GENERAL OPERATING MANUAL

FOR ARTISAN HORIZONTAL DISPLAY FRIDGES

IMPORTANT

TO BE KEPT WITH YOUR EQUIPMENT

artisan™

SAFETY OPERATING PROCEDURE

REFRIGERATORS AND FREEZERS

DO NOT **USE THIS EQUIPMENT UNLESS YOU HAVE BEEN INSTRUCTED IN ITS SAFE USE AND OPERATION.**

Non slip footwear must be worn when cleaning or servicing equipment.

Protective gloves must be worn when operating this equipment

PRE-OPERATIONAL SAFETY CHECKS

1. **Check workspaces and walkways to ensure that no slip/trip-hazards are present.**
2. **Check that all fittings and connections are in good condition prior to starting.**
3. **Ensure ventilation openings are kept clear at all times.**
4. **Ensure power cord is not damaged.**
5. **Locate and ensure that you are familiar with the operation of the On/Off switch.**
6. **Faulty equipment must not be used. Immediately isolate and report faulty equipment.**

OPERATIONAL SAFETY

1. **Set the refrigerator/freezer to a desired temperature.**
2. **Turn on the refrigerator/freezer.**
3. **Allow the refrigerator or freezer to come to equilibrium at the desired temperature.**
4. **Only suitable foods/drinks are to be stored in this refrigerator/freezer.**
5. **Ensure items are securely stored in this equipment.**
6. **Use correct manual handling techniques when loading and unloading this equipment.**
7. **Do not store flammable substance in refrigerator/freezer.**
8. **Clean up all liquid spills immediately**
9. **Ensure doors are left closed.**

MAINTENANCE

1. **Switch off the equipment and isolate before performing maintenance.**
2. **Inspect equipment weekly for frost deposits.**
3. **Do not use mechanical devices or other means to accelerate the defrosting process.**
4. **Clean equipment according to manufacturer's guidelines.**
5. **Ensure area around equipment is left clean and all liquid spills are cleaned up.**
6. **Maintenance is only to be carried out by trained and qualified personnel.**

POTENTIAL HAZARDS

■ **Cold components and product** ■ **Liquid Spills** ■ **Contamination** ■ **Manual Handling** ■ **Sharp Edges**

IMPORTANT SAFETY INFORMATION

- The appliance is intended for commercial use or similar use only, Not Domestic
- Do not use the appliance outside.
- Unit must only be operated/used on a flat and stable ground.
- Do not attempt to service Electrical / Refrigeration Parts Yourself!
- Do not use damaged appliances. If you are in any doubt, consult service agent.
- Do not use electrical appliances inside the appliance (e.g. heaters, ice-cream makers etc.), unless they are of the type recommended by the manufacturer.
- Do not obstruct any vents (see Ventilation).
- Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.
- Do not damage the refrigerant circuit.
- Do not stand or support yourself on the base, drawers, or the door.
- Do not allow oil or fat to come into contact with the plastic components or door seal. Clean immediately if contact occurs.
- Do not place combustible, explosive or volatile articles, corrosive acids or alkalis or liquids in the appliance.
- Do not use this appliance to store medical supplies.
- Never hose or flush with water nor allow water to splash on unit but rather wipe over with warm neutral water.
- Do not allow children to play with the packaging and destroy plastic bags safely.
- Bottles that contain a high percentage of alcohol must be sealed and placed vertically in the refrigerator.
- Always carry, store, and handle the appliance in a vertical orientation and move by holding the base of the appliance.
- Do not move unit unless unit is empty and disconnected from power.
- Always switch off and disconnect the power supply to the unit before cleaning.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons to avoid a hazard.
- This appliance is not intended for use by persons (including children) 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.
- For indoor used only. Not suitable for installation in an area where it could be exposed to rain or bad weather conditions.
- Must not be cleaned by a water jet.
- To guarantee safe operation, ensure that the appliance is set up and connected as described in the instruction manual.
- Any repairs and work on the appliance should only be carried out by a qualified technician.
- Do not overload shelving, make sure product is evenly positioned
- The key to the fridge/freezer should be kept out of the reach of children and users.
- Cabinet must be plugged into a dedicated power outlet i.e. do not use double adaptors, extension leads, or power boards etc.
- If cabinet is provided with a 15 amp or large plug DO NOT change plug, install the right power socket
- This appliance must be earthed. Ensure that earthing/grounding wire is attached and appropriately fitted and working.

Index

Warranty

WARRANTY FOR HEATED & REFRIGERATED SHOWCASES RETAIL WARRANTY

This warranty is only available to the end-user of the equipment who has brought the equipment directly from Artisan Food Equipment. Further, this warranty is only available to the original purchaser of the equipment.

This Warranty dates from the despatch of the equipment by us ex our Sydney works.

All goods manufactured by us are warranted against defective workmanship and/or material(s).

Where faulty manufacture is accepted by us, we will provide **LABOUR AND PARTS FOR TWELEVE (12) MONTHS,** all subject to conditions hereunder. The warranty covers the repair and/or replacement at our factor of all part(s) found to be defective due to faulty workmanship and/or materials.

Specifically excluded from the warranty are: Light bulbs and tubes; glass and finish after delivery; door handles; closing devices; springs for both hinging and sliding doors; castors; electrical and electronic components and consequential damages. Although we reserve the right to insist that units are returned to our factory (i.e. freight both ways at your cost) we reserve the right to provide "On-Site" free service (Labour) for your approved warranty claims during the first twelve (12) months on our normal service areas.

We shall not be liable for any direct, indirect or consequential loss howsoever and whatsoever arising.

During the twelve (12) months of the above warranty no arrangement whatsoever can be made for anyone to provide warranty services to the goods except Artisan Food Equipment and with their express and written approval.

No other party or person whatsoever is authorised to make arrangements on behalf of or/and at the expense of Artisan Food Equipment.

Warranty is voided if normal operational maintenance and cleaning is not carried out as per our "Operating Instructions" and/or accepted standard procedures for such equipment.

Further, the following are excluded from warranty:-

- Remote work units even if condenser is provided
- Damage to the units caused by accident, misuse or Acts of God
- Damage resulting from failure of electrical power or water supply or inadequate ventilation
- Transportation or travelling costs when the units are outside Artisan Food Equipment's normal service areas
- Repairs when the unit has been attended other than by service personnel authorized by Artisan Food Equipment
- Costs due to inaccessibility of equipment
- Overtime rates; call-out fees or out-of-hours penalty rates
- Consequences of any controller parameters that have been changed without authorization

Artisan does not guarantee that any service to be performed under this warranty will be carried out within any particular time limit.

During this time of warranty, the customer must maintain the equipment by qualified technicians as set out in warranty at customer's expense.

All repairs must be organized by Artisan Food Equipment by a works order number supplied. Failure to do this will result in non payment of work and void warranty

Warranty

IMPORTANT RESPONSIBILITIES OF CABINET OPERATIONS

- Correct and consistent power supply
- No direct sunlight on units or air currents
- Product to go into cabinet at desired holding temperature
- Max. Ambience: 24° C & 60% R.H.
- Do not turn off at power switch regularly
- Observe all details and instructions in MANUAL
- Have a qualified mechanic check/clean unit every 3 months (your account)
- Following cleaning and operating procedures, set out in manual, on a daily, weekly and regular basis as specified
- Level Floor
- Cabinet to be at correct temperature before being loaded
- Water quality is the responsibility of the owner/operator and any part affected will not be covered by warranty

FAILURE TO PERFORM THE ABOVE (ON YOUR OWN ACCOUT) WILL VOID WARRANTY AND PERFORMANCE PARAMETERS OF YOUR UNIT

CLEANING PROCEDURES

Are also very important. Carefully follow the manual.

- DO NOT hose or splash water in, or about, your cabinet.
- DO NOT use bleaches, chlorine, alcohol etc. use only mild detergents.
- DO NOT use any metal brushes for cleaning
- Clean only with gloves and appropriate training
- The drains are only for condensate (not waste)
- Clean carefully. Wiping out areas and ensuring drains lines are clear and clean

