Operating- and servicemanual
Gram Standard Plus / Baker Standard 139

Table of contents

Application 3
Safety information 4
Location 5
Optimizing the energy consumption 7
General description 8
Refrigerant / GWP value 9
Climate / temperature class 9
Electrical connection 9
General use 11
Operating the product 13
Keyboard lock 14
Changing the temperature 15
Errors and Alarms 15
Display of the evaporator sensor reading 16
HACCP Alarms 17
Setting of HACCP alarm values 17
Display of HACCP alarms 17
Deletion of HACCP alarms 18
Cleaning of condenser filter 19
Defrosting 19
Defrost water 20
Door closing mechanism 21
Power failure 21
Cleaning 21
Door gaskets 22
Long term storage 22
Service 23
Disposal 24
EC-Declaration of conformity 25
RoHS 3 - (EU) 2015/863 25
Default factory settings 26
Access to service parameters 26
Parameter overview 27
Wiring diagram K/M 139 37
Wiring diagram F 139 38
Piping diagram 39

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 representatives and dealers placed all over the world are ready to help you.

Please refer to your dealer for information about the warranty coverage of your new Gram product.

Any warranty is subject to correct use according to specifications in this user manual, where e.g. common maintenance and eventual repairs are carried out by authorized technicians with proper knowledge of the product and only using original spare parts.

Changes in installation and other use of the product than prescribed 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

The product is designed for professional storage of foodstuff at a constant temperature.

The product is not be used for chilling down or freezing in 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 foodstuff stored in the product are not kept at the correct temperature or even damage the product.

The product is not suited for storing blood plasma, laboratory samples, pharmaceuticals or similar substances. The manufacturer will not be held liable or responsible for any damage caused by improper, incorrect or unreasonable use of the product.

Safety information

Important
Description of symbols used in this manual.

Warning Lacking observation to these instrucions 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 supervison 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 loosing the balance, causing danger to persons.

Do not pull the power cord to dicconnect 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.

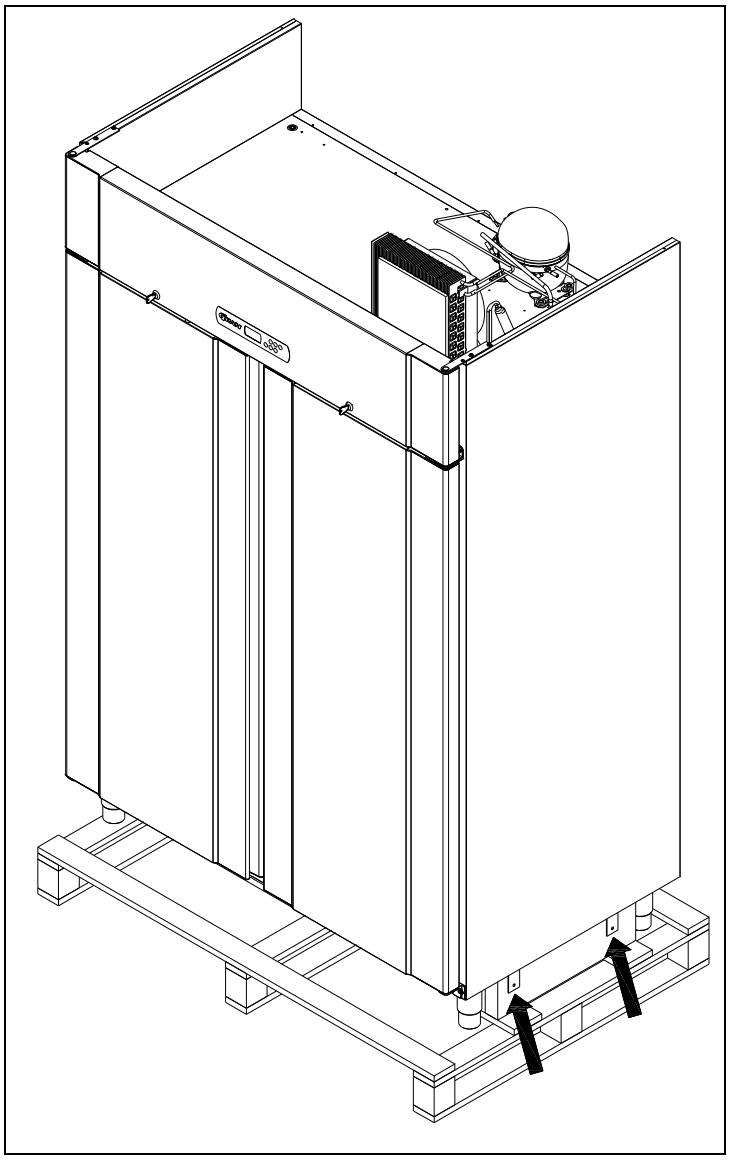


Fig.1

- If the cabinet has been transported in horizontal position it must stand upright at least 2 hours before it is started to allow the oil from the compressor to run back.
- 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.

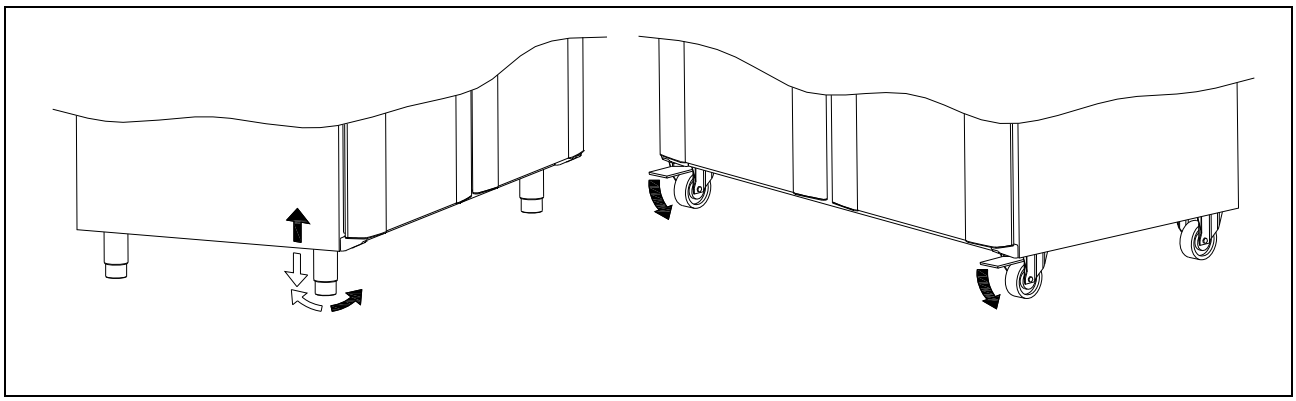


Fig. 2

Optimizing the energy consumption

- 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.
- Do not keep the door open for too long.
- Keep the condenser filter clean – to be cleaned at least every 2 weeks.
- Do not set the temperature setpoint too low.
- There must always be 20 cm of free space above the product, to ensure that the heat from the condenser can be led away.
- The product should be placed as close as possible up against the wall. For products with a heating element in the tray on the cabinet backside, however max. 75 mm from the wall.

