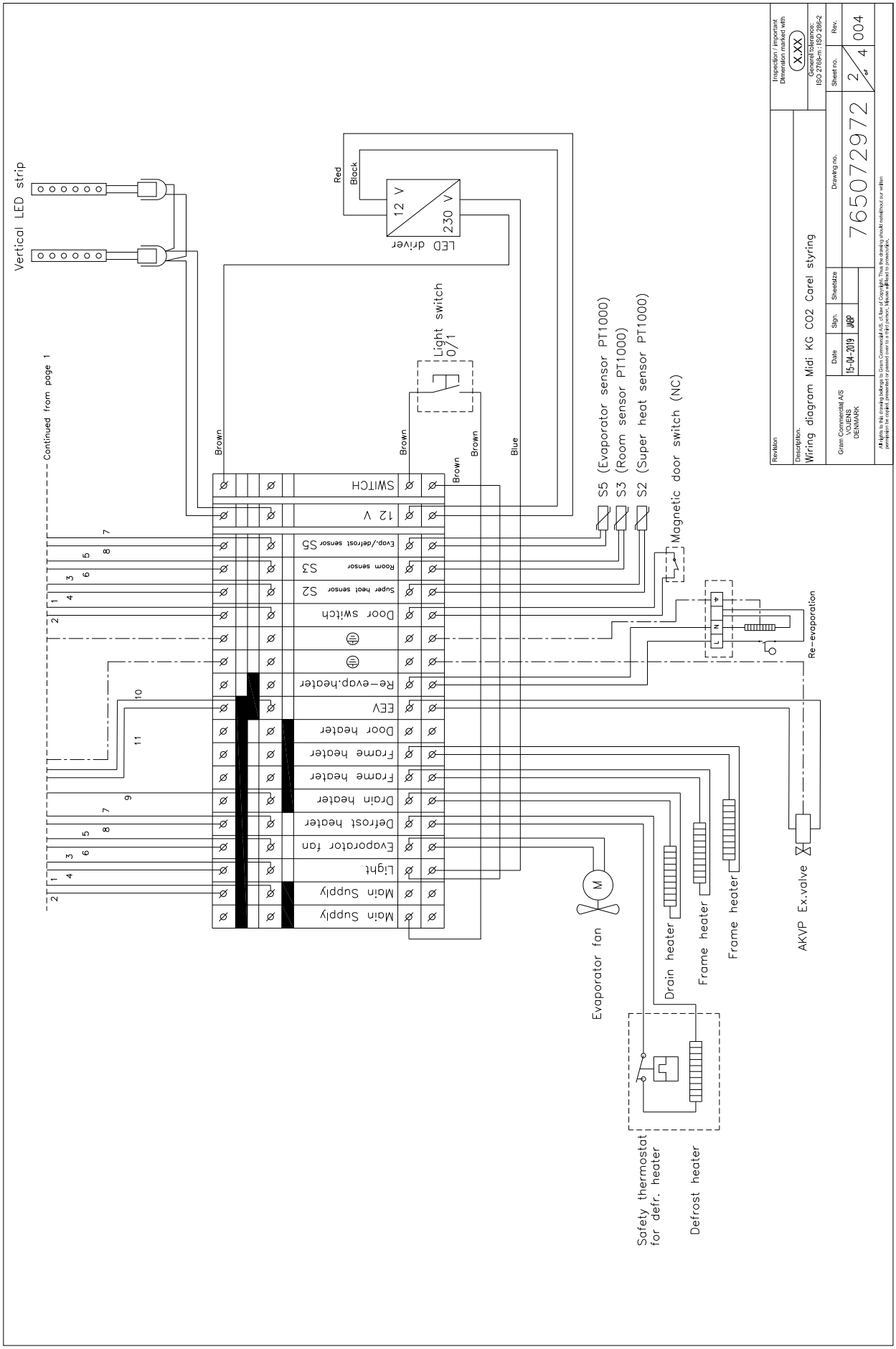
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Room sensor S3
Super heat sensor S2
Door switch
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EEV
Door heater
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Frame heater
Drain heater
Defrost heater
Evaporator fan
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Defrost heater
Revision
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Gram Commercial A/S
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Rev.
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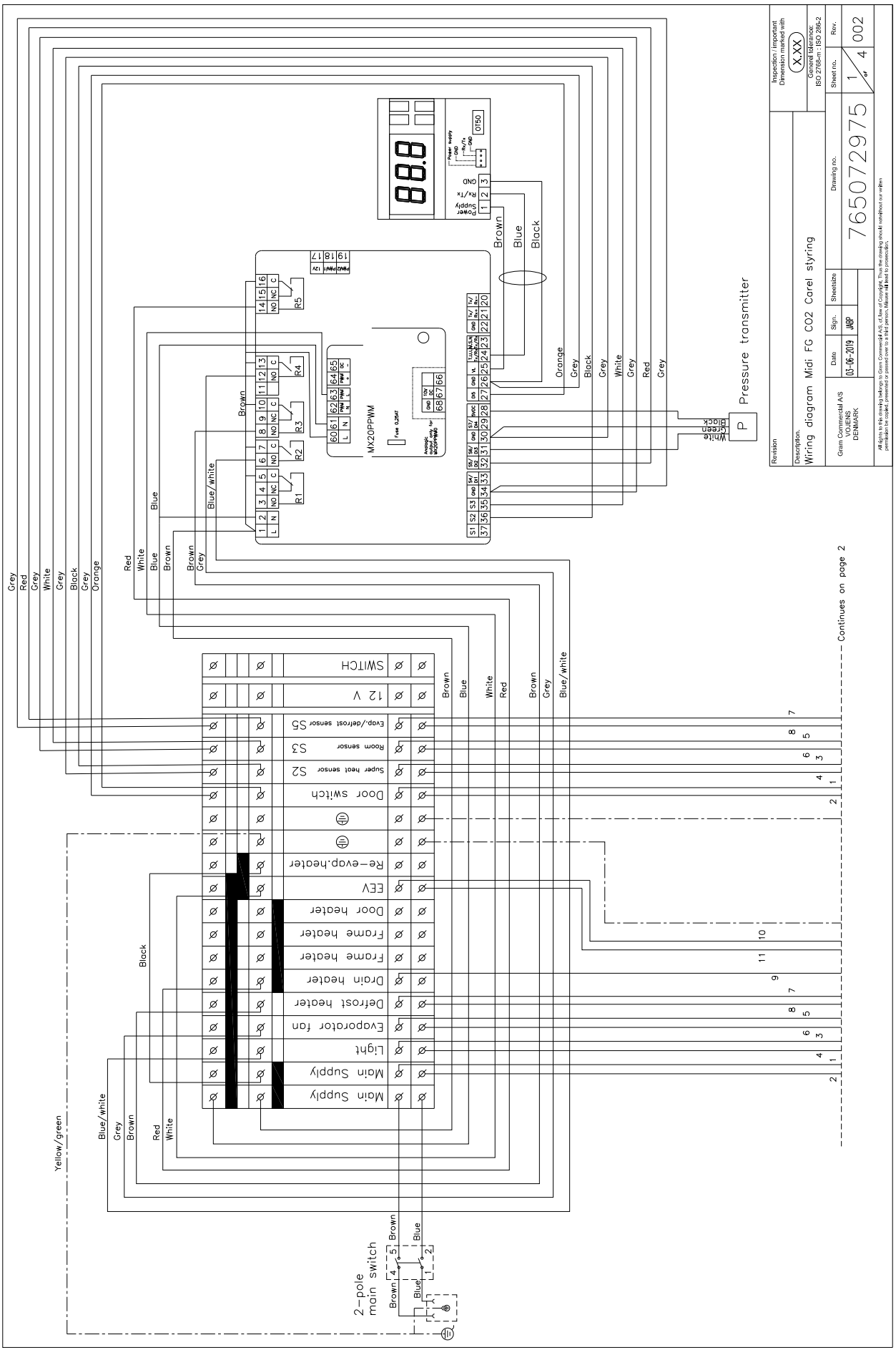
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2-pole main switch
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Evaporator fan
Defrost heater
Drain heater
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Room sensor S3