BLOCKED DRAINS AND DAMAGE TO ANY COMPNENT CAUSED BY BLOCKED DRAINS WILL NOT BE COVERED BY WARRANTY

TERMS AND CONDITIONS OF SALE AND/OR SUPPLY ARTISAN™ FOOD EQUIPMENT PTY LTD

1. These Terms and Conditions of Sale apply (unless otherwise previously agreed in writing) to this contract and all sales contracts, and all hire, loan and supply contracts and/or arrangements with the customer. An acceptance of an order by us is and shall always be deemed to be an acceptance of these Conditions of Sale by us and the customer, notwithstanding any variation which may be introduced in the customer's order of acceptance.
2. We reserve the right to vary our selling prices and terms without notice and prices charged will be those ruling at the date of order.
3. Unless otherwise agreed in writing, payment for the goods shall be made to us upon order of goods and any costs incurred through action taken by us to recover monies due for payment, including but not limited to debt collecting costs, shall be paid by the customer.
4. A. The customer expressly acknowledges and agrees that we are not liable for any advice given by ourselves or our agents or employees in relation to the suitability for any purpose of goods or materials or services supplied by us and all such advice relied upon is at the customer's risk.
4. B. Your placement of order is your authority to allow us to register (P.P.S.R.) our financial interest & first priority over all goods supplied by us until paid for in full.
5. We shall not be liable to the customer whatsoever for any defect, loss, damage or delay caused by strikes, lock-outs, damage to or break-down of plant, Government interference, earthquake, civil commotion, force majeure, or any other cause beyond our control.
6. At our discretion, the customer shall be liable to pay interest on any monies due and payable to us such as interest to be charged to the customer's account. The rate of interest shall be 2% per month, or part thereof. The interest shall commence to accrue at the expiration of the period allowed to the customer for the payment of accounts as defined in Clause 3.
7. The terms and conditions shown in our Price List(s) and Quotation form(s) shall be deemed to be included herein in their entirety.
8. GST is applicable at the current rate and is an extra cost.
9. Sizes and colours are nominal only and are subject to variations at our or our supplier's discretion.
10. Methods of construction, finish, style, components and all details are to our discretion in all respect.
11. A. Subject to the terms and conditions of the warranty statement a conditional warranty is available as separately advised to you. Explicit details of any relevant warranty will be provided with the goods; subject to service, care and usage requirements. Warranty is not transferrable
11. B. Warranty is null and void unless payment for the goods and any associated and/or subsequent services have been paid for in full.
12. We shall not be liable for any direct, indirect or consequential loss howsoever and whatsoever arising.
13. Any Council/Authority/Code/Landlord etc., compliance and/or approval is to customer's responsibility in all respects.
14. All site fixing, cutting, drilling etc., (at installation) is to other's responsibility in all respects including the protection/making good of all surfaces.
15. Any encasement by bulkhead, fascia, or whatsoever, of any non-ambient unit must allow full & free ventilation and include mechanical ventilation for upright and Underbench situations.
16. A. Complete responsibility and care for the goods passes to you ex our works. The transportation of the goods (and any installation) is to be to and by your instructions. However, in the absence of any notice to the contrary we will arrange for same to your account and responsibility in all respect. If delivery is included in our quotation, it is to kerbside and does not allow for any steps, doorways, unpacking or installation. These items will be quoted if you advise us at time of quotation. Delivery will be within our normal delivery times and days.
16. B. Delivery is kerbside of business premises/retail shop providing it is unstepped access with sealed pathway up to door, door way must be of suitable height and width and no obstructions during business hours. Customer to provide suitable vehicular access and unloading space as we deem necessary.
16. C. Delivery will be on our standard schedule run(s); subject to change due to external factors.
16. D. Should site conditions, for delivery, not be standard, or as specially noted in "inclusions" then we will return the goods to storage at your cost and requote your delivery. This does not constitute a valid reason for order cancellation.
16. E. Upon receipt of goods, they must be inspected by the purchaser, who must report anything adverse, to the relevant contact at our head office by close of business time on day of delivery.
17. The title in the goods shall only pass from us (to the purchaser) upon our receipt of full payment for the goods and any transport and/or installation, etc., works arranged, or done by us.
18. All plans, sketches and drawings supplied by us are covered by their copyright in all respects. No use, copy, transfer or provision to other parties, is to be made of these details without our express permission.
19. Your acceptance of any of our plans, sketches, recommendations, suggestions, etc., and/or their execution by ourselves or by others (as approved) does not give or imply any warranty, undertaking or liability whatsoever, by us, as to their suitability, benefit, advantage or otherwise to yourself, or any other party, in any connection whatsoever or howsoever arising.
20. OPEN FRONT cabinets are only warranted for use in a fully air-conditioned environment to max. 25˚ ambience/60% R.H. & no direct sunlight or airflows.
21. Our units are not for use in personal, domestic or household locations. The customer warrants that our products will not be used for such situations. Warranty is null and void if our units are used in such applications.
22. Goods cannot be returned for credit without our prior approval in writing. Orders for custom-made units cannot be cancelled. A 25% restocking & processing charge plus any freight costs apply to all other agreed cancelled orders.
23. If any of the provisions of the contract are unlawful or invalid under any applicable statute or rule of law, they are to that extent to be deemed omitted.
24. Your offered order affirms your acceptance of all of the above conditions in their entirety.
25. It is agreed that any offered order/order acceptance/invoice/contract/sale is deemed to be made in Sydney NSW and the parties irrevocably and unconditionally agree to the sole application of N.S.W. law and jurisdiction, in all respects.

General Advice

The first objective for which the cabinet has been projected is to offer to its user, a maximum performance with maximum safety and economy. It is intended for the conservation and display of food.

Therefore, we can state that this cabinet complies with the norm EN 60335-2-89 – Safety for Household and similar electrical appliances – rules that apply to commercial refrigerated appliances.

In case you need to contact the local representative, please identify the cabinet mentioning the serial number that is on the characteristics label that is taped on the cabinet.

The purpose of this manual is to alert the user for the same aspects that we consider important for this safety and durability of the cabinet. Please **Keep it at hand for future consultations,** also please observe and respect the indications that follow

This Cabinet was projected and manufactured in conformity with the ambient conditions of the Climate Class 3 (25 C – 60% Hr). For different conditions and values the thermodynamic performance may not be according to expectations.

This Cabinet is exclusively for the use of display and conservation of food products.

Environmental Protection

Unpacking
All packing materials are recyclable and should be eliminated according to local regulations.
Plastic bags must be kept away from children in order to avoid potential hazard.

End of Life Cycle
When the product reaches the end of its life cycle, we recommend to:
Make is unusable (ex. By cutting the power supply cable);
Remove the doors and other element, which eventually could be harmful to children.
In the case of complete dismantling, we recommend to strictly respect the local regulations regarding waste disposal.

Security

The personnel responsible for the moving and instillation of the equipment must have gloves, which should be flexible and anti-sliding, have protective glasses as well as protecting shoes.
Protection equipment must always be used when necessary.

In general the best practices for safety in work and hygiene should be applied when working.

Installation

Verify the general aspect of the package. In the case there are signs of bad handling during transport, referrer this in the transport documentation and inform your supplier. If all is well please proceed as follows:

1. The location where the cabinet will be installed is very important for its good working and consequent energy saving.
   Avoid the proximity of heating sources (Heaters, Stoves, Condensers and other appliances, etc.), drafts (windows, doors, ventilation systems, air conditioning, etc.) and places with strong exposure to solar rays.
   Adequate ventilation must be left at front and rear.
   Make sure that the socket of the feeding cable is always accessible.
   Remove carefully plastics that protect some components.

Note: This equipment has not been developed to work in open air neither under rain.

2. In case that this manual has also additional “Assembling Instructions”, please follow the order mentioned for the correct installation.

3. We recommend that when necessary and adequate mechanical protection is made, to avoid possible damages to the equipment caused by moving objects such as trolleys, cleaning machines, forklifts and other equipment.

4. Clean the Interior and exterior of the cabinet with a smooth cloth and warm water with a neutral soap (5% of the water volume).

Avoid that it gets splashed by the cleaning products used to wash the establishment. The substances used in cleaning of the floors can attack chemically the components of the unit.

Dry carefully all the rests of water with the help of a sponge. On the Glass parts / acrylics use appropriate liquid to clean them.

Installation

Whenever a spillages or contamination happens as a consequence of the rupture of the package inside the unit, it should be cleaned immediately, and the evaporation tray of the condensed water should be drained right away. Verify that the drains of the waste are not obstructed and are free flowing.

5. Level the cabinet on the horizontal to allow:
    a. It's good functioning,
    b. A perfect disposal of residual waters and defrost waters of evaporator,
    c. Noise reduction caused by the vibration of the moving parts.

6. The Condensation group (compressor + condenser), commonly installed on the bottom of the cabinet, should not have, around it, and obstacle that reduces necessary free circulation of air. Therefore, near the air circulation zones, you should NOT put boxes or other objects.

7. Verify if the power supply voltage and the tension of the place where the cabinet will be installed is according to what is indicated on the identification plate.
   The connection MUST have a ground wire element that, besides being necessary, is demanded by law.
   The appliance is not equipped with electric protection devices against overload, so it is recommended to verify the electric safety level of the installation network where the cabinet will be installed.
   Do not connect any other appliances to the same power socket, nor use socket extensions.
   We decline all liability for eventual injures that may result to people, animals or products (goods) for not respecting these instructions.

8. Turn on the cabinet 1 (One) hour after it has been installed.
   On the appliances equipped with electronic thermostat temperature regulation is made according to the specific instructions that are supplied with the cabinet. This thermostat is already programmed from factory; any changes made should be done by a specialized technicians.

9. The Control lights, in the case they exist, show the operation mode of the appliance:
   GREEN Switch Light (0/ I) with the light ON > means that the switch is on there is electrical power in the equipment (units with electrical tension)
   ORANGE Switch light (☼) with the light ON > means that the light of the unit is turned on.
   ORANGE control on > means the compressor is working.

Installation

10. After the cabinet has been switched on wait, at least 2 (two) hours before filling it with products. Make sure that when filling the cabinet with the goods, the air circuit is not obstructed. (For example: the grids of the air discharge and air intake, “suction” and “insufflation”)

11. Respect the loading limits that are mentioned directly on the cabinet by the sticker aside the label with the features of the cabinet. Never display, products above this refrigeration level, as it can create disturbances of the air flow and as a consequence deteriorate the food products displayed.

    The shelves (in case they exist) placed above the refrigeration level they are exclusively to display products that are not in need of refrigeration.

    We remind that this equipment has not been conceived to lower the temperature of the food products display, but to maintain the temperature of the food products there placed.

    Food Products with temperature above the one recommend for the working of the equipment must not be placed inside the unit.
    Do not leave the food products in boxes or pallets more than the necessary time to load the equipment (unit).
    In the Static Coil equipment (Arctic Ice); food products must be removed during the night and placed in a Cold Room or similar equipment to preserve the food temperature during the night and to allow unit to manually defrost

12. To optimize the working of the equipment and the conservation of the food products use only complements and accessories supplied with the unit.