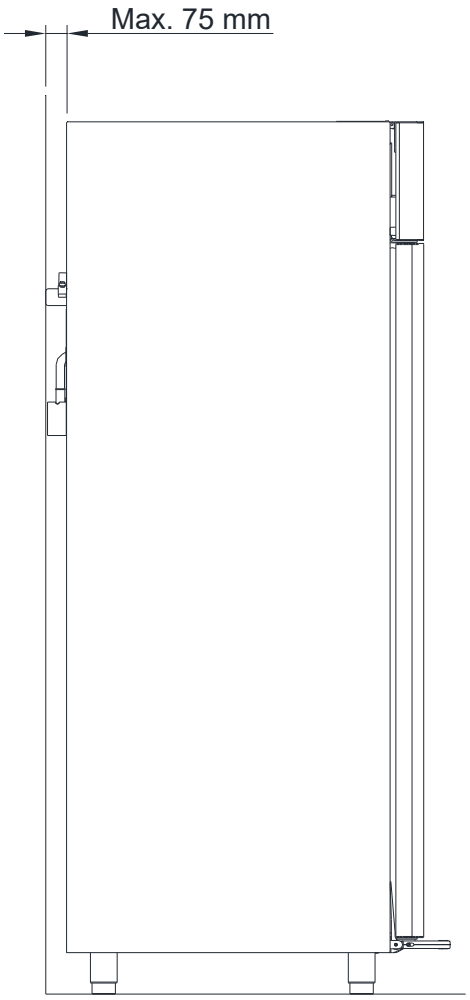


Fig. 3

General description

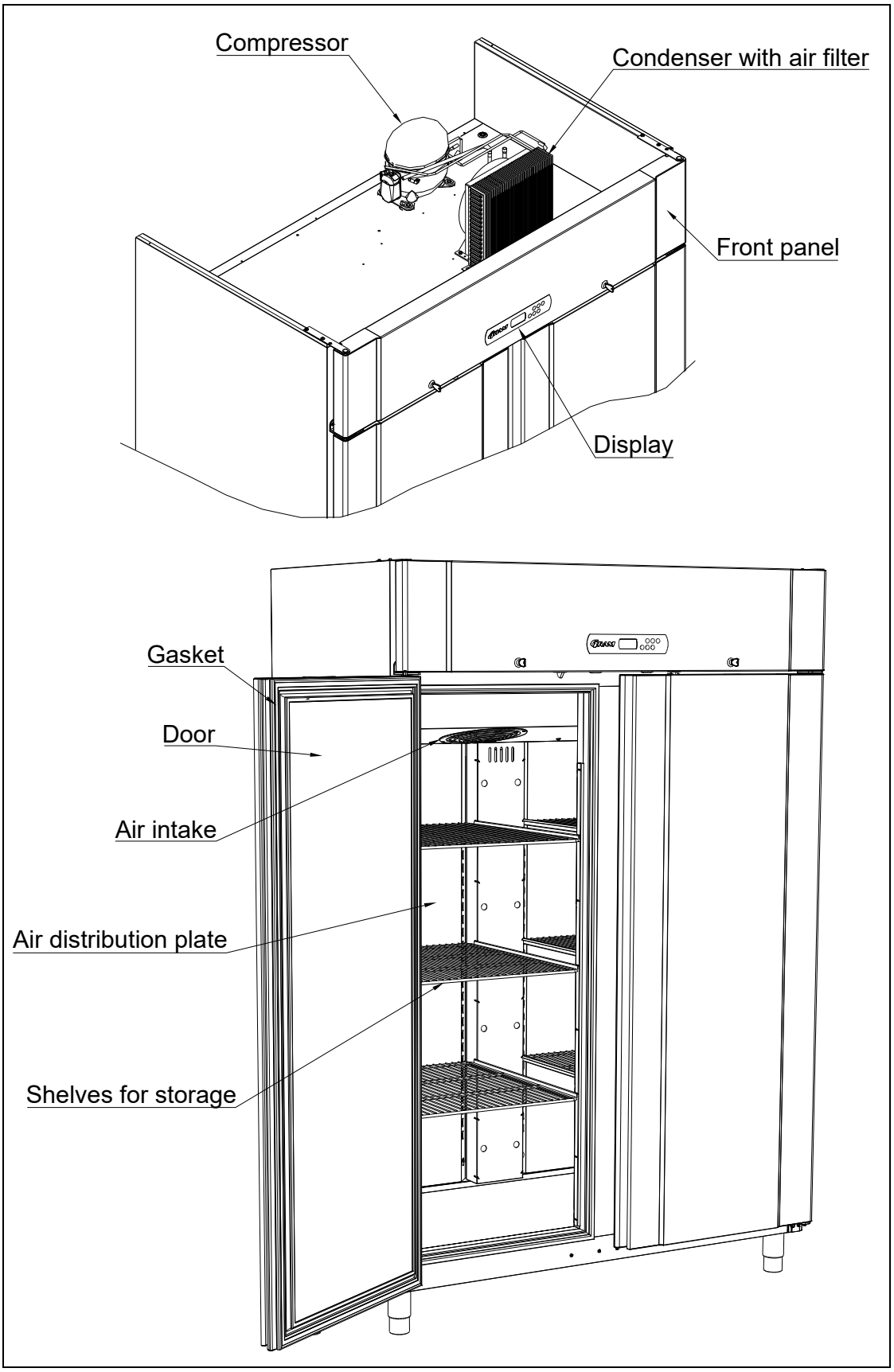


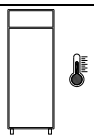
Fig. 4

Refrigerant / GWP value

Refrigerator	Regrigerant	Charge kg	GWP	CO_2 equivalent
STANDARD PLUS K 139 G	R290	0,146	3	0,4
STANDARD PLUS M 139 G	R290	0,146	3	0,4
Freezer				
STANDARD PLUS F 139 G	R290	0,143	3	0,4

Climate / temperature class

Products are tested according to the following climate and temperature classes. Information about the product's climate and temperature class can be found at the name plate (see fig.8)

Climate class	
3	25°C / 60 % RH
4	30°C / 55 % RH
5	40°C / 40 % RH

Temperature class	
L1	-18°C
M1	+5°C

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 an authorized technician with proper knowledge of the product during the guarantee period, if it is a product with built-in compressor.
If it is a product connected to an external compressor unit, it must be examined by the company who has connected the product to the unit.
Outside the guarantee period, it is advisable to use the service advised by your dealer. If this is not the case, assistance is required from an authorized technician with proper knowledge of the product.

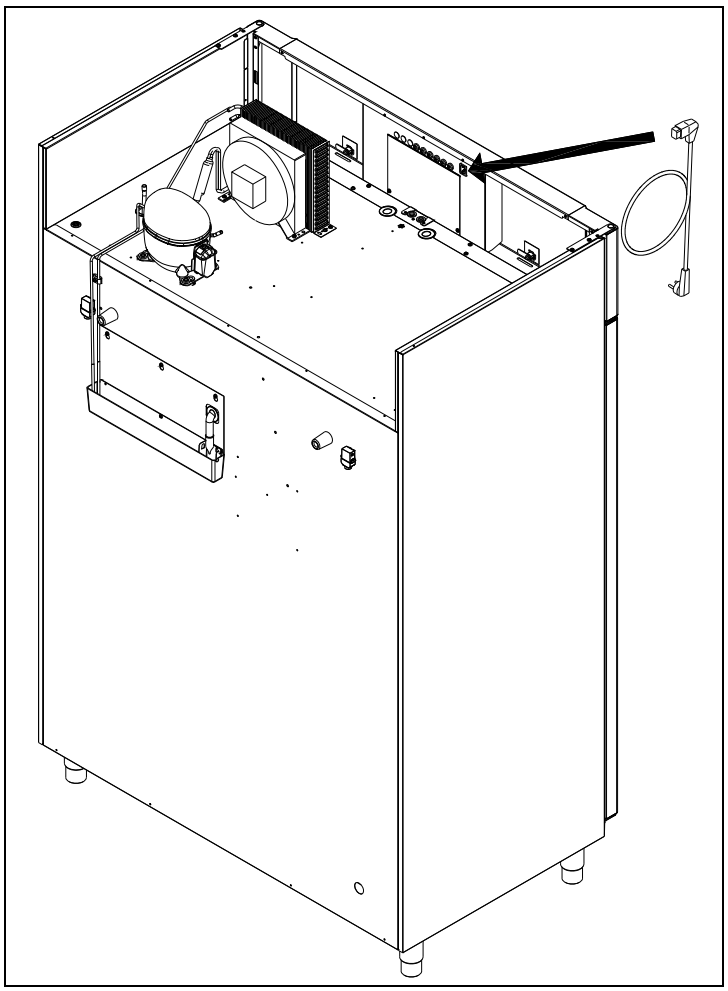


Fig. 5

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.

Repairing of electrical/technical parts may only be performed by authorized technicians with proper knowledge of the product.

Do not use the product before all coverings are installed, so that live or rotating machine parts can not 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 disconnected at the wall socket or at the cabinet inlet as shown above (Fig. 5), before service is performed on electrical parts. It is not sufficient to switch off the product by the START/STOP key as there will still be voltage to some electrical parts of the product.