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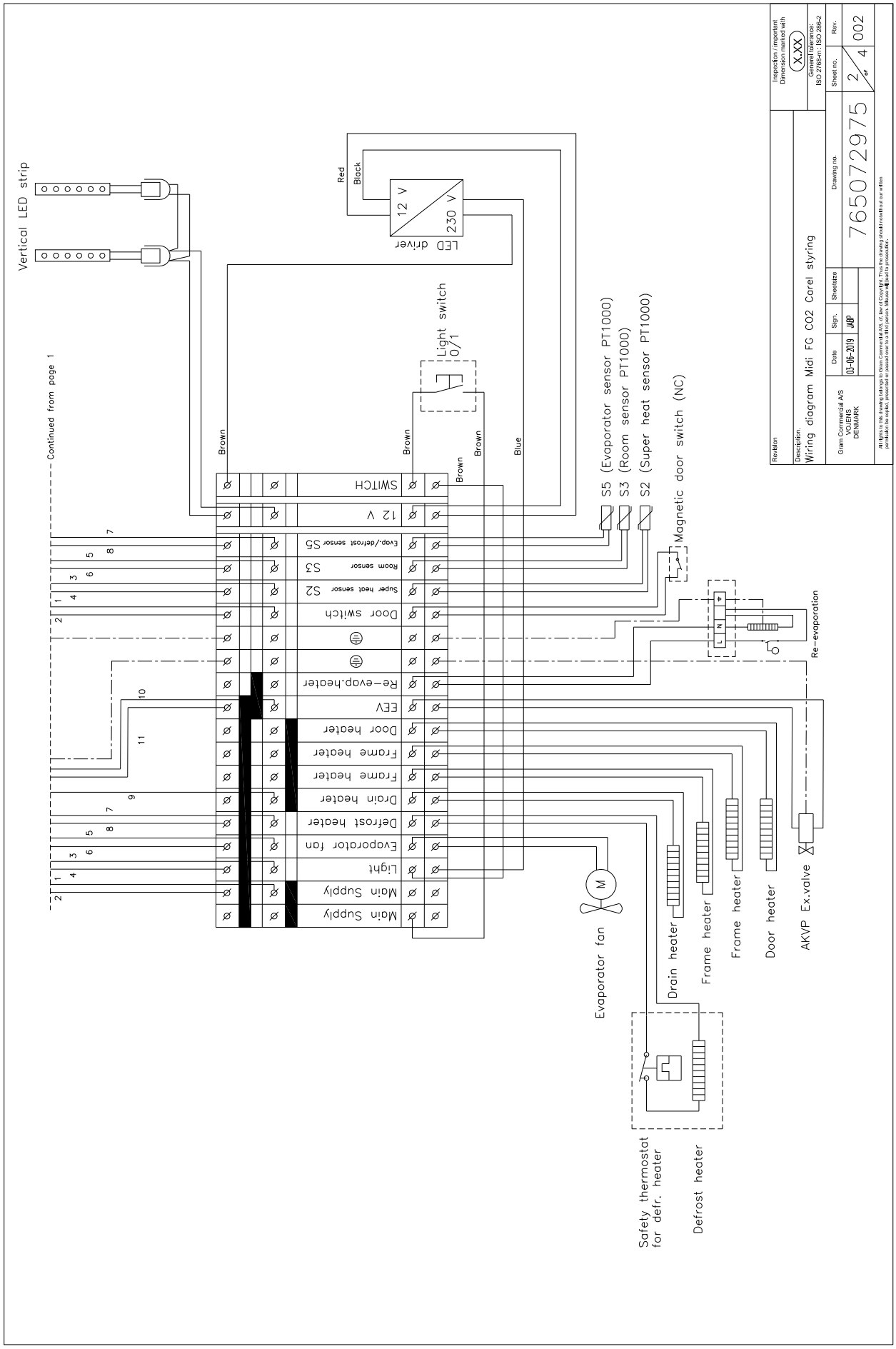
12 V
SWITCH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Room sensor S3
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Door switch
Re-evap.heater
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Frame heater
Frame heater
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Evaporator fan
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Main Supply
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S5 (Evaporator sensor PT1000)
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Magnetic door switch (NC)
Re-evaporation
Evaporator fan
Drain heater
Frame heater
Frame heater
Door heater
AKVP Ex.valve
Safety thermostat for defr. heater
Defrost heater
Revision
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Gram Commercial A/S
Date
03-06-2019
Sign.