Settings Change

Temperature

i) Press the **SET** key for more than 3 seconds, the set point will be displayed and the °C will start blinking.

ii) 3. To change the value, push the  or  arrows within 10s.

iii) To memorise the new set point, press **SET** key or wait 10 seconds.

Note: All units have a preset differential of 2°C to 3°C.

Note: All other parameter changes should only be made with permission of Artisan Food Equipment

Technical Problems and Solutions

1. **The Unit does not work**

    - Verify if the electrical voltage in the establishment is available
    - Verify if the socket is correctly plugged in
    - Verify if there isn't any automatic defrosting in progress
    - Verify if the general switch, if it exists is in the position "I"
    - Verify if the SETPOINT values are high. Proceed with the regulation according to the "Program Parameters"

2. **The Interior Temperature isn't low enough**

    - Verify if the unit isn't near a heating device
    - Verify if there are no drafts
    - Verify if there is no excess ice formation on the evaporator/proceed to a manual defrosting (If it is not sufficient, stop the equipment during the next 24 hours)
    - Verify the temperature is correctly defined on the thermostat
    - Verify if the grids of Cold Air Flow are not obstructed (blocked)
    - Verify if there is a good airflow in the condensers area; if necessary clear this area for a better airflow.
    - Verify if the condenser is dirty/please clean it (see bottom of page 13)
    - Verify if all the components (fans, thermostat, etc) are working

3. **The unit emits a loud noise**

    - Verify if the moving parts are in contact with other components
    - Verify if the unit is correctly levelled
    - Verify if all the elements are well adjusted/screwed

4. **Evaporator with excess of ice**

    - Verify if the doors of the cabinet are well closed
    - Verify if the doors are open and closed very often
    - Verify if the food products exceed the loading limit defined in the unit.

Automatic defrost insufficient. Program a manual defrost in accordance with what is indicated in the manual of the thermostat and following the instructions in the chapter of "periodic maintenance"

Technical Problems and Solutions

5. **The Glasses create condensations on the exterior:**

    - It is a very humid day.
    - The temperature inside the unit is very low / Adjust the temperature to a higher value.
    - The suction gird of air (When Existing) is blocked by the products displayed.
    - The location of the unit (they are not in front of exterior doors)

6. **The Compressor Does not stop working / it works for long periods.**

    - The Ambient Temperature is very high
    - Verify if the condenser is dirty; proceed with the cleaning of it
    - Verify if the values of the SETPOINTS are to low; proceed with the regulation
    - Verify if there is no ice formation in excess on the evaporator; induce a manual defrost (If it is not sufficient, stop the equipment for 24 hours)

Whenever those verifications and correspondent actions do no result, contact the technical services of Artisan on 1300 278 472 or the Technical services of a local representative. You must always identify the cabinet by the serial number that is in the feature label on the unit and wait for instructions on how to act.

Special Conditions

The Information in this manual is valid at the moment of printing of the same. Due to the constant evolution of technology and product development, we reserve the right to change all technical specifications and as a consequence the content in this manual.

We decline all responsibility for eventual change that the client may do on the unit, or if all instructions that are recommend in this manual are not followed.

Maintenance & Cleaning

1. The unit, when equipped with automatic defrosting programmer, should be switched off and cleaned at least once a month. **The accumulation of ice in the evaporator reduces the performance and makes the energy costs rise.**
   Never remove the ice from the evaporator with metal objects such as knives or cutting objects. When the evaporator has ice the ideal is to let it defrost manually off the evaporator.

   Water Resulting from daily defrosting is collected in a plastic tray that must be emptied, whenever necessary. In some Models this procedure is not necessary since the water is re-evaporated in an appropriate place. **Special attention but be taken when a defrosting is made after ice is created in the evaporator, as the recipient for the condensed water may not have sufficient capacity and overflow.**

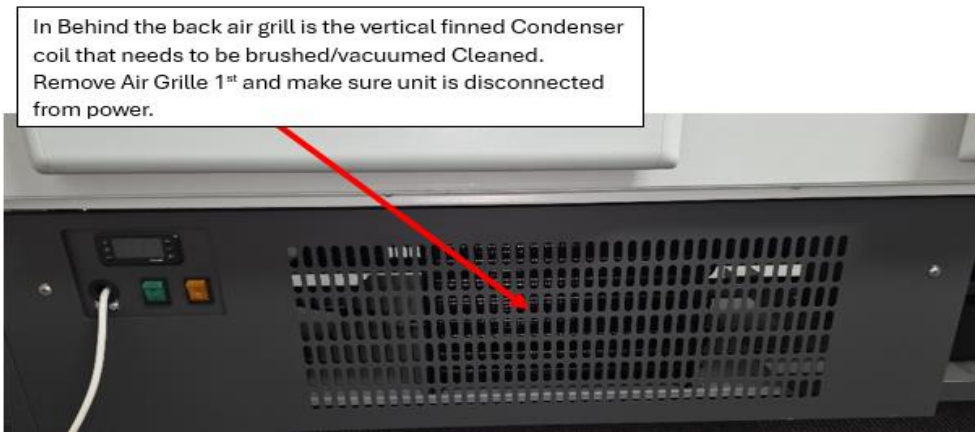
2. Before any maintenance or cleaning operation the appliance MUST be unplugged in order to guarantee, that is not connected to electric power. The plug must be removed from the socket in order to insure that there is no electrical current of any type. Then remove all the Products that are inside the cabinet and place them in a cold room or adequate conservation place.

   Whenever necessary to remove any protection or isolation all the procedures for this must be correctly followed. Never restart functioning without making sure that all the removed elements have been fully fitted on the unit.

Cleaning

1. Internal and external cleaning must be done periodically with a soft cloth and warm water with neutral soap (5% of the water volume) without chlorine. It is very important that the drainage hole of the condensed water is perfectly clear.
   Dry carefully all the rests of the water with the help of a sponge. On the glass parts use appropriate liquid to clean them.

2. **Condenser cleaning should be done regularly , check every week and then you may be able to go fortnightly or monthly depending on cabinet location**. Whenever is shows impurities/dust/dirt on the condenser coil that may hinder or block free circulation of air. The removal of impurities or filth must be done using a brush (**never use a metal brush),** a vacuum cleaner or with air pressure flow.



Maintenance

Replacement of the LED lights

1. Disconnect the unit from the power socket/source.

2. Press both polycarbonate protection caps of the lights, Rotate both – led / protection caps approximately 90 degrees and remove the light.

In case that the protection in the polycarbonate is inserted, remove it with the help of a tool.

3. Rotate the light approximately 90 degrees and remove it.

4. The Light must be replaced by one with the same reference or equivalent.

5. To place a new light, repeat the same procedure in the opposite sense.

As to recycling of used lights respect the local legislations and regulations that apply.

Important remarks.

Do not spill water over boxes or electrical components;

Do not use water pressure (jets) or any type of metallic objects in order to remove impurities or filth

Do not use substance or materials that are abrasives or solvents, avoiding the use of acid as well as detergents with chlorine base or pure alcohol.