General use

Do not damage the refrigeration system parts.

During normal operation, some parts of the refrigeration system in the compressor compartment might reach high temperatures, and could therefore cause burns if touching these components.

Do not use electrical devices inside the product.

To ensure correct and efficient air flow in the cabinet, the upper and lower areas must be kept free of items as shown on the next page. (see Fig. 6)

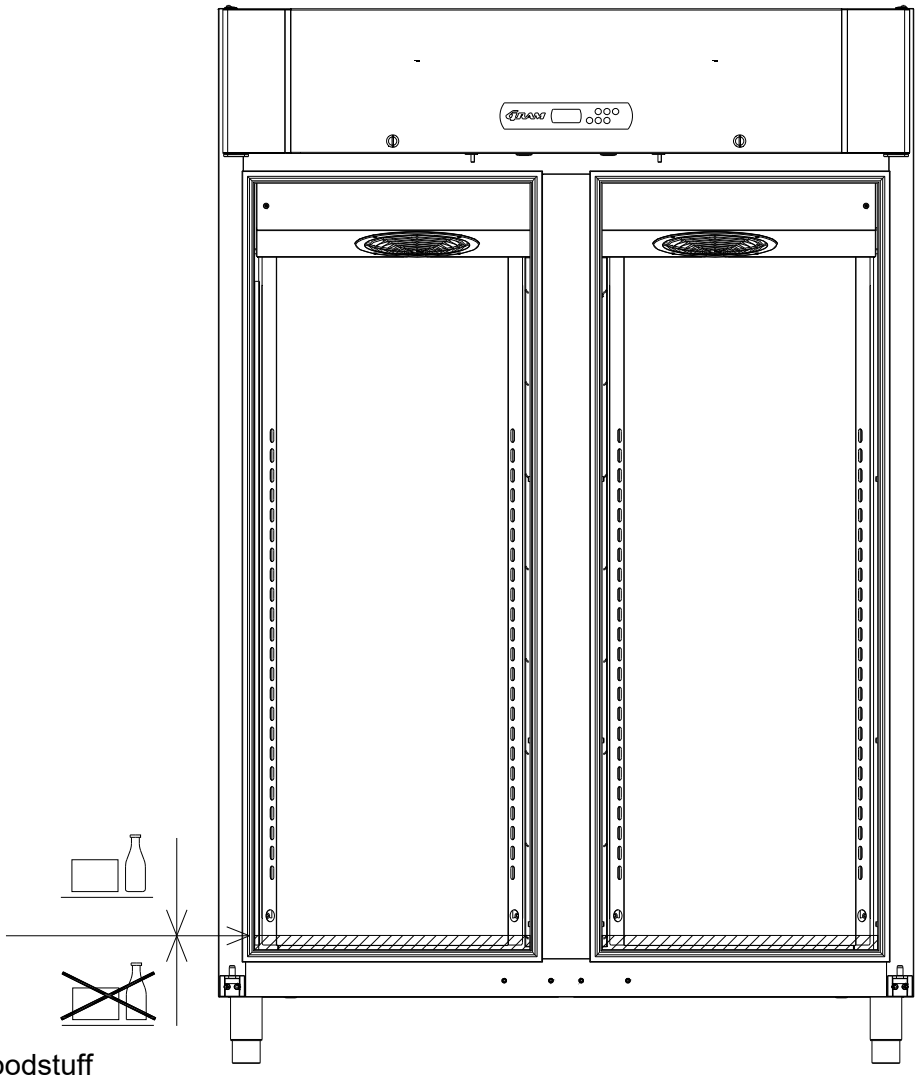
All items to be stored, that are not wrapped or packed, must be covered in order to avoid unnecessary corrosion of the inner parts of the cabinet.

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.

If the product is turned off, wait minimum 3 minutes before turning it on again. This is to protect the compressor from damage

Maximum loading of wire shelf: 40 kg

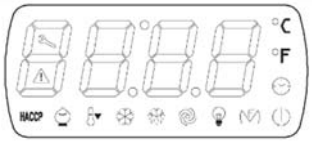
Do not store explosive substances such as aerosol cans with flammable propellant in this appliance.

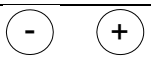


Do not place foodstuff
Below the bottom shelf support

Fig. 6

Operating the product

Display		The display contains the elements that are shown to the left of this text. Not all the symbols shown are used in this product. The symbols that are used are described below. The temperature is shown in the 4 alphanumeric positions. The individual symbols show what is in operation.
Symbols	HACCP	If this symbol is lit, not all HACCP alarms have been displayed. If this symbol flashes, the controls have stored at least one new HACCP alarm. If this symbol is not lit, then all HACCP related alarms have been shown or the alarm log has been deleted.
		If this symbol is lit, then the compressor is in operation. If this symbol flashes, the set point of the controls is about to be changed or the compressor is being prevented from starting due to various safety parameters in the controls.
		If this symbol is lit, the controls are performing a defrosting process. If this symbol flashes, the drip time after defrosting is under way or defrosting could not be commenced due to the compressor's operation preventing this defrosting.
		If this symbol is lit, then the evaporator fan is in operation. If this symbol flashes, it means that the evaporator fan has been deactivated/limited in starting by various parameters in the controls.
		When this symbol is lit, the frame and drainage heating elements respectively have been switched on (only applies to freezers).
		When this symbol is lit, the cabinet is in energy-saving mode.
		When this symbol is lit, it is time to clean the cabinet's condenser
		When this symbol is lit, there is a current alarm or a sensor fault that needs to be addressed.

	°C	This symbol indicates that the temperature in the display is measured in °C
		When this symbol is lit, the cabinet is in standby mode.
Operating buttons		On/off button. Used to switch the cabinet on or off and to exit a menu.
		Press the P button to set the desired temperature in the cabinet /Set point. This button is also used as a ”select” button.
		+/- buttons. Up/down when making settings.
		The alarm clock is used in connection with temperature alarms
		The defrosting button is used to initiate manual defrosting

Start-up:

Connect the product to the electrical outlet. If the product starts in Standby, do the following:

- Press the button  for approx. 2 sec to switch the product on.

Upon start-up, the display will show the current temperature in the cabinet and relevant control lights will be lit.

Keyboard lock

If the display is locked, attempts to switch the cabinet off or to enter settings will result in the display showing Loc. In this state, no settings can be made on the controls.

The keyboard for the controls can be unlocked by simultaneously pressing  and  for approx. 1 second. The display will now show UnL, and the display is unlocked.

The keyboard can be locked in the same manner. After being locked, the display will show Loc, and the display is locked.

Changing the temperature

To set the desired set point, do the following:

- Briefly press the button (P). Once this has been done, the current set point of the product is shown in the display. Furthermore, the symbol ❄ will flash as an indication that the set point is about to be changed. The set point can now be changed using (+) or (-).
- Each time (+) or (-) is pressed, the temperature is changed by 0.1 degrees up or down respectively. If (+) or (-) is pressed continuously, then the set point is changed continuously.
- Once the desired set point has been set, the new value is shown in the display.
- Pressing the button (P) saves the new set point, and the controller does return to normal operation.

If there is no confirmation by pressing the button (P), the controller will return to normal operation after 15 seconds. Those changes that might have been performed with respect to the set point will then be saved such that the value set will become the new cabinet set point.

Errors and Alarms

SENSOR ERRORS

Display	Explanation
Pr1 ⚠	Room sensor error. The error display will persist until the fault is remedied. Service is required for the product.
Pr2 ⚠	Evaporator sensor error. The error display will persist until the fault is remedied. Service is required for the product.

ALARMS

Display	Explanation
dFd	Defrosting alarm. This code is shown in the display if the defrosting has been interrupted at the maximum time allowed for a defrosting. The product will in all probability continue to function normally. This is just an indication that the product is being or has been subjected to a greater load than the defrosting parameter settings are able to accommodate. This error is acknowledged by touching any key.
ld	Door alarm, if the door remains open or is not properly closed. This alarm is cancelled when the door is closed again properly.
AH ⚠	High temperature alarm. This alarm is saved in the alarm log.
AL ⚠	Low temperature alarm. This alarm is saved in the alarm log.