JØP
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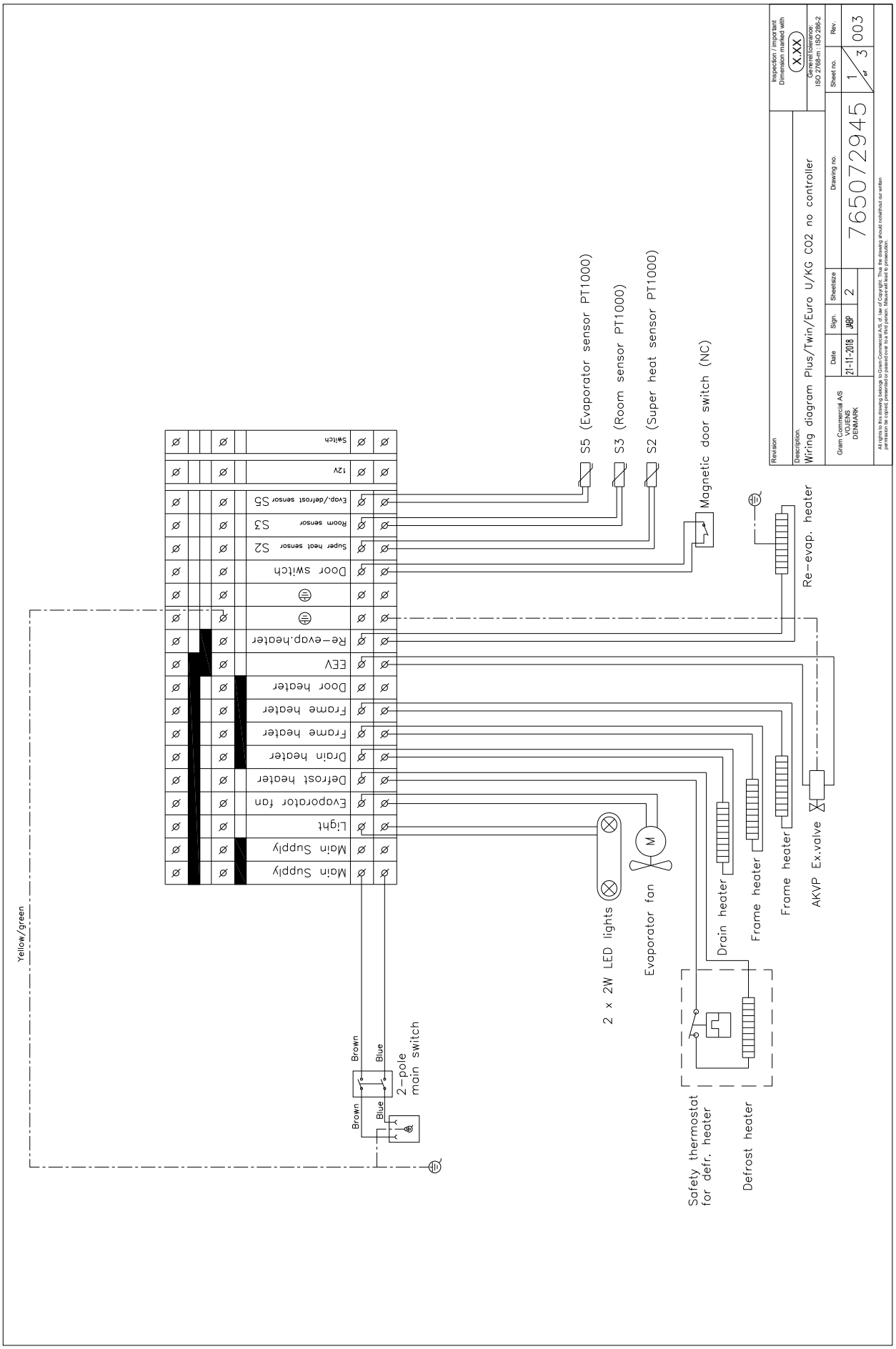
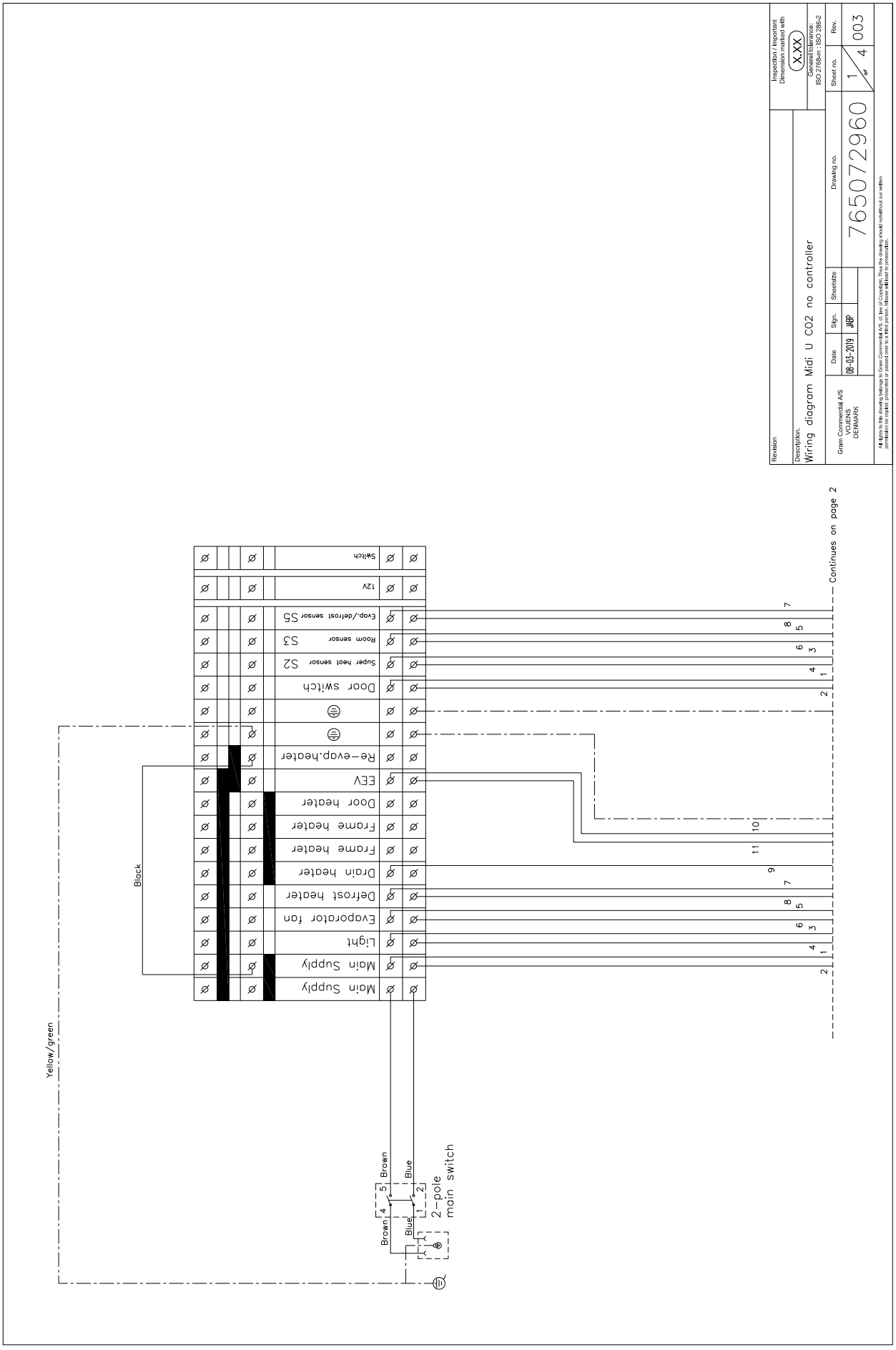
2 of 4
Rev.
002
Inspection / important Dimension marked with
(x.xx)
General tolerances: ISO 2768-m - ISO 286-2

# Wiring diagram - no controller




Revision
Description:
Wiring diagram Midi U CO2 no controller
Inspection / Important Dimension marked with
(X.XX)
General tolerances: ISO 2768-m : ISO 286-2
Gram Commercial A/S
VOJENS
DENMARK
Date
Sign.
Sheetsize