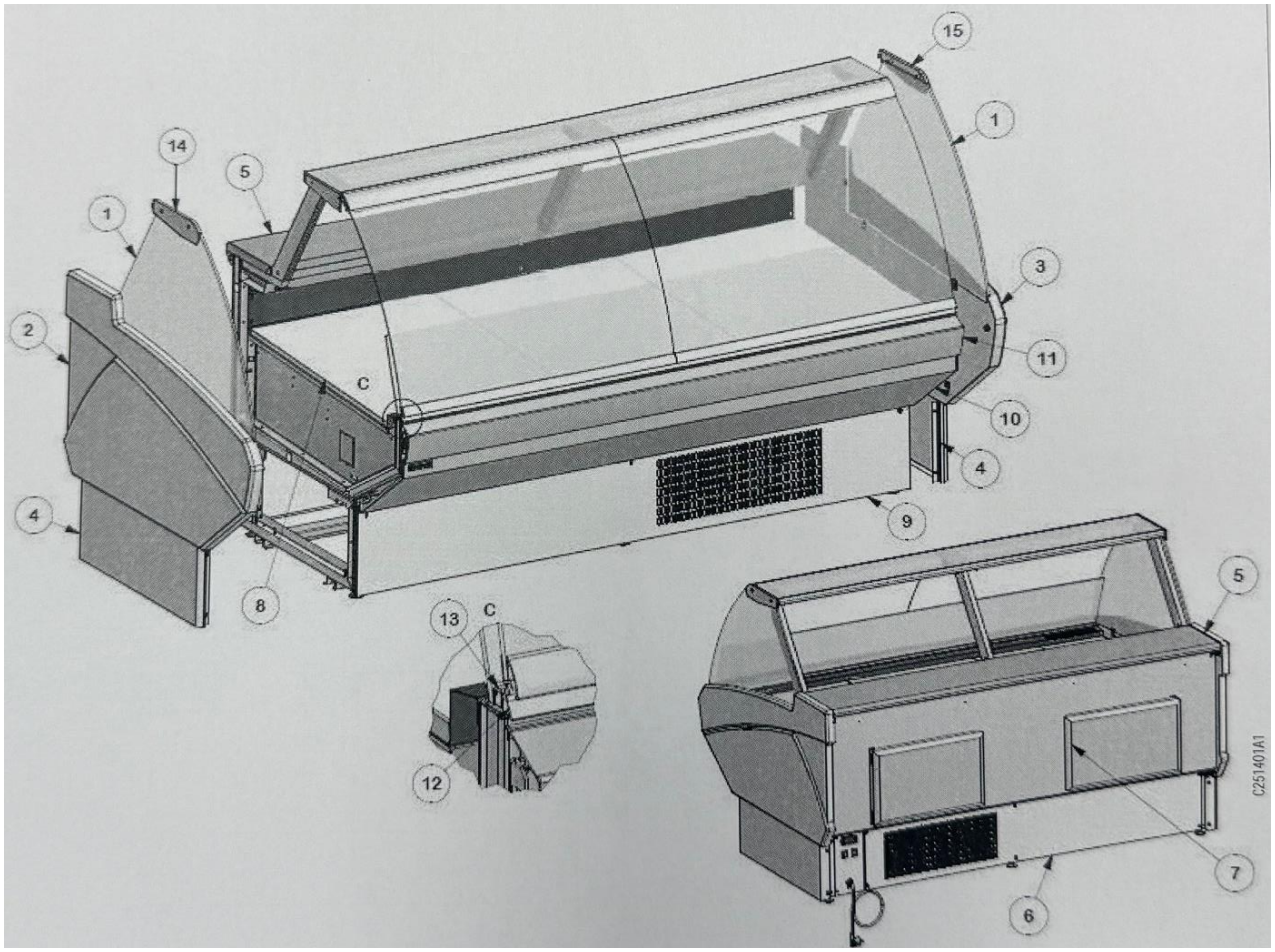
General Features

Arctic Plus – Technical Data

Technical Data		M5713	M5717	M5720	M5726	M5733	M5739
Climate Class		25°C / 60% HR					
Temperature Class		M1					
Operating Temperature	C°	0 / +2°					
Total Area Display	m^2	0.80	1.0	0.19	1.59	1.99	2.39
Refrigerated Base Area	m^2	1.04	1.30	1.56	2.09	2.60	3.12
Number of Doors		1	2	2	3	4	4
Volume of Under Storage	m^2	0.10	0.13	0.17	0.20	0.33	0.40
Electrical Data							
Electrical Supply	V/Hz	230/50					
Power Supply	W	175	220	235	320	380	650
Lighting		T5 Fluorescent					
Refrigeration Data							
Refrigerant	Type	R404A					
Heat Extraction Rate	W/m	400					
Defrosting	# -min	4-30 (Automatic)					
Refrigeration Piping	Ø Pol Inch	In 3/8" | Out ½"					
Dimensions							
Length Without Sides With Sides	mm	 1270 1330	 1585 1645	 1895 1955	 2520 2580	 3145 3205	 3770 3830
Weight	kg	140	180	220	280	330	380

General Features

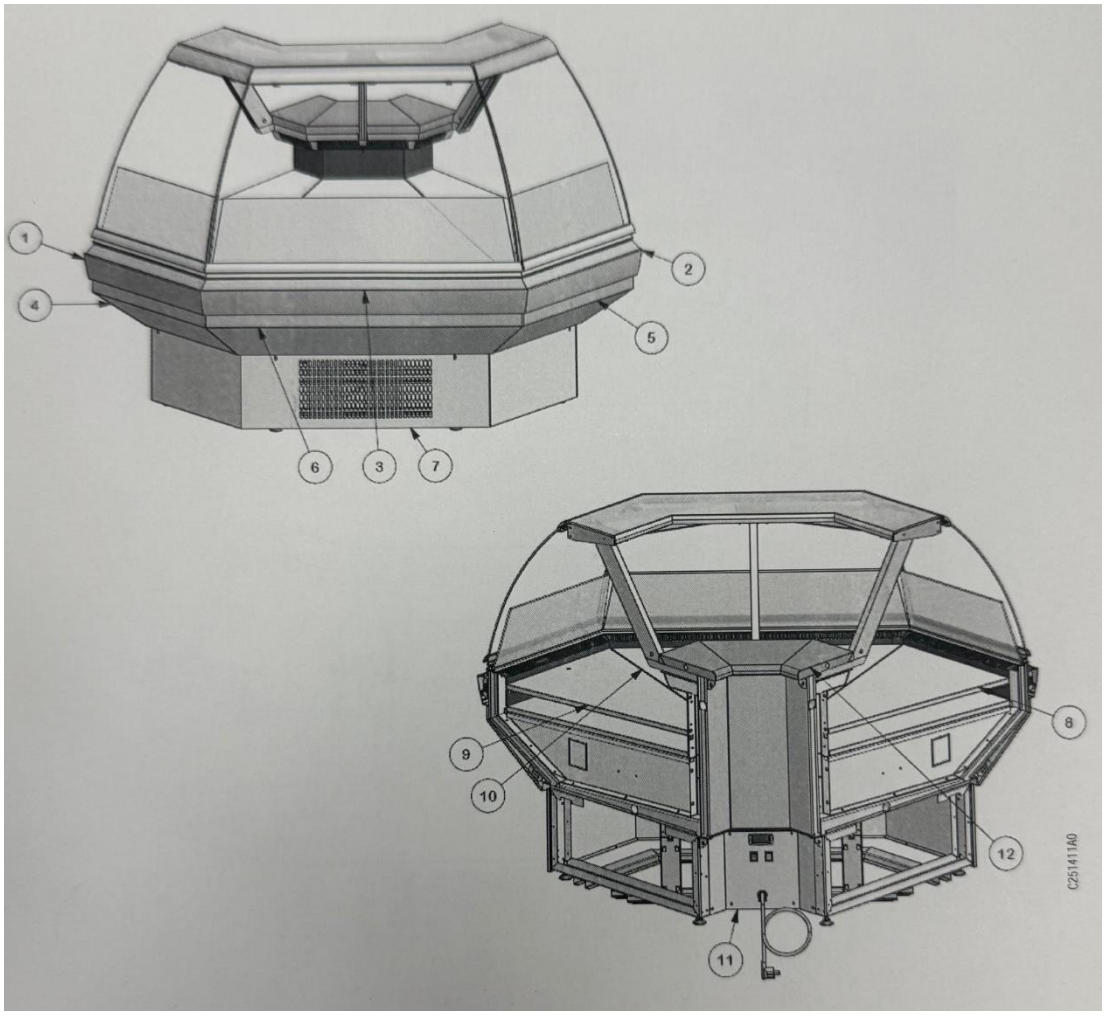
Arctic Plus



1	Side Glass
2	Side Panel – Left
3	Side Panel – Right
4	Plinth
5	Working Top Stainless Steel
6	Lower Side Panel
7	Door
8	Tray
9	Front Panel
10	Decoration
11	PVC Profile
12	Aluminium Profile
13	Aluminium Profile
14	Right Cover
15	Left Cover

General Features

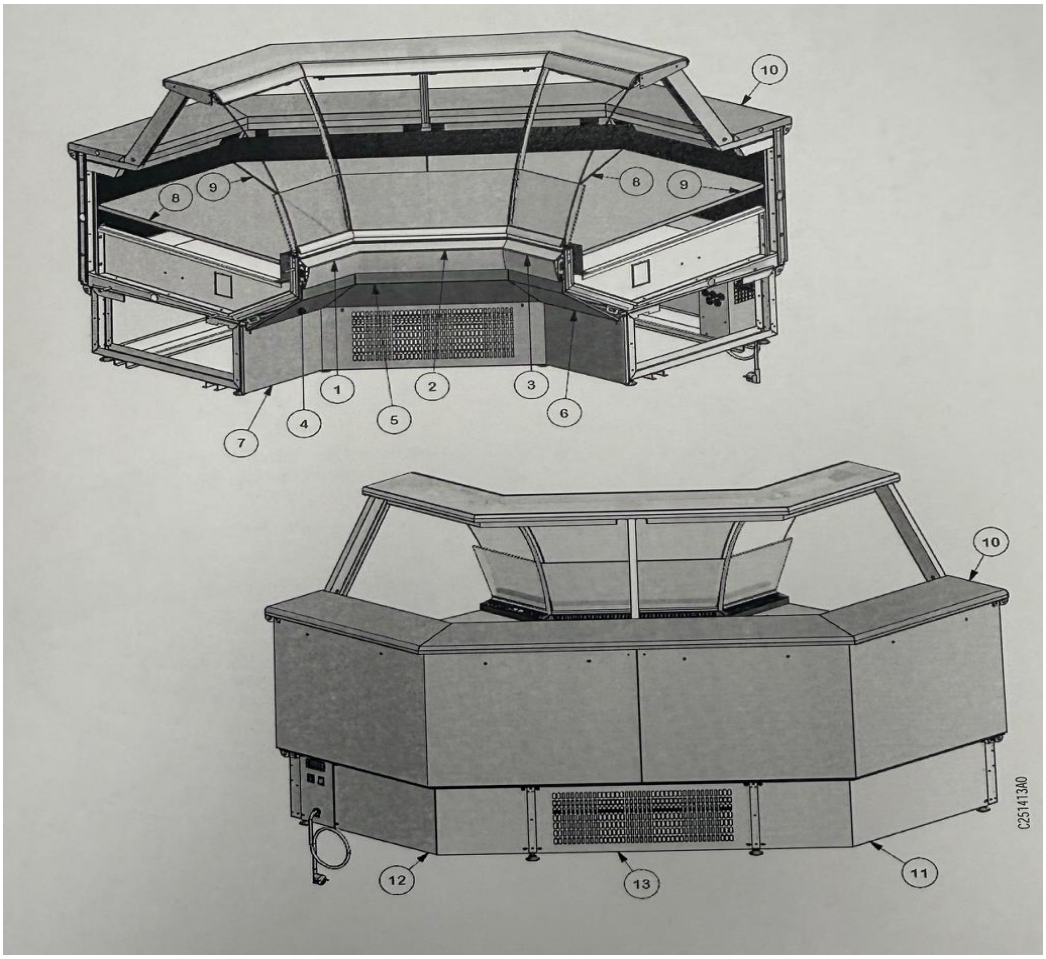
Arctic Plus



1	PVC Profile - Right
2	PVC Profile - Left
3	PVC Profile - Central
4	Decoration - Right
5	Decoration - Left
6	Decoration - Central
7	Front Panel
8	Tray - Right
9	Tray - Left
10	Tray - Central
11	Lower Side Panel
12	Working Stainless Steel