For all alarms, press (P) to acknowledge the alarm. The display will then revert to its normal content.

Display of the evaporator sensor reading

In order to check the evaporator temperature / the function of the evaporator sensor, it is possible to read out the evaporator temperature from the controller display. This is done by holding (−) for approx. 2 Seconds. The dispaly will then show **"rCH"**. Press (+) until **"PB2"** is shown in the display. In order to display the current reading of probe 2 „PB2", which is the evaporator sensor, it is now necessary to press (P). Now the evaporator temperature is displayed. In order to end the read out press (⏻). If nothing further is touched for 60 seconds, the display will return to standard operation showing the cabinet temperature.

HACCP Alarms

The controls can store up to three HACCP alarms. The information saved for these alarms is:

- The critical value(s)
- Duration of the alarm

The controls can display the following alarms:

Display	Explanation
AL	Low temperature alarm. The read-out provided by the controls for the alarm shows the lowest temperature that has occurred in the cabinet and how long the cabinet temperature has been under the set alarm value (A1).
□□	High temperature alarm. The read-out provided by the controls for the alarm shows the highest temperature that has occurred in the cabinet and how long the cabinet temperature has been above the set alarm value (A4).
L**d**	Door alarm. The read-out provided by the controls for the alarm shows the highest temperature that has occurred in the cabinet during this type of alarm and how long the door has been open.

Setting of HACCP alarm values

This is done by pressing ⊕ and ⊖ simultaneously until A1 is shown in the display. Then press ⊕ or ⊖ to switch between the individual parameters (A1, A4 and A7). The PA parameter, which appears when browsing as described above, is treated in the chapter on service parameters.

Display	Explanation
□□	Low temperature alarm limit. The default setting is -35°C
□□	High temperature alarm limit. The default setting is +25°C
□□	Time delay for A1 and A4. The default is 60 minutes.

Display of HACCP alarms

If there have been or still are one or more alarms for the cabinet, this will be indicated by the controls.

When “HACCP” is continuously lit in the control display, not all HACCP alarms have been read out.
If “HACCP” flashes, the controls have stored at least one new HACCP alarm.
If “HACCP” is not lit, then all HACCP related alarms have been shown or the alarm log has been deleted.

If one or more alarms are active for the cabinet, then the symbol  will be lit. Active alarms cannot be deleted.

If “HACCP” is either continuously lit or flashing in the display, it is possible to read out the alarm(s) contained in the log. This is done by pressing the button  . This action causes LS to appear on the control display. Pressing (P) will then cause information on the first possible alarm type to be displayed. Pressing (+) or (-) will cause the controls to switch between the different alarms if there are more than one type. When the alarm for which data is desired to be read out is reached, then do the following.
example:
The controls show AH. Press (P).
The controls will now show the data that relates to the AH alarm. Each individual step is shown for approx. 1 second. The sequence is as follows:

Display	Explanation
15.4°C	The critical highest temperature under the AH alarm in °C
dur	Duration of the alarm
H01	Number of hours the temperature alarm has lasted (1 hour)
n20	Number of minutes the temperature alarm has lasted (**n** is used because the display cannot write "m" for minutes)
AH	Alarm type (AH for high temperature alarm)

To leave this part of the display and return to the LS display, press  once. To exit the alarm log, press once on or twice on  . To delete the alarm log instead, do as described in the following.

Deletion of HACCP alarms

When all relevant alarms have been checked and none of them are active any longer, then the log can be deleted in the manner described below.

Press the button  once, after which the display shows LS. By pressing once more on  the display will show rLS, which is the reset of the alarm log. When this appears in the display, then press (P). The display now shows 0. Press the button (+) until the display shows 149. Pressing the button (+) continuously causes the numerical value to change more quickly. If you run past 149, the button (-) can be used to correct the value. When the display shows 149, confirm the deletion by pressing (P). The controls confirm the deletion by showing ” **----** ” which will flash for 4 seconds.

Cleaning of condenser filter

Reminder about cleaning the condenser's air filter:

To ensure the proper operation of the cabinet, it will be periodically indicated that the filter in front of the condenser has to be cleaned. This is indicated by the warning light being lit.

Resetting of condenser filter alarm:

After the filter has been cleaned, the controls must be reset to remove the filter alarm. Resetting can only be done by a specific key combination.

- Press the button (-) until the control display shows a combination of letters.
- Using the button (+) or (-), press if necessary until the display shows rCH.
- When the display shows rCH, then press (P).
- Then press the button (+) or (-) until the display shows 149.
- When the display shows 149, press (P).
- This causes the display to show ---- for approx. 4 seconds, which confirms that the counter has been reset.

Now the warning light is shut off and the controls return to normal operation according to parameter “C10”.

Defrosting

Normal defrosting takes place automatically 4 times per day. If the product is under an extremely intense load (frequent openings of the door and frequent replacement of the goods), it may become necessary to perform manual defrosting.

Starting manual defrosting: Press the button for more than 4 seconds.

The symbol will be lit while defrosting is occurring. After defrosting has been concluded, the symbol will flash to indicate a drip time. Immediately after the drip time has been completed, the cabinet's refrigeration system will start up again.

If pressing the button as described above does not result in defrosting being performed, then the reason is:

- that the evaporator is ice-free, which means that defrosting is not necessary.
- that the defrosting is delayed, due to the compressor is running. This is indicated by is flashing.

Shortly after defrosting has been completed, the compressor starts, and the symbol is lit to indicate that the refrigeration process is working once again.

⚠ Do not use sharp or pointed objects to accelerate the defrosting process.

Defrost water

The product generates defrost water during defrosting, which is conducted out into a re-evaporation tray at the back of the product (see Fig. 7).

A re-evaporation tube from the cooling system on freezers or an electric heating element placed on the tray for refrigerators (K and M models) will enable the water to be re-evaporated.

Cleaning the re-evaporation tray at the back of the product is recommended as needed and at a minimum once annually. Remember to shut off the electrical power to the product before cleaning.
Be careful not to damage the re-evaporation tube on freezers or the re-evaporation heating element and associated float switch in refrigerators in connection with any cleaning.

Please note that the re-evaporation components placed on the back of the cabinets can be hot. This applies both for the pressurised tube on the freezer as well as for the heating element on the refrigerators. Use proper means of protection (gloves) to avoid burns in connection with cleaning the re-evaporation trays.

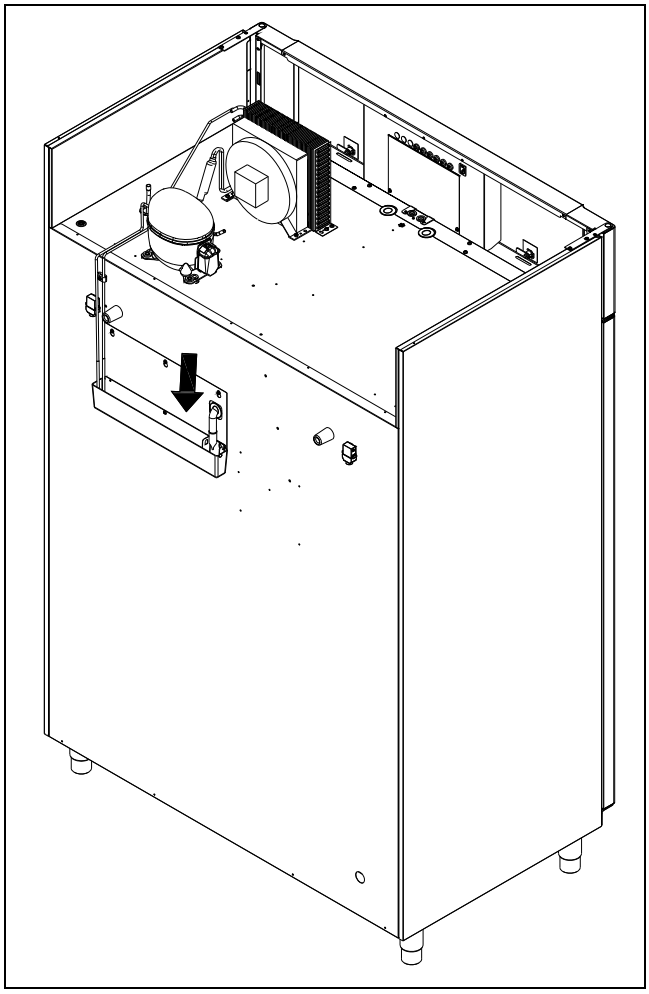


Fig. 7

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.