Drawing no.
Sheet no.
Rev.
08-03-2019
JABP
765072960
1 of 4
003
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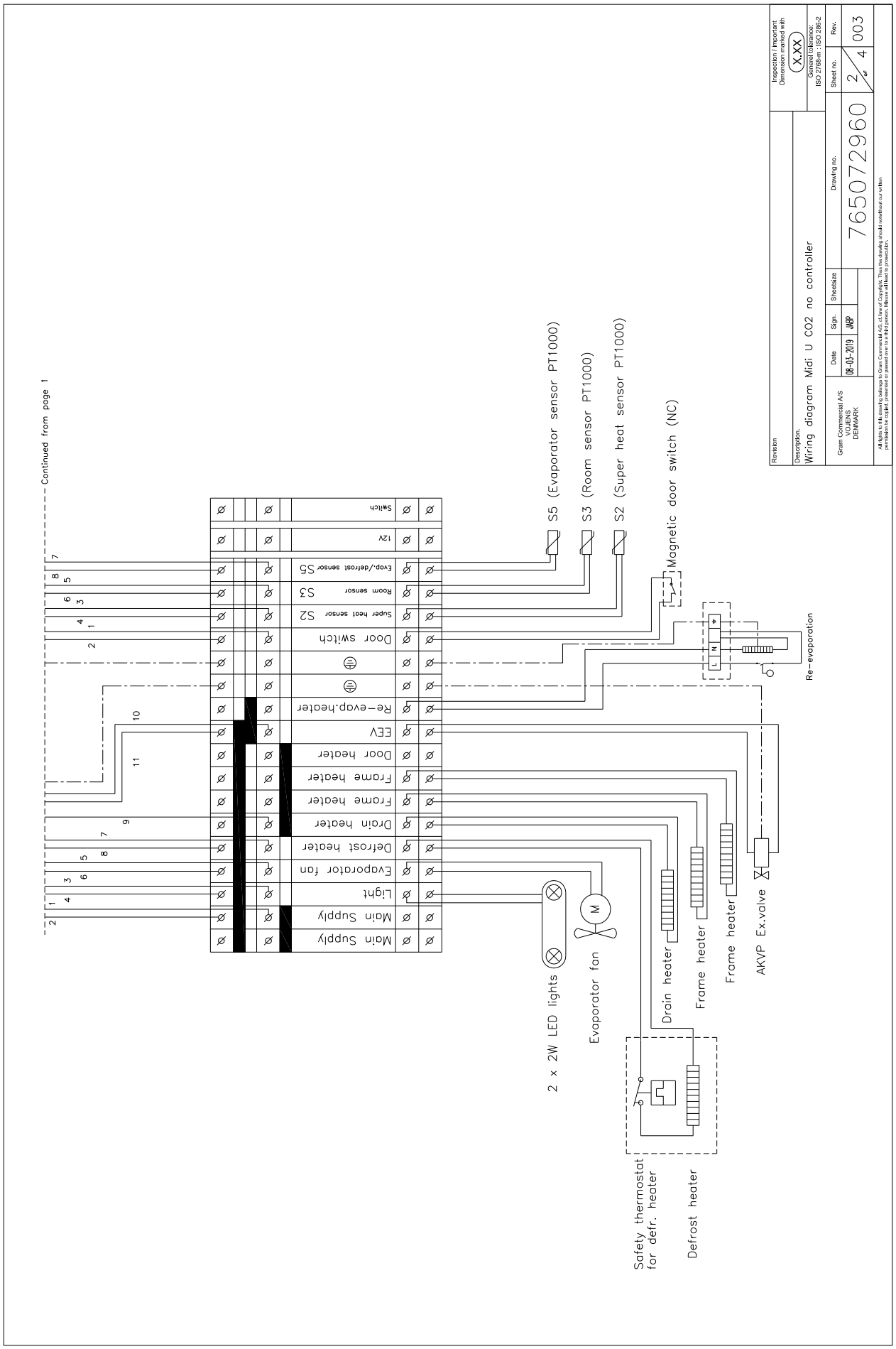
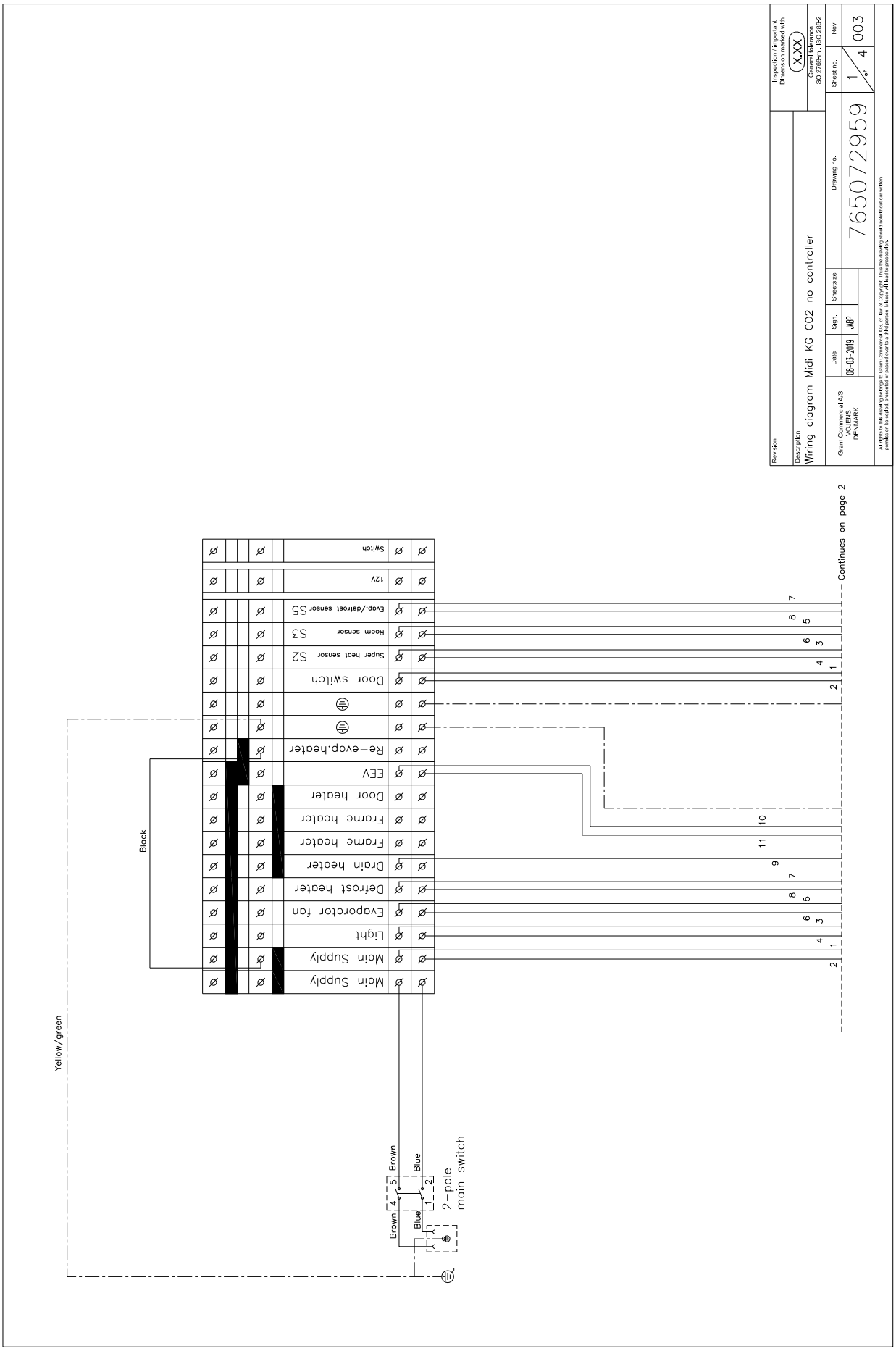
Continues on page 2
Yellow/green
Black
Brown
Blue
2-pole main switch
Main Supply
Main Supply
Light
Evaporator fan
Defrost heater
Drain heater
Frame heater
Frame heater
Door heater
EEV
Re-evap.heater
Door switch
Super heat sensor S2
Room sensor S3
Evap./defrost sensor S5
12V
Switch


Continued from page 1
Main Supply
Main Supply
Light
Evaporator fan
Defrost heater
Drain heater
Frame heater
Frame heater
Door heater
EEV
Re-evap.heater
Door switch
Super heat sensor S2
Room sensor S3
Evap./defrost sensor S5
12V
Switch
S5 (Evaporator sensor PT1000)
S3 (Room sensor PT1000)
S2 (Super heat sensor PT1000)
Magnetic door switch (NC)
Re-evaporation
2 x 2W LED lights
Evaporator fan
Drain heater
Frame heater
Frame heater
AKVP Ex.valve
Safety thermostat for defr. heater
Defrost heater
Revision
Description.