General Features

Arctic Plus



1	PVC Profile - Right
2	PVC Profile - Left
3	PVC Profile - Central
4	Decoration - Right
5	Decoration - Left
6	Decoration - Central
7	Front Panel
8	Tray - Right
9	Tray - Left
10	Working Stainless Steel
11	Lower Side Panel - Right
12	Lower Side Panel - Left
13	Lower Side Panel - Central

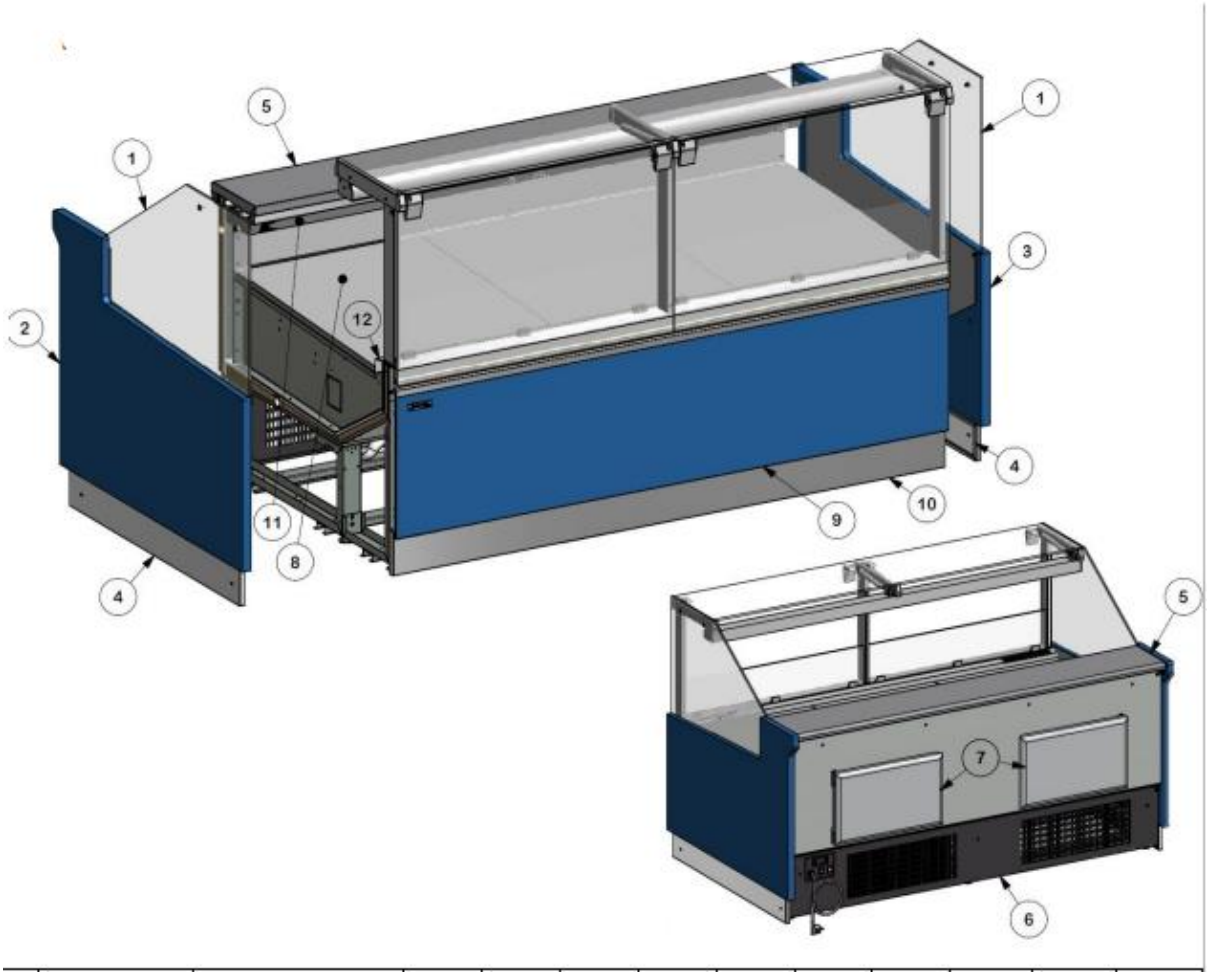
General Features

Arctic Ice

Technical Data		M5601	M5603	M5604
Climate Class		25°C / 60% HR		
Temperature Class		H1		
Operating Temperature	C°	0 / +2°		
Total Area Display	m^2	0.69	1.04	1.39
Refrigerated Base Area	m^2	0.83	1.03	1.65
Electrical Data				
Electrical Supply	V/Hz	230/50		
Power Supply	W	660	1000	1240
Lighting		T5 Fluorescent		
Refrigeration Data				
Refrigerant	Type	R404A		
Heat Extraction Rate	W/m	600 / 725		
Defrosting	# -min	Electric 6 -20		
Dimensions				
Length With Sides	mm	1350	1975	2575
Weight	kg	210	315	390

General Features

Arctic Ice



1	Side Glass
2	Side Panel – Left
3	Side Panel – Right
4	Plinth
5	Working Top Stainless Steel
6	Lower Side Panel
7	Door
8	Tray
9	Front Panel
10	Decoration
11	PVC Profile
12	Acrylic Holder
13	Grid in Stainless Steel

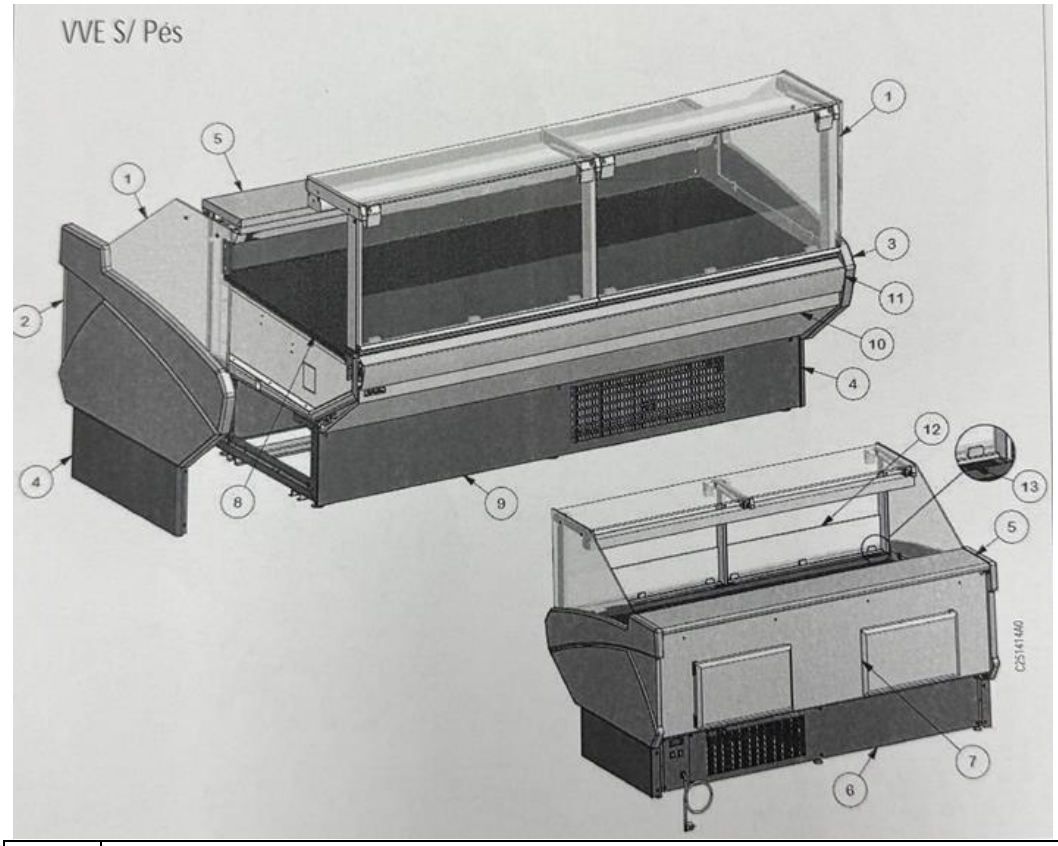
General Features

Arctic Classic

Technical Data		M5313	M5317	M5320	M5326	M5333	M5339
Climate Class		25°C / 60% HR					
Temperature Class		M1					
Operating Temperature	C°	0 / +2°					
Total Area Display	m^2	0.80	1.0	0.19	1.59	1.99	2.39
Refrigerated Base Area	m^2	1.04	1.30	1.56	2.09	2.60	3.12
Number of Doors		1	2	2	3	4	4
Volume of Under Storage	m^2	0.10	0.13	0.17	0.20	0.33	0.40
Electrical Data							
Electrical Supply	V/Hz	230/50					
Power Supply	W	175	220	235	320	380	650
Lighting		T5 Fluorescent					
Refrigeration Data							
Refrigerant	Type	R404A					
Heat Extraction Rate	W/m	400					
Defrosting	# -min	4-30 (Automatic)					
Refrigeration Piping	Ø Pol Inch	In 3/8" | Out ½"					
Dimensions							
Length Without Sides With Sides	mm	 1270 1330	 1585 1645	 1895 1955	 2520 2580	 3145 3205	 3770 3830
Weight	kg	140	180	220	280	330	380