Power failure

In the event of a power failure, the control remembers the temperature setting and restarts the product when power is restored. If the power failure persists for some time, the control might revert to the factory setting.

Cleaning

Insufficient cleaning will cause that the product will not work at optimum perfomance, 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 compressor compartment and in particular the condenser must be kept free from dust and dirt. This is best done with a vacuum cleaner and a brush.
The air filters on the condenser and the front panel can be removed and cleaned in a dishwasher at max. 50°C.


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 thorougly with a hot soapy damp cloth.
Eventual remnants of food could create mould.

Service

The refrigerating system and the hermetically sealed compressor require no maintainance - they merely have to be kept clean.

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 your dealer.

When contacting us please tell 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:

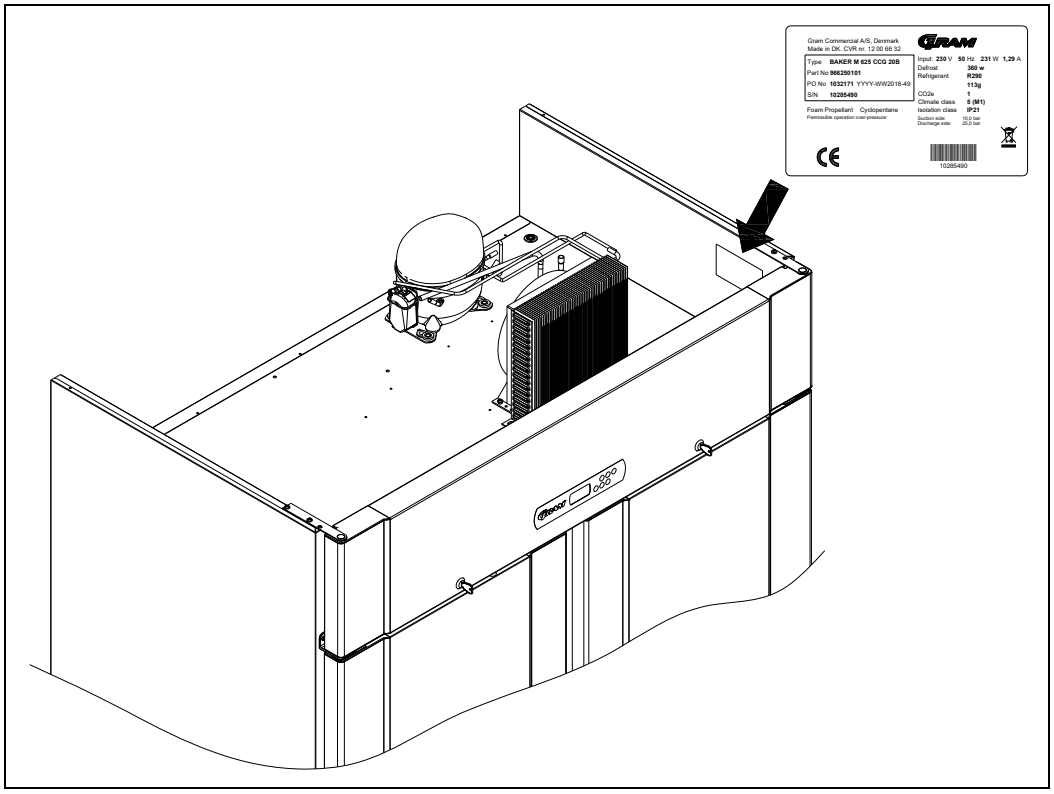


Fig.8

Disposal

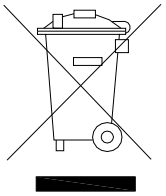
Electrical and electronic equipment (EEE) contains materials, components and substances that can be dangerous and harmful to human health and the environment if the waste (WEEE) is not disposed of properly.
Products that are labelled with a “crossed-out wheelie bin” is considered electric and electronic equipment. The crossed-out wheelie bin symbolizes that waste of this type cannot be disposed of with unsorted municipal waste but must be collected separately.
Contact your local dealer when the product needs to be disposed of.
Please be aware of not damaging the refrigeration system and piping when a product is taken out of use. This will prevent the uncontrolled escape of the refrigerant from the refrigeration system.

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 recognises 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.



EC-Declaration of conformity

Producer	Name: Gram Commercial A/S Adress: Aage Grams Vej 1, 6500 Vojens Tel.: +45 73 20 12 00
Product	Model: Standard Plus 139, Baker Standard 139 Refrigerant: R290 Year: 2020
Directives	The product is in compliance with all the essential health- and safety requirements and provisons in: **Directive for Machinery 2006/42/EF** The product is where relevant in compliance with the following other directives: **Electromagnetic Compatibility Directive – 2014/30/EU** **Design of energy related products 2009/125/EF** **Regulation 2015/1095** **FCM regulation 10/2011** **Regulation 1935/2004** **RoHS 2 - 2011/65/EU** **RoHS 3 - (EU) 2015/863**
Standards	The following standards are used to the extent necessary to comply with the relevant directives: **DS/EN 12100:2011** - Safety of machinery -- General principles for design -- Risk assessment and risk reduction **DS/EN 60335-1:2012** – Household and similar electrical appliances. Safety. General requirements **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 **DS/EN ISO 22041:2019** – Refrigerated storage cabinets and counters for professional use. Performance and energy consumption
Person responsible for technical dossier	Company: Gram Commercial A/S Adress: Aage Grams Vej 1 Name: John Lund
Signature	Vojens 02/03-2020 R&D Manager

Default factory settings

The controller can be reset to default factory settings. Please be aware that default factory settings of the controller can differ from the settings implemented when the cabinet was delivered. Therefore some parameters might have to be modified after resetting to controller factory setting.

Press buttom ⊕ and ⊖ at the same time for approximately 4 seconds untill the Display shows **"A1"**. Then press ⊕ or ⊖ untill the display shows **"PA"**. Press buttom Ⓟ, and the display will show **„0"**. Change this value by using ⊕ or ⊖ untill the value **"149"** is shown and then press Ⓟ and the display will again show **"PA".**

Then press ⊕ and ⊖ at the same time and keep them pressed untill the display shows **"dEF".** Press buttom Ⓟ, and the display will show **„0"**. Change this value by using ⊕ or ⊖ untill the value **"1"** is shown and then press Ⓟ.

After this the display shows **"dEF"** 4 times and then the default controller settings are restored.

Turn off the power supply to the cabinet and then turn it back on to implement the reset.

The cabinet will start under normal running condition.

Access to service parameters

Press buttons ⊕ and ⊖ at the same time for approximately 4 seconds untill the Display shows **"A1"**. Then press ⊕ or ⊖ untill the display shows **"PA"**. Press buttom Ⓟ, and the display will show **„0"**. Change this value by using ⊕ or ⊖ untill the value **"-19"** is shown and then press Ⓟ and the display will again show **"PA".**

Then press ⊕ and ⊖ at the same time and keep them pressed untill the display shows the first service parameter **"SP".**

With the buttons ⊕ and ⊖ it is now possible to select the diffrent service parameters.

Press the button Ⓟ to access the parameter and then use buttons ⊕ and ⊖ to change the value of the parameter. By pressing Ⓟ the entered value will be saved.

To leave the service parameters press ⏻ or keep ⊕ and ⊖ pressed for approximately 4 seconds. If no buttons are pressed for 60 seconds the controller automatically leves the service parameter settings.

Turn off the power supply to the cabinet and then turn it back on to implenet the reset.

The cabinet will start under normal running condition.