Wiring diagram Midi U CO2 no controller
Gram Commercial A/S
VOJENS
DENMARK
Date
08-01-2019
Sign.
JABP
Sheetsize
Drawing no.
765072960
Sheet no.
2 of 4
Rev.
003
Inspection / important Dimension marked with
(X.XX)
General tolerance:
ISO 2768-m ; ISO 286-2


Revision
Description:
Wiring diagram Midi KG CO2 no controller
Inspection / important
Dimension marked with
(xxx)
General tolerance:
ISO 2768-mH : ISO 286-2
Gram Commercial A/S
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Drawing no.
765072959
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1 of 4
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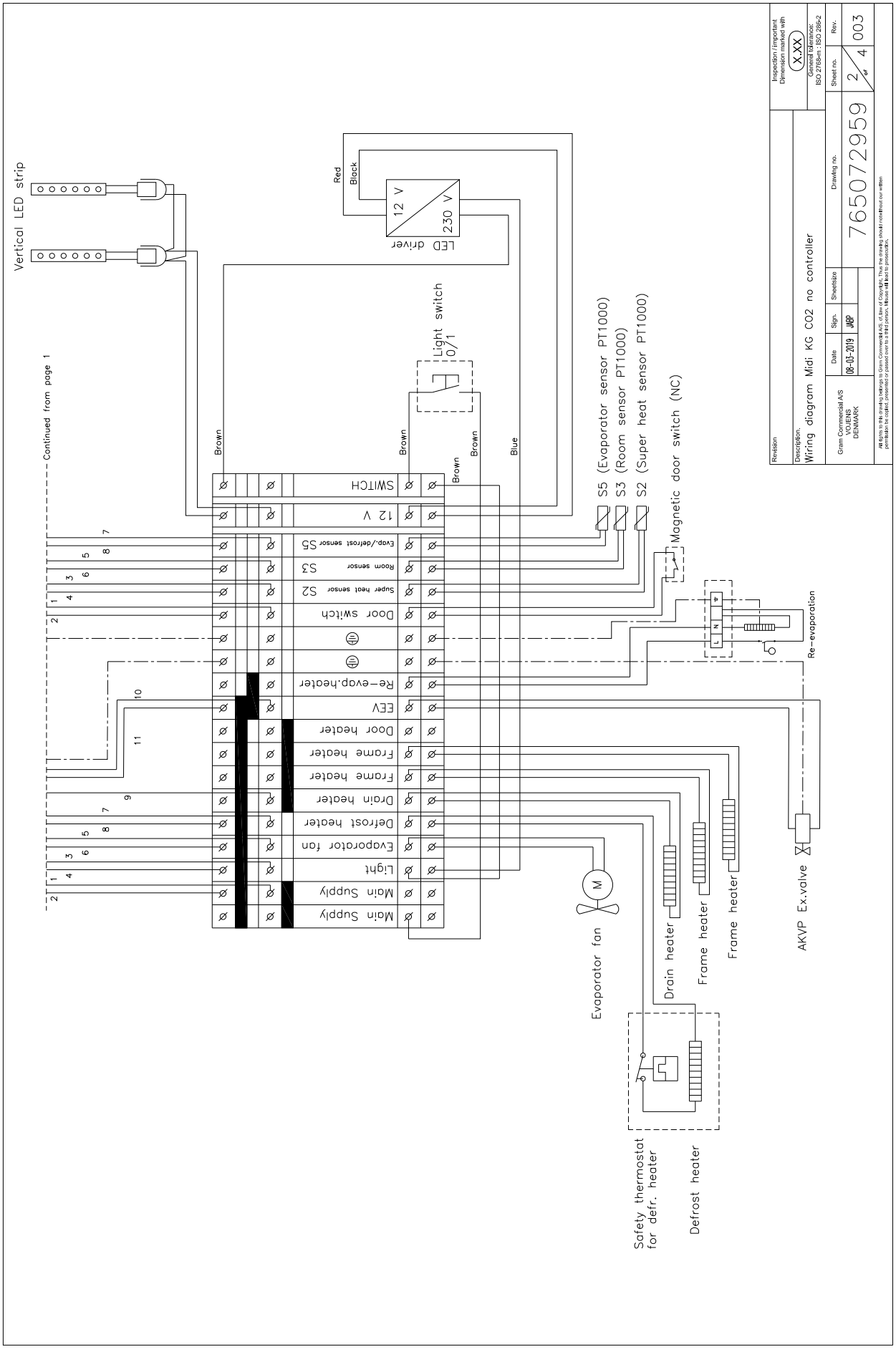
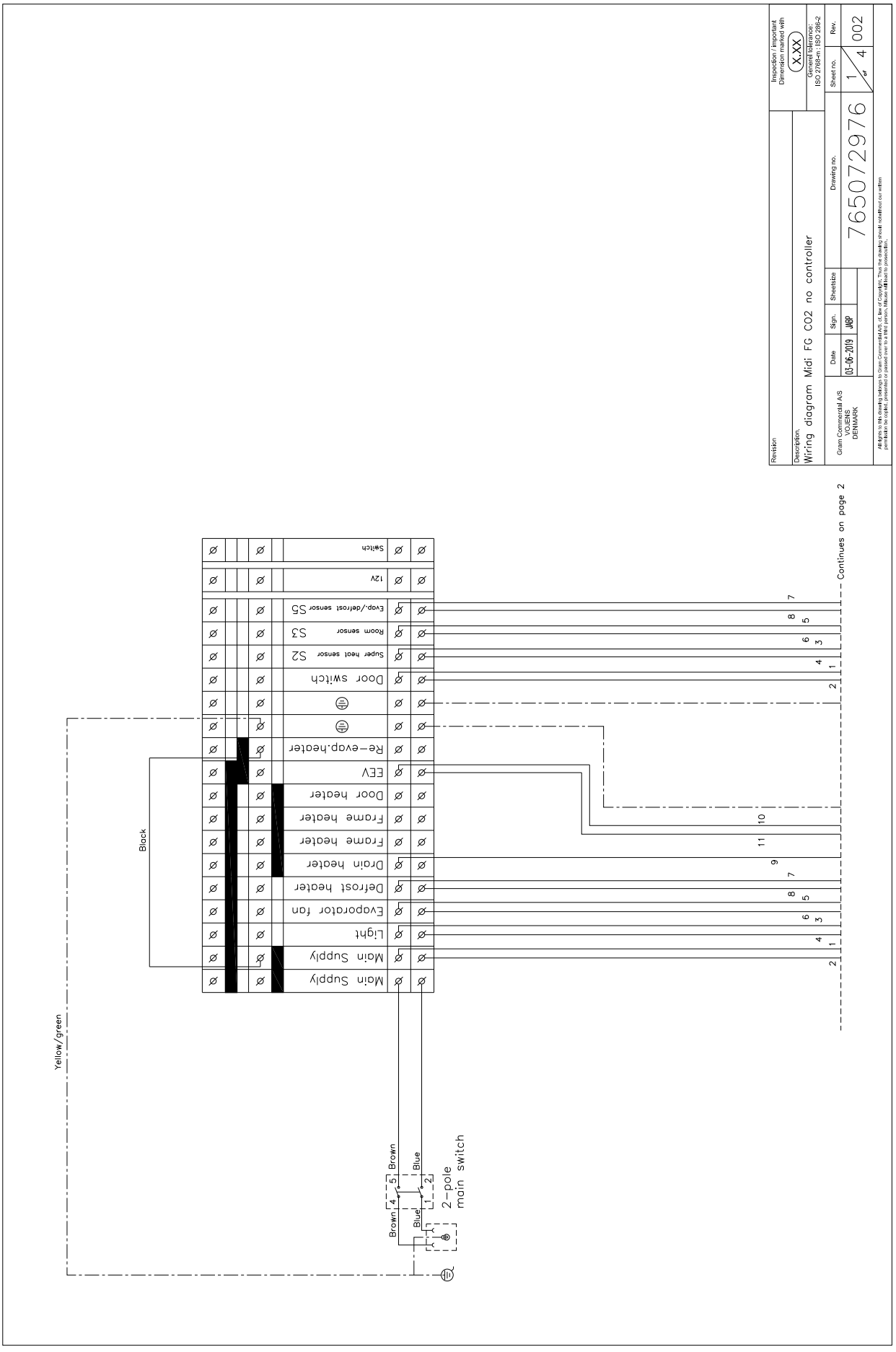
Continues on page 2
Main Supply
Light
Evaporator fan
Defrost heater
Drain heater
Frame heater
Frame heater
Door heater
EEV
Re-evap.heater
Door switch
Super heat sensor S2
Room sensor S3
Evap./defrost sensor S5
12v
Switch
Black
Yellow/green
Brown
Blue
2-pole
main switch


Vertical LED strip
Continued from page 1
LED driver
12 V
230 V
Red
Black
Light switch
0/1