General Features

Arctic Classic



1	Side Glass
2	Side Panel – Left
3	Side Panel – Right
4	Plinth
5	Working Top Stainless Steel
6	Lower Side Panel
7	Door
8	Tray
9	Front Panel
10	Decoration
11	PVC Profile
12	Acrylic Holder
13	Grid in Stainless Steel

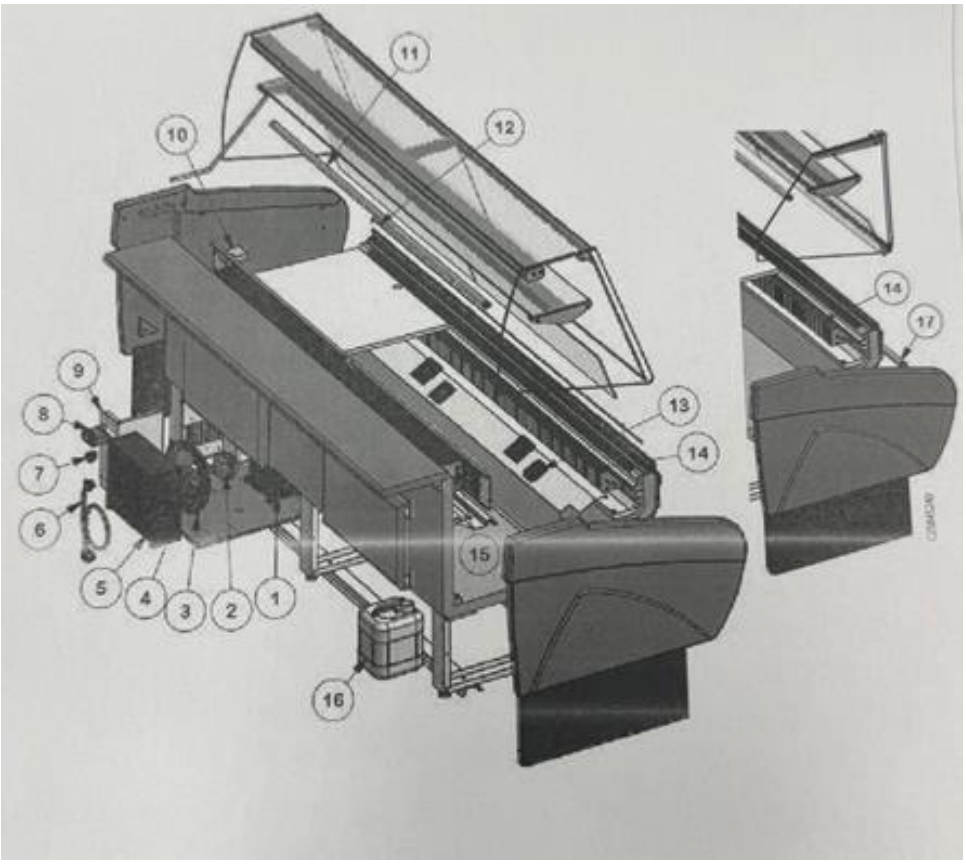
General Features

Arctic Vogue

Technical Data		M5410	M5415	M5420	M5425
Climate Class		3 (25°C / 60% HR)			
Temperature Class		H1 / M2			
Operating Temperature	C°	0 / +2°			
Total Area Display	m^2	0.55	0.81	1.10	1.39
Number of Doors		1	2	2	3
Volume of Under Storage	dm^2	0.13	0.19	0.26	0.32
Electrical Data					
Electrical Supply	V/Hz	230/50			
Power Supply	W	330/340	370/430	465/514	530/595
Lighting		LED T8			
Refrigeration Data					
Refrigerant	Type	R404A			
Heat Extraction Rate	W/m	290/350	350/450	485/550	580/620
Defrosting	# - min	Automatic			
Dimensions					
Length With Sides	mm	1000	1500	2000	2500
Weight	kg	140	205	260	280

General Features

Arctic Vogue



1	Compressor
2	Fan Motor
3	Fan Protection
4	Fan
5	Condenser
6	Electrical Power Cable
7	Switch
8	Digital Controller
9	Cover for Electrical Box
10	Thermometer
11	T8 LED
12	Heater
13	Fan
14	Display Area Evaporator
15	Under Storage Evaporator
16	Plastic Container

Controller Operating Instructions

Dixell *Installing and operating instructions* **EMERSON**

Digital controller with off cycle defrost
XR20CH

CONTENTS

1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.
- Dixell Srl reserves the right to change the composition of its products, even without notice, ensuring the same and unchanged functionality.

1.2 ⚠ SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to Dixell Srl (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

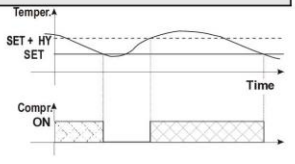
2. GENERAL DESCRIPTION

Model **XR20CH**, format 32 x 74 mm, is a digital thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It provides a relay output to drive the compressor. It is also provided with 2 NTC or PTC probe inputs, the first one for temperature control, the second one, optional, to connect to the HOT KEY terminals to signal the condenser temperature alarm or to display a temperature. The digital input can operate as third temperature probe.
The HOT KEY output allows to connect the unit, by means of the external module XJ485-CX, to a network line **ModBUS-RTU** compatible such as the **dixell** monitoring units of X-WEB family. It allows to program the controller by means the HOT KEY programming keyboard.
The instrument is fully configurable through special parameters that can be easily programmed through the keyboard.

3. CONTROLLING LOADS

3.1 COMPRESSOR

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.



In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "**COn**" and "**COF**".

3.2 DEFROST

Defrost is performed through a simple stop of the compressor. Parameter "**IdF**" controls the interval between defrost cycles, while its length is controlled by parameter "**MdF**".

4. FRONT PANEL COMMANDS

SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

❄ **(DEF)** To start a manual defrost

(UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.

(DOWN) To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.

⏻ To switch the instrument off, if onF = oFF.

☀ Not enabled

KEY COMBINATIONS:

- ▲ + ▼ To lock & unlock the keyboard.
- SET + ▼ To enter in programming mode.
- SET + ▲ To return to the room temperature display.

4.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
❄	ON	Compressor enabled
❄	Flashing	Anti-short cycle delay enabled
❄	ON	Defrost enabled
🔔	ON	An alarm is occurring
❄	ON	Continuous cycle is running
ECO	ON	Energy saving enabled
°C/°F	ON	Measurement unit
°C/°F	Flashing	Programming phase

5. MAX & MIN TEMPERATURE MEMORIZATION

5.1 HOW TO SEE THE MIN TEMPERATURE

1. Press and release the ▼ key.
2. The "Lo" message will be displayed followed by the minimum temperature recorded.
3. By pressing the ▼ key again or by waiting 5s the normal display will be restored.

5.2 HOW TO SEE THE MAX TEMPERATURE

1. Press and release the ▲ key.
2. The "Hi" message will be displayed followed by the maximum temperature recorded.
3. By pressing the ▲ key again or by waiting 5s the normal display will be restored.

5.3 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

1. Hold press the SET key for more than 3s, while the max. or min temperature is displayed. (rSt message will be displayed)
2. To confirm the operation the "rSt" message starts blinking and the normal temperature will be displayed.

6. MAIN FUNCTIONS

6.1 HOW TO SEE THE SETPOINT

SET

1. Push and immediately release the **SET** key: the display will show the Set point value;
2. Push and immediately release the **SET** key or wait for 5 seconds to display the probe value again.

6.2 HOW TO CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the **"°C" or "°F"** LED starts blinking;
3. To change the Set value push the ▲ or ▼ arrows within 10s.
4. To memorise the new set point value push the **SET** key again or wait 10s.

6.3 HOW TO START A MANUAL DEFROST

❄

Push the **DEF** key for more than 2 seconds and a manual defrost will start.

Controller Operating Instructions

6.4 HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:
1. Enter the Programming mode by pressing the **Set** + ▼ keys for 3s (the **"°C" or "°F"** LED starts blinking).
2. Select the required parameter. Press the "**SET**" key to display its value
3. Use "**UP**" or "**DOWN**" to change its value.
4. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET + UP** or wait 15s without pressing a key.
NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.5 THE HIDDEN MENU

The hidden menu Includes all the parameters of the instrument.

6.5.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the **Set** + ▼ keys for 3s (the **"°C" or "°F"** LED starts blinking).
2. Released the keys, then push again the Set+ ▼ keys for more than 7s. The Pr2 label will be displayed immediately followed from the HY parameter.
   NOW YOU ARE IN THE HIDDEN MENU.
3. Select the required parameter.
4. Press the "**SET**" key to display its value
5. Use ▲ or ▼ to change its value.
6. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET +** ▲ or wait 15s without pressing a key.
NOTE1: if none parameter is present in Pr1, after 3s the "noP" message is displayed. Keep the keys pushed till the Pr2 message is displayed.
NOTE2: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.5.2 HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing **"SET +** ▼**"**.
In HIDDEN MENU when a parameter is present in First Level the decimal point is on.

6.6 HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 s the **UP** + **DOWN** keys.
2. The "POF" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
3. If a key is pressed more than 3s the "POF" message will be displayed.