Parameter overview

				Freezer	Refrigerator extended	Refrigerator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
				45-358-0133	45-358-0134	45-358-0132	GRAM sparepart item number
Parameter	Maximum	Minimum	Value	**Factory setting**			
SP	r1	r2	°C/°F	-18	5	5	Temperature setpoint
CA1	-25.0	25.0	°C/°F	0	0	0	Offset room sensor
CA2	-25.0	25.0	°C/°F	0	0	0	Offset evaporator sensor
CA3	-25.0	25.0	°C/°F	Not applicable			Offset condensor sensor
P1	0	1	- - - -	0	0	0	Celsius grade decimal point; 0=no; 1=yes
P2	0	1	- - - -	0	0	0	Temperature unit of measurement; 0=°C; 1=°F
P3	0	2	- - - -	1	1	1	Evaporator sensor function; 0= sensor absent; 1=defrosting probe and probe for evaporator fan on/off; 2=probe for evaporator fan on/off
P4	0	1	- - - -	0	#	#	Enable condenser sensor 1=yes 0=no
P5			°C/°F	3	3	3	Digital Filter value (if P5 is set to a value (0= filter OFF) , if measured temperature is inside the interval SETPOINT-P5 and SETPOINT + P5, value shown on the display is SETPOINT. If temperature measured is outside previous interval, value shown on the display will be real temperature.
P6	0	1	- - - -	1	1	1	Hysteresis type; 0=asymmetric; 1=symmetric
P8	0	250	ds	100	100	100	Display update time of temperature sensor
r0	0	15	°C/°F	2	2	2	Working setpoint differential (Hysterese)
r1	-99.0	r2	°C/°F	-22	-5	2	Minimum working temperature setpoint
r2	r1	99.0	°C/°F	-10	12	12	Maximum working temperature setpoint
r3	0	1	- - - -	0	0	0	Blocking setpoint calibration for user; 0=no; 1=yes
r4	0	99		0	#	#	Value of set Increase after energy saving cycle activation
r5	0	99	°C/°F	0	0	0	Decrease in temperature during Overcooling function; see also r6
r6	0	240	min	0	0	0	Duration of Overcooling function
r7	0	99	°C/°F	#	#	#	minimum difference “cell temperature - working setpoint” (when the instrument switches on) such as to provoke the exclusion of the consequent value of the evaporator temperature among the ones used for the calculation of the relative average (for the defrost activation; only if d8 = 3); also look at d17

Not relevant or not availble

COMPRESSOR PROTECTION SYSTEM

				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
C0	0	240	min	5	5	5	Delay in switching on compressor after turning on cabinet
C1	0	240	min	5	5	5	Minimum time between two consecutive compressor start-ups; also delay in compressor start-up after conclusion of cell probe error ; overuled by C2+C3;
C2	0	240	min	5	5	5	Minimum duration of compressor switch off time
C3	0	240	sec	240	240	240	Minimum duration of compressor switch on time
C4	0	240	min	10	10	10	Duration of compressor switch off during room sensor error (code “Pr1”); see also C5
C5	0	240	min	30	10	10	Duration of compressor switch on during room sensor error (code “Pr1”); see also C4
C6	0.0	199.0	°C/°F	#	#	#	Condenser temperature is higher than that at which the condenser overheating alarm is activated (code “COH”)
C7	0.0	199.0	°C/°F	#	#	#	condenser temperature is higher than the limit at which the compressor blocked alarm is activated (code “CSd”)
C8	0	15	min	#	#	#	Delay for compressor alarm (code “CSd”)
C10	0	9.999	hr	2160	1440	1440	number of compressor operating hours is higher than the limit at which the need for maintenance is signaled (Interval for condenser/filter cleaning). 0 = function absent

Not relevant or not availble

				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
d0	0	99	hr	6	6	6	defrosting interval (only if d8 = 0, 1 or 2) 0= never activated
d1	0	2	- - - -	0	0	2	Defrost type 0 = Electric 1 = Hotgas 2 = Compressor stop type of defrosting 0= ELECTRIC - during defrosting the compressor will remain off and the defrosting output will be activated; evaporator fan activity will depend on parameter F2; 1=BY HOT GAS - during defrosting the compressor will be switched on and the defrosting output will be activated; evaporator fan activity will depend on parameter F2; 2=VIA STOPPING OF COMPRESSOR - during defrosting the compressor will remain switched off and the defrosting output will remain disactivated; evaporator fan activity will depend on parameter F2
d2	-99	99	°C/°F	12	7	4	evaporator temperature at end of defrosting (only if P3 = 1); see also d3 valid if P3=1
d3	0	99	min	30	30	30	if P3 = 0 or 2, defrosting duration; if P3 = 1, maximum defrosting duration; see also d2; 0= defrost will be never activated
d4	0	1	- - - -	0	0	0	defrosting when instrument is switched on (only if d8 = 0, 1, 2 or 3) 1=yes 0=no
d5	0	99	min	30	30	30	If d4 = 1, delay in activation of defrosting after cabinet is turned on If d4=0 minimum time between turning on cabinet and defrost activation

Not relevant or not availble

				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
d6	0	1	- - - -	1	1	1	Temperature displayed during defrosting 0= Room temperature 1= N/A
d7	0	15	min	4	4	0	Dripping duration
d8	0	4	- - - -	0	0	0	Defrosting activation criterias 0 = Interval cabinet runtime - defrosting will be activated once the cabinet has been running for a certain amount of time, designated as d0 1 = Interval compressor runtime - defrosting will be activated once the compressor has been switched on for time d0 2 = Interval evaporator temperature - defrosting will be activated once the evaporator temperature has been below temperature d9 for time d0 3 = Temperature - defrosting will be activated when one of the following conditions is present : - condition 1: “room temperature - evaporator temperature” difference has been higher than temperature d10 for time d12; - condition 2: evaporator temperature has been below temperature d9 for time d14
d9	-99	99	°C/°F	0	0	0	evaporator temperature is higher than that at which the defrost interval counter is suspended (only if d8 = 2 or if d8 = 3 and for condition 2)
d11	0	1	- - - -	1	1	1	Defrosting alarm switches off once maximum time limit has been reached (code “dFd”; only if P3 = 1 and in absence of an evaporator probe (code “Pr2”) 1 = yes
d15	0	99	min	0	0	0	minimum time that the compressor must be switched on before defrosting can be activated (only if d1 = 1) This is valid only if you have hot gas defrost
d16	0	99	min	0	0	0	Predripping duration (during predripping the compressor will remain switched off, the defrosting output will be activated and the evaporator fan will remain switched off)
d17	1	10		#	#	#	number of evaporator temperature values used for the calculation of the relative average (for the defrost activation; only if d8 = 3); also look at r7, i11 and i12
d18	0	3.000	min	#	#	#	Defrosting interval (only if d8 = 3 and for condition 1) 0 = defrosting for condition 1 will never be activated
d19	0	40	°C/°F	#	#	#	evaporator temperature above which the defrost is activated (relative to the evaporator temperatures average, or “evaporator temperatures

							average - d19") (only if d8 = 3 and for condition 2); also look at d17
d20	0	500	min	0	0	0	minimum consecutive time the compressor must be switched on such as to provoke the defrost activation 0 = the defrost will never be activated because the compressor has been switched
d21	0	500	min	0	0	0	minimum consecutive time the compressor must be switched on after the insturment switches on (on condition that the difference "cell temperature - working setpoint" is higher temperature r7) and after function Overcooling is activated such as to provoke the defrost activation 0 = the defrost will never be activated because the compressor has been switched on
d22	0	10	°C/°F	#	#	#	evaporator temperature above which the defrosting interval is suspended (relative to the evaporator temperatures average, or "evaporator temperatures average + d22") (only if d8 = 3 and for condition 1); also look at d17
d23	0	10	°C/°F	#	#	#	evaporator temperatures average increase during function Energy Saving (for defrost activation; only if d8 = 3); also look at d17