Brown
Blue
SWITCH
12 V
Evap./defrost sensor S5
Room sensor S3
Super heat sensor S2
Door switch
Re-evap.heater
EEV
Door heater
Frame heater
Frame heater
Drain heater
Defrost heater
Evaporator fan
Light
Main Supply
Main Supply
S5 (Evaporator sensor PT1000)
S3 (Room sensor PT1000)
S2 (Super heat sensor PT1000)
Magnetic door switch (NC)
Re-evaporation
AKVP Ex.valve
Evaporator fan
Drain heater
Frame heater
Frame heater
Safety thermostat for defr. heater
Defrost heater
Revision
Description.
Wiring diagram Midi KG CO2 no controller
Inspection / important Dimension marked with (X.XX)
General tolerances ISO 2768-m - ISO 286-2
Gram Commercial A/S VOJENS DENMARK
Date 08-03-2019
Sign. JABP
Sheetsize
Drawing no. 765072959
Sheet no. 2 of 4
Rev. 003


Inspection / important Dimension marked with
XXX
General tolerances ISO 2768-m / ISO 286-2
Revision
Description
Wiring diagram Midi FG CO2 no controller
Gram Commercial A/S
VOJENS
DENMARK
Date
03-06-2019
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JMBP
Sheetsize
Drawing no.
765072976
Sheet no.
1 of 4
Rev.