6.7 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the ▲ and ▼ keys, till the **"Pon"** message will be displayed.

6.8 THE CONTINUOUS CYCLE

When defrost is not in progress, it can be activated by holding the " ▲ " key pressed for about 3 seconds. The compressor operates to maintain the "**ccS**" set point for the time set through the "**CCt**" parameter. The cycle can be terminated before the end of the set time using the same activation key " ▲ " for 3 seconds.

6.9 THE ON/OFF FUNCTION

With "**onF = oFF**", pushing the **ON/OFF** key, the instrument is switched off. The **"OFF"** message is displayed. In this configuration, the regulation is disabled.
To switch the instrument on, push again the ON/OFF key.

WARNING: Loads connected to the normally closed contacts of the relays are always supplied and under voltage, even if the instrument is in stand by mode.

7. PARAMETERS

REGULATION

Hy Differential: (0,1 ÷ 25,5°C / 1÷255 °F) Intervention differential for set point. Compressor Cut IN is Set Point + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
LS Minimum set point: (- 50°C÷SET/-58°F÷SET): Sets the minimum value for the set point.
US Maximum set point: (SET÷110°C/ SET÷230°F). Set the maximum value for set point.
Ot Thermostat probe calibration: (-12.0÷12.0°C; -120÷120°F) allows to adjust possible offset of the thermostat probe.
P3P Third probe presence (P3): n= not present:, the terminal operates as digital input.; **y=** present:, the terminal operates as third probe.
O3 Third probe calibration (P3): (-12.0÷12.0°C; -120÷120°F). allows to adjust possible offset of the third probe.
P4P Fourth probe presence: (n = Not present; y = present).
o4 Fourth probe calibration: (-12.0÷12.0°C) allows to adjust possible offset of the fourth probe.
OdS Outputs activation delay at start up: (0÷255min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.
AC Anti-short cycle delay: (0÷50 min) minimum interval between the compressor stop and the following restart.
CCt Compressor ON time during continuous cycle: (0.0÷24.0h; res. 10min) Allows to set the length of the continuous cycle: compressor stays on without interruption for the CCt time. Can be used, for instance, when the room is filled with new products.
CCS Set point for continuous cycle: (-50÷150°C) it sets the set point used during the continuous cycle.
COn Compressor ON time with faulty probe: (0÷255 min) time during which the compressor is active in case of faulty thermostat probe. With COn=0 compressor is always OFF.
COF Compressor OFF time with faulty probe: (0÷255 min) time during which the compressor is OFF in case of faulty thermostat probe. With COF=0 compressor is always active.
CH Type of action: CL = cooling; Ht = heating.

DISPLAY

CF Temperature measurement unit: °C=Celsius; **°F**=Fahrenheit. WARNING: When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, Ot, ALU and ALL have to be checked and modified if necessary).
rES Resolution (for °C): (in = 1°C; dE = 0.1 °C) allows decimal point display.
dLy Display delay: (0 ÷20.0m; risul. 10s) when the temperature increases, the display is updated of 1 °C/1°F after this time.

DEFROST

IdF Interval between defrost cycles: (0÷120h) Determines the time interval between the beginning of two defrost cycles.
MdF (Maximum) length for defrost: (0÷255min) When **P2P = n**, (not evaporator probe: timed defrost) it sets the defrost duration, when **P2P = y** (defrost end based on temperature) it sets the maximum length for defrost.
dFd Temperature displayed during defrost: (**rt** = real temperature; **it** = temperature at defrost start; **SEt** = set point; **dEF** = "dEF" label)
dAd MAX display delay after defrost: (0÷255min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.

ALARMS

ALC Temperature alarms configuration: (Ab; rE)
Ab= absolute temperature: alarm temperature is given by the ALL or ALU values. rE = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the "SET+ALU" or "SET-ALL" values.
ALU MAXIMUM temperature alarm: (SET÷110°C; SET÷230°F) when this temperature is reached the alarm is enabled, after the "ALd" delay time.
ALL Minimum temperature alarm: (-50.0 ÷ SET°C; -58÷230°F when this temperature is reached the alarm is enabled, after the "ALd" delay time.
AFH Differential for temperature alarm recovery: (0,1÷25,5°C; 1÷45°F) Intervention differential for recovery of temperature alarm.
ALd Temperature alarm delay: (0÷255 min) time interval between the detection of an alarm condition and alarm signalling.
dAO Exclusion of temperature alarm at startup: (from 0.0 min to 23.5h) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

CONDENSER TEMPERATURE ALARM (detected by the fourth probe)

AP2 Probe selection for temperature alarm of condenser: nP = no probe; **P1** =thermostat probe; **P2 =** evaporator probe; **P3** =configurable probe; **P4** = Probe on Hot Key plug.
AL2 Low temperature alarm of condenser: (-55÷150°C) when this temperature is reached the LA2 alarm is signalled, possibly after the Ad2 delay.
Au2 High temperature alarm of condenser: (-55÷150°C) when this temperature is reached the HA2 alarm is signalled, possibly after the Ad2 delay.
AH2 Differential for temperature condenser alarm recovery: (0,1÷25,5°C; 1÷45°F)
Ad2 Condenser temperature alarm delay: (0÷255 min) time interval between the detection of the condenser alarm condition and alarm signalling.
dA2 Condenser temperature alarm exclusion at start up: (from 0.0 min to 23.5h, res. 10min)
bLL Compressor off with low temperature alarm of condenser: **n = no:** compressor keeps on working**; Y = yes,** compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.
AC2 Compressor off with high temperature alarm of condenser: **n = no:** compressor keeps on working**; Y = yes,** compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

DIGITAL INPUT

i1P Digital input polarity: oP: the digital input is activated by opening the contact; **CL:** the digital input is activated by closing the contact.
i1F Digital input configuration: EAL = external alarm: "EA" message is displayed; **bAL** = serious alarm "CA" message is displayed. **PAL** = pressure switch alarm, "CA" message is displayed; **dor** = door switch function; **dEF** = activation of a defrost cycle; **AUS** = not enabled; **Htr** = kind of action inversion (cooling – heating); **FAn = do not set it; ES =** Energy saving.
did: (0÷255 min) **with i1F= EAL or i1F = bAL digital input alarm delay:** delay between the detection of the external alarm condition and its signalling.
with i1F= dor: door open signalling delay
with i1F = PAL: time for pressure switch function: time interval to calculate the number of the pressure switch activation.
nPS Pressure switch number: (0 ÷15) Number of activation of the pressure switch, during the "**did**" interval, before signalling the alarm event (I2F= PAL).
If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.
odc Compressor status when open door: no; Fan = normal; **CPr**; **F_C** = Compressor OFF.
rrd Outputs restart after doA alarm: no = outputs not affected by the doA alarm; **yES =** outputs restart with the doA alarm;
HES Temperature increase during the Energy Saving cycle : (-30,0°C÷30,0°C/-22÷86°F) it sets the increasing value of the set point during the Energy Saving cycle.

Controller Operating Instructions

OTHER

Adr Serial address (1÷244): Identifies the instrument address when connected to a ModBUS compatible monitoring system.
PbC Type of probe: it allows to set the kind of probe used by the instrument: **PbC** = PBC probe, **ntc** = NTC probe.
onF on/off key enabling: nu = disabled; **oFF** = enabled; **ES = not set it**.
dP1 Thermostat probe display
dP3 Third probe display- *optional*.
dP4 Fourth probe display.
rSE Real set point: (readable only), it shows the set point used during the energy saving cycle or during the continuous cycle.
rEL Software release for internal use.
Ptb Parameter table code: readable only.

8. DIGITAL INPUT (ENABLED WITH P3P = N)

The free voltage digital input is programmable in different configurations by the "**i1F**" parameter.

8.1 DOOR SWITCH INPUT (i1F = dor)

It signals the door status and the corresponding relay output status through the "**odc**" parameter: **no, Fan** = normal (any change); **CPr, F_C** = Compressor OFF.
Since the door is opened, after the delay time set through parameter "**did**", the door alarm is enabled, the display shows the message "**dA**" and **the regulation restarts is rtr = yES.** The alarm stops as soon as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

8.2 GENERIC ALARM (i1F = EAL)

As soon as the digital input is activated the unit will wait for "**did**" time delay before signalling the "**EAL**" alarm message. The outputs status don't change. The alarm stops just after the digital input is de-activated.

8.3 SERIOUS ALARM MODE (i1F = bAL)

When the digital input is activated, the unit will wait for "**did**" delay before signalling the "**CA**" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

8.4 PRESSURE SWITCH (i1F = PAL)

If during the interval time set by "**did**" parameter, the pressure switch has reached the number of activation of the "**nPS**" parameter, the "**CA**" pressure alarm message will be displayed. The compressor and the regulation are stopped. When the digital input is ON the compressor is always OFF.
If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.

8.5 START DEFROST (i1F = dFr)

It starts a defrost if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "MdF" safety time is expired.

8.6 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (i1F = Htr)

This function allows to invert the regulation of the controller: from cooling to heating and viceversa.

8.7 ENERGY SAVING (i1F = ES)

The Energy Saving function allows to change the set point value as the result of the SET+ HES (parameter) sum. This function is enabled until the digital input is activated.

8.8 DIGITAL INPUTS POLARITY

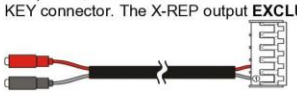
The digital input polarity depends on the "**i1P**" parameter.
i1P=CL: the input is activated by closing the contact.
i1P=OP: the input is activated by opening the contact

9. TTL SERIAL LINE – FOR MONITORING SYSTEMS

The TTL serial line, available through the HOT KEY connector, allows by means of the external TTL/RS485 converter, **XJ485-CX**, to connect the instrument to a monitoring system **ModBUS-RTU** compatible such as the X-WEB500/3000/300.

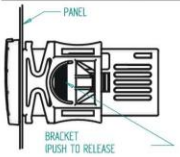
10. X-REP OUTPUT – OPTIONAL

As optional, an X-REP can be connected to the instrument, trough the HOY KEY connector. The X-REP output **EXCLUDES** the serial connection.



To connect the X-REP to the instrument the following connectors must be used CAB-51F(1m), CAB-52F(2m), CAB-55F(5m),

11. INSTALLATION AND MOUNTING



Instrument **XR20CH** shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied. The temperature range allowed for correct operation is 0÷60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

12. ELECTRICAL CONNECTIONS

The instrument is provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

12.1 PROBE CONNECTION

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

13. HOW TO USE THE HOT KEY

13.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "**Hot key**" and push ▲ key; the **"uPL"** message appears followed a by flashing **"End"**
3. Push "**SET**" key and the **End** will stop flashing.
4. Turn OFF the instrument remove the **"Hot Key",** then turn it ON again.

NOTE: the "**Err**" message is displayed for failed programming. In this case push again ▲ key if you want to restart the upload again or remove the "**Hot key**" to abort the operation.

13.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)

1. Turn OFF the instrument.
2. Insert a **programmed "Hot Key" into the 5 PIN receptacle** and then turn the Controller ON.
3. Automatically the parameter list of the **"Hot Key"** is downloaded into the Controller memory, the "**doL**" message is blinking followed a by flashing **"End".**
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the **"Hot Key"**..

NOTE the message "**Err**" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "**Hot key**" to abort the operation.

14. ALARM SIGNALS

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output acc. to par. "Con" and "COF"
"P3"	Third probe failure	Outputs unchanged
"P4"	Fourth probe failure	Outputs unchanged
"HA"	Maximum temperature alarm	Outputs unchanged.
"LA"	Minimum temperature alarm	Outputs unchanged.
"HA2"	Condenser high temperature	It depends on the "Ac2" parameter
"LA2"	Condenser low temperature	It depends on the "bLL" parameter
"dA"	Door open	Compressor according to rrd
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF

14.1 ALARM RECOVERY

Probe alarms **P1**", "**P3**" and "**P4**" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.
Temperature alarms "**HA**", "**LA**" "**HA2**" and "**LA2**" automatically stop as soon as the temperature returns to normal values.
Alarms **"EA"** and **"CA"** (with i1F=bAL) recover as soon as the digital input is disabled.
Alarm "**CA**" (with i1F=PAL) recovers only by **switching off and on** the instrument.

14.2 OTHER MESSAGES

Pon	Keyboard unlocked.
PoF	Keyboard locked
noP	**In programming mode**: none parameter is present in Pr1 **On the display** or in dP2, dP3, dP4: the selected probe is nor enabled
noA	**None alarm is recorded.**

Controller Operating Instructions

Dixell *Installing and operating instructions* **EMERSON**

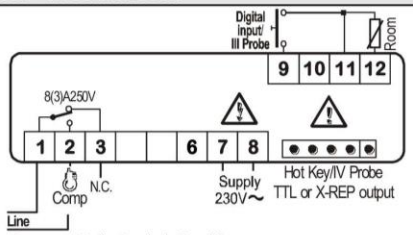
15. TECHNICAL DATA

Housing: self extinguishing ABS.
Case: XR20CH frontal 38x80 mm; depth 62mm;
Mounting: XR20CH panel mounting in a 71x29mm panel cut-out
Protection: IP20; **Frontal protection: XR20CH** IP65
Connections: Screw terminal block ≤ 2,5 mm² wiring.
Power supply: according to the model: 12Vac/dc, ±10%; 24Vac/dc, ±10%; 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz
Power absorption: 3VA max
Display: 3 digits, red LED, 14,2 mm high; **Inputs**: Up to 4 NTC or PTC probes.
Digital input: free voltage contact
Relay outputs: compressor SPST 8(3) A, 250Vac; or 20(8)A 250Vac
Data storing: on the non-volatile memory (EEPROM).
Kind of action: 1B; **Pollution grade:** 2;**Software class:** A.;
Rated impulsive voltage: 2500V; **Overvoltage Category**: II
Operating temperature: 0÷60 °C;**Storage temperature:** -30÷85 °C.
Relative humidity: 20÷85% (no condensing)
Measuring and regulation range: NTC probe: -40÷110°C (-40÷230°F);
PTC probe: -50÷150°C (-58÷302°F)
Resolution: 0,1 °C or 1°C or 1 °F (selectable); **Accuracy (ambient temp. 25°C)**: ±1 °C ±1 digit

16. CONNECTIONS

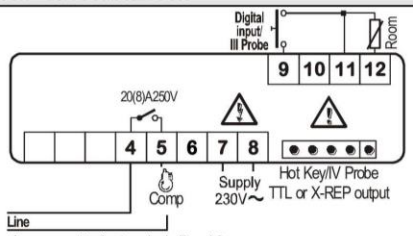
The X-REP output excludes the TTL output.. It's present in the following codes: XR20CH- xx**2**xx, XR20CH –xx**3**xx;

16.1 XR20CH – 8A COMPRESSOR



9-40Vdc supply: connect to the terminals 7 and 8.
12Vac/dc supply: connect to the terminals 7 and 8.
24Vac/dc supply: connect to the terminals 7 and 8.
120Vac supply: connect to the terminals 7 and 8.

16.2 XR20CH – 20A COMPRESSOR



9-40Vdc supply: connect to the terminals 7 and 8.
12Vac/dc supply: connect to the terminals 7 and 8.
24Vac/dc supply: connect to the terminals 7 and 8.
120Vac supply: connect to the terminals 7 and 8.

17. DEFAULT SETTING VALUES

Label	Name	Range	°C/°F	
Set	Set point	LS÷US	3.0	- - -
Hy	Differential	0,1÷25.5°C/ 1÷ 255°F	2.0	Pr1
LS	Minimum set point	-50°C÷SET/-58°F÷SET	-50.0	Pr2
US	Maximum set point	SET÷110°C/ SET ÷ 230°F	110	Pr2
Ot	Thermostat probe calibration	-12÷12°C /-120÷120°F	0.0	Pr1
P3P	Third probe presence	n=not present; Y=pres.	n	Pr2
O3	Third probe calibration	-12÷12°C /-120÷120°F	0	Pr2
P4P	Fourth probe presence	n=not present; Y=pres.	n	Pr2
O4	Fourth probe calibration	-12÷12°C /-120÷120°F	0	Pr2
OdS	Outputs delay at start up	0÷255 min	0	Pr2
AC	Anti-short cycle delay	0 ÷ 50 min	1	Pr1
CCt	Continuos cycle duration	0.0÷24.0h	0.0	Pr2
CCS	Set point for continuous cycle	(-55.0÷150,0°C) (-67÷302°F)	3	Pr2
COn	Compressor ON time with faulty probe	0 ÷ 255 min	15	Pr2
COF	Compressor OFF time with faulty probe	0 ÷ 255 min	30	Pr2
CH	Kind of action	CL=cooling; Ht= heating	cL	Pr1
CF	Temperature measurement unit	°C ÷ °F	°C	Pr2
rES	Resolution	in=integer; dE= dec.point	dE	Pr1
dLy	Display temperature delay	0 ÷ 20.0 min (10 sec.)	0	Pr2
IdF	Interval between defrost cycles	1 ÷ 120 ore	8	Pr1
MdF	(Maximum) length for defrost	0 ÷ 255 min	20	Pr1
dFd	Displaying during defrost	rt, it, SEt, DEF	it	Pr2
dAd	MAX display delay after defrost	0 ÷ 255 min	30	Pr2
ALc	Temperat. alarms configuration	rE= related to set; Ab = absolute	Ab	Pr2
ALU	MAXIMUM temperature alarm	Set÷110.0°C; Set÷230°F	110	Pr1
ALL	Minimum temperature alarm	-50.0°C÷Set/ -58°F÷Set	-50.0	Pr1
AFH	Differential for temperat. alarm recovery	(0,1°C÷25,5°C) (1°F÷45°F)	1	Pr2
ALd	Temperature alarm delay	0 ÷ 255 min	15	Pr2
dAo	Delay of temperature alarm at start up	0 ÷ 23h e 50'	1.3	Pr2
AP2	Probe for temperat. alarm of condenser	nP; P1; P2; P3; P4	P4	Pr2
AL2	Condenser for low temperat. alarm	(-55 ÷ 150°C) (-67÷ 302°F)	-40	Pr2
AU2	Condenser for high temperat. alarm	(-55 ÷ 150°C) (-67÷ 302°F)	110	Pr2
AH2	Differ. for condenser temp. alar. recovery	[0,1°C ÷ 25,5°C] [1°F ÷ 45°F]	5	Pr2
Ad2	Condenser temperature alarm delay	0 ÷ 254 (min.) , 255=nU	15	Pr2
dA2	Delay of cond. temper. alarm at start up	0.0 ÷ 23h 50'	1,3	Pr2
bLL	Compr. off for condenser low temperature alarm	n(0) - Y(1)	n	Pr2
AC2	Compr. off for condenser high temperature alarm	n(0) - Y(1)	n	Pr2
i1P	Digital input polarity	oP=opening;CL=closing	