GRAM

ALARM PARAMETERS

				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
A0	0	1	- - - -	0	0	0	Sensor for low temperature alarm (code “AL”) 0 = Room temperature 1 = Evaporator temperature
A1	-99	99	°C/°F	-35	-35	-35	temperature below that at which the minimum temperature alarm is activated (code “AL”); see also A0, A2 and A11
A2	0	2	- - - -	2	2	2	Settings minimum temperature alarm (code “AL”) 0 = alarm deactivated 1 = relative to working setpoint (that is “working setpoint - A1”; consider A1 without sign) 2 = absolute (A1)
A4	-99	99	°C/°F	25	25	25	temperature higher than that at which the maximum temperature alarm is activated (code “AH”); see also A5 and A11
A5	0	2	- - - -	2	2	2	Settings maximum temperature alarm (code “AH”) 0 = alarm deactivated 1 = relative to working setpoint (that is “working setpoint + A4”; consider A1 without sign)) 2 = absolute (A4)
A6	0	240	min	120	120	120	Delay in maximum temperature alarm (code “AH”) after the cabinet is turned on
A7	0	240	min	60	60	60	Temperature alarm delay (code “AL” and code “AH”)
A8	0	240	min	15	15	15	Delay in maximum temperature alarm (code “AH”) after evaporator fan has been stopped
A9	0	240	min	15	15	15	Delay in maximum temperature alarm (code “AH”) after deactivation of door switch
A11	0.1	15	°C/°F	2	2	2	Differential of parameters AL (A1) and AH (A4)

Not relevant or not availble

EVAPORATOR FAN PARAMETERS

				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
F0	0	5	- - - -	1	1	1	Evaporator fan activity during normal operation 0 = Switched off 1 = Switched on; F13, F14 and ∟10 2 = Parallel with compressor; F9, F13, F14 and ∟10 3 = Dependent on F1 4 = Switched off if compressor is switched off, dependent on F1 if the compressor is switched on 5 = Dependent on F6
F1	-99	99	°C/°F	-1	-1	-1	evaporator temperature above the limit at which the evaporator fan is switched off (only if F0 = 3 or 4); see also F8
F2	0	2	- - - -	0	0	1	evaporator fan activity during defrosting and dripping 0 = switched off 1 = switched on (recomended; d7=0) 2 = dependent on F0
F3	0	15	min	5	5	5	Maximum duration of evaporator fan deactivation after dripping; see also F7
F4	0	240	sec	60	60	60	time duration that evaporator fan is switched off during operation for a low percentage of relative humidity when the compressor is switched off; see also F5 (only if F0 = 5)
F5	0	240	sec	10	10	10	time duration that evaporator fan is switched on during operation for a low percentage of relative humidity when the compressor is switched off; see also F4 (only if F0 = 5)
F6	0	1		1	1	1	operation for low or high percentage of relative humidity (only if F0 = 5) 0 = low relative humidity - evaporator fan will operate in parallel with the compressor; see also F4 and F5 1 = high relative humidity - evaporator fan will always be switched on
F7	-99	99	°C/°F	5	5	5	evaporator temperature to activate fans during the fan stop phase (relative to working setpoint, that is "working setpoint + F7"); see also F3
F8	1	15	°C/°F	2	2	2	parameter F1 differential
F9	0	240	sec	60	60	60	delay in switching off the evaporator fan following the switching off the compressor
F13	0	240	min	5	5	5	time the evaporator fan remains turned off during function Energy Saving; see also F14 and ∟10 (only if F0 = 1 or 2)
F14	0	240	min	1	1	1	time the evaporator fan remains turned on during function Energy Saving; see also F13 and ∟10 (only if F0 = 1 or 2)

Not relevant or not availble

DIGITAL INPUTS " Door Switch, (Multifunction input, not used)

				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
∟0	0	5	- - - -	2	2	2	Effect caused by door switch activation; see also ∟4 0 = deactivated 1 = compressor and evaporator fan will be switched off (for time ∟3 or until input is disactivated 2 = evaporator fan will be switched off (for time ∟3 or until input is disactivated)
∟1	0	1	- - - -	1	1	1	Type of door switch input 0 = normally open (active input with closed contact) 1 = normally closed (active input with open contact)
∟2	-1	120	min	5	5	5	Delay of door alarm (code "∟d") -1= the alarm will not be signaled
∟3	-1	120	min	-1	-1	-1	maximum duration of the effect caused by activation of the door switch on the compressor and the evaporator fan -1= the effect will last until the input is disactivated
∟4	0	1	- - - -	1	1	1	storage of door alarm (code "∟d") 1 = yes
∟5	0	6	- - - -	0	#	#	Configuration multifunction input: Not availeble / not used
∟6	0	1	- - - -	0	#	#	
∟7	0	120	min	0	#	#	
∟8	0	15	- - - -	0	#	#	
∟9	1	999	min	#	#	#	
∟10	0	999	min	11	11	11	Time without activations of door switch needed to automatically activate energy saving function (condition; cabinet temperature has reached working setpoint) (effect on the evaporator fan only if F0 = 1 or 2) 0 = function will never be automatically activated
∟11	0	240	sec	#	#	#	minimum time door switch must be activated (only if d8 = 3); Not used
∟12	0	240	sec	#	#	#	minimum time door switch must be activated (only if d8 = 3); Not used
∟13	0	240	- - - -	0	0	0	number of door switch input activations to provoke the defrost activation 0 = the defrost will never be activated because of the door switch input activation
∟14	0	240	min	0	0	0	Minimum duration of the door switch input activation to provoke the defrost activation 0 = the defrost will never be activated because of the door switch input activation

Not relevant or not availble

DIGITAL OUTPUTS

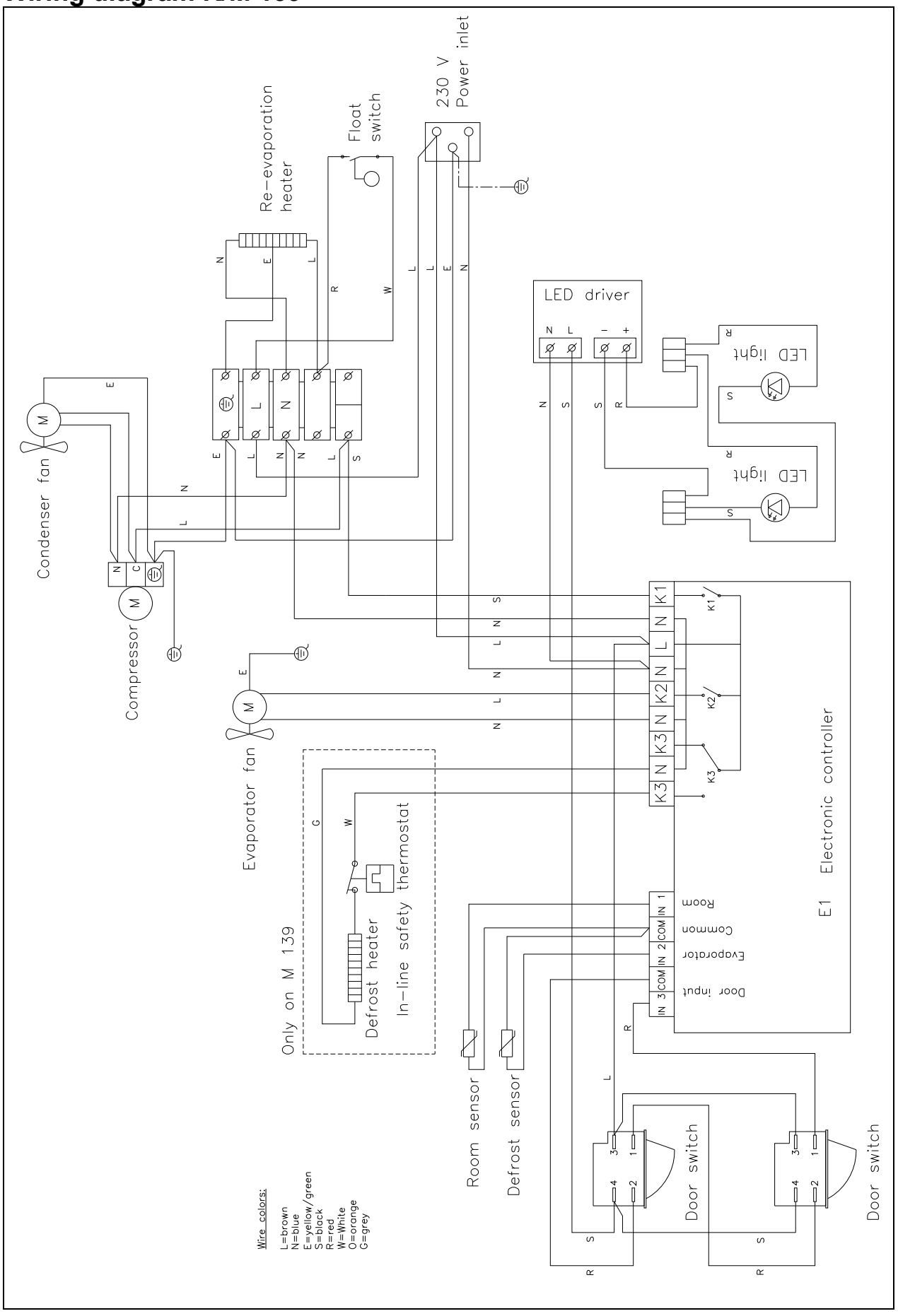
				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
u1	0	6	- - - -	4	#	#	operation controlled by the fourth relay output 0 = CELL LIGHT - in this case the AUXILIARY key and parameters i0 and u2 will be activated 1 = DEMISTER RESISTORS - in this case the AUXILIARY key and parameter u6 will be activated 2 = AUXILIARY OUTPUT - in this case the AUXILIARY key and parameters i5 and u2 will be activated 3 = ALARM OUTPUTS - in this case parameter u4 will be activated 4 = DOOR RESISTORS - in this case parameter u5 will be activated 5 = EVAPORATOR VALVE - in this case parameters u7 and u8 will be activated 6 = CONDENSER FAN - in this case parameters P4, F11 and F12 will be activated
u2	0	1		0	#	#	Not available / not used
u4	0	1		0	#	#	Not available / not used
u5	-99	99	°C/°F	2	#	#	cell temperature below that at which the door resistors are switched on (“u5 - 2.0 °C/4 °F, only if u1 and/or u11 = 4) (6)
u6	1	120	min	#	#	#	Not availeble / not used
u7	0	99	°C/°F	#	#	#	Not availeble / not used
u8	0	1		0	#	#	Not availeble / not used
u9	0	1		1	1	1	enabling of buzzer 1 = YES

SERIAL NETWORK (MODBUS)

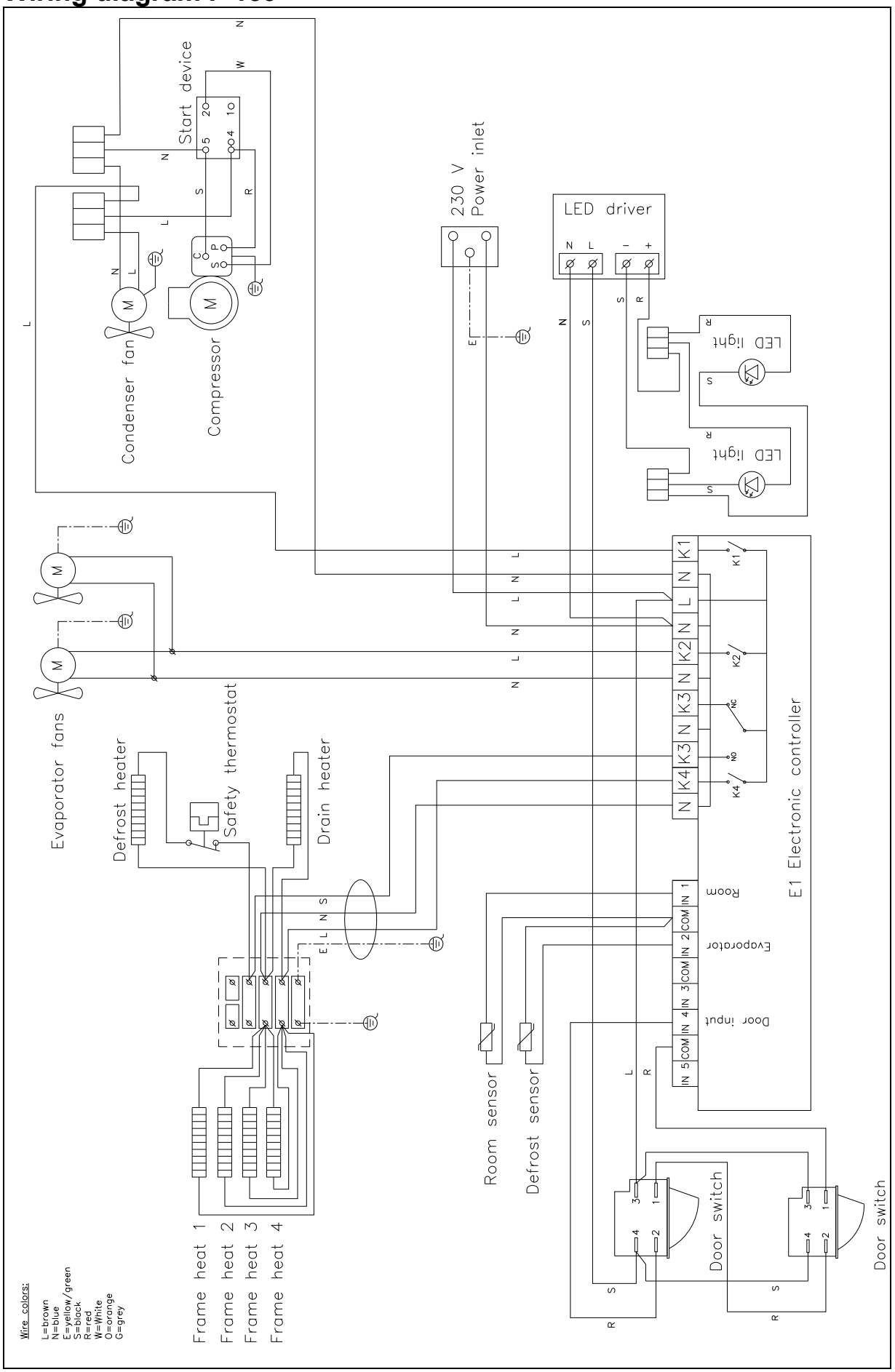
				Freezer	Refrige-rator extended	Refrige-rator	Cabinet type
				-22 /-10	-5/+12	+2/+12	Temperature area
Para-meter	Maxi-mum	Mini-mum	Value	**Factory setting**			
LA	1	247	- - - -	247	247	247	instrument address
Lb	0	3	- - - -	2	2	2	baud rate 0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud\
LP	0	2	- - - -	2	2	2	parity 0 = none 1 = odd 2 = even

Not relevant or not availble

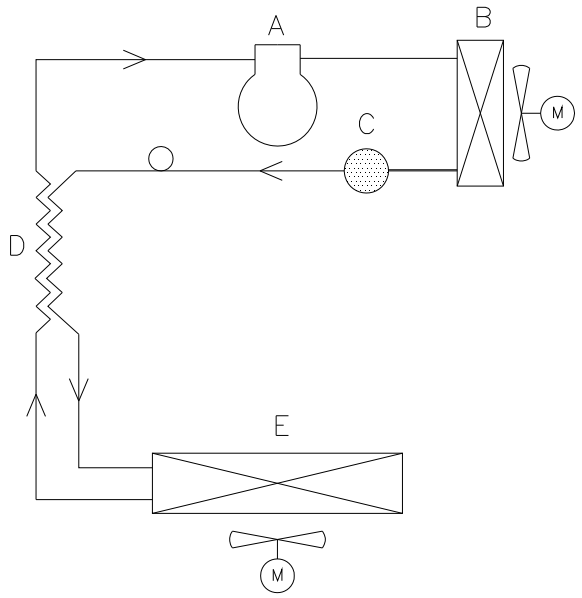
Wiring diagram K/M 139



Wiring diagram F 139



Piping diagram



	DK	GB	D
A	Kompressor	Compressor	Kompressor
B	Kondensator	Condenser	Verflüssiger
C	Tørrefilter	Filter drier	Trockenfilter
D	Varmeudveksler	Heat exchanger	Wärmeaustauscher
E	Fordamper	Evaporator	Verdampfer