002
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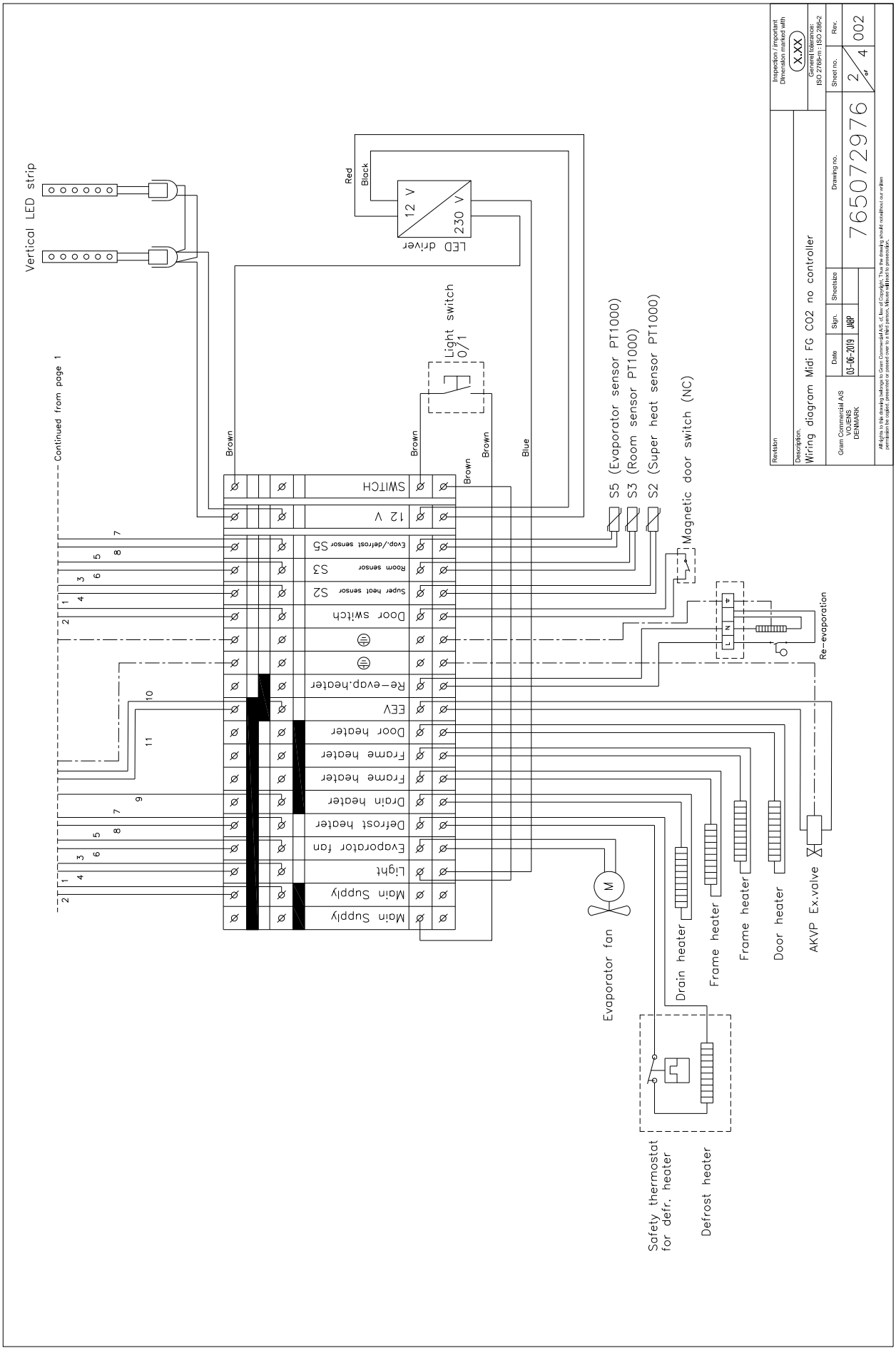
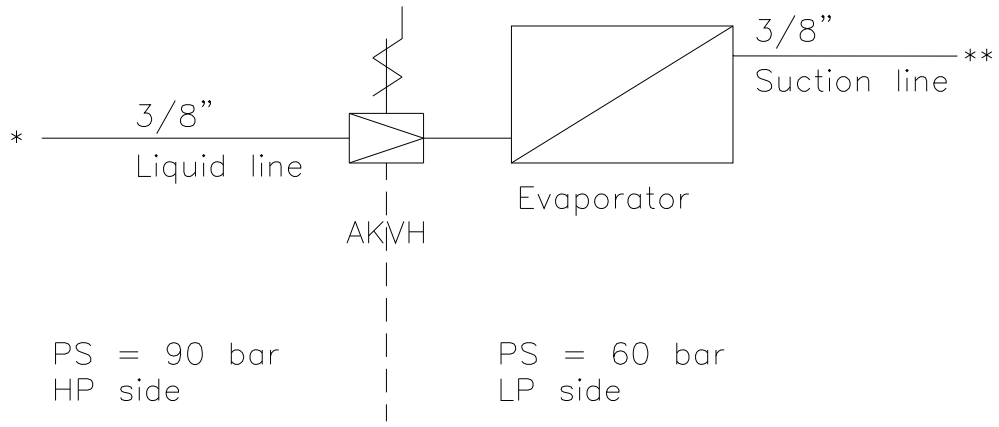
Continues on page 2
Main Supply
Light
Evaporator fan
Defrost heater
Drain heater
Frame heater
Frame heater
Door heater
EEV
Re-evap.heater
Door switch
Super heat sensor S2
Room sensor S3
Evap./defrost sensor S5
12V
Switch
Black
Yellow/green
Brown
Blue
2-pole main switch


Vertical LED strip
LED driver
12 V
230 V
Red
Black
Light switch
0/1
Brown
Blue
Continued from page 1
SWITCH
12 V
Evap./defrost sensor S5
Room sensor S3
Super heat sensor S2
Door switch
Re-evap.heater
EEV
Door heater
Frame heater
Frame heater
Drain heater
Defrost heater
Evaporator fan
Light
Main Supply
Main Supply
S5 (Evaporator sensor PT1000)
S3 (Room sensor PT1000)
S2 (Super heat sensor PT1000)
Magnetic door switch (NC)
Re-evaporation
Evaporator fan
Drain heater
Frame heater
Frame heater
Door heater
AKVP Ex.valve
Safety thermostat for defr. heater
Defrost heater
Revision
Description.
Wiring diagram Midi FG CO2 no controller
Drawing no.
765072976
Sheet no.
2 of 4
Rev.
002
Gram Commercial A/S
VOJENS
DENMARK
Date
03-06-2019
Sign.
JABP
Sheetsize
Inspection / important
Dimension marked with
(x.xx)
General tolerances:
ISO 2768-m : ISO 2768-2

# Piping diagram




* Mounted with servicevalve for delivery. (to be cut off before installation)

** Soldered tight for delivery.

| | | | | | | |
|---|---|---|---|---|---|---|
| Revision | | | | | Inspection / important Dimension marked with X.XX | |
| Description. Piping diagram CO2 cabinets | | | | | Generel tolerance: ISO 2768-m : ISO 286-2 | |
| Gram Commercial A/S VOJENS DENMARK | Date | Sign. | Sheetsize | Drawing no. | Sheet no. | Rev. |
| | 13-12-2017 | JABP | 4 | 765042194 | 1 of 1 | 0000 |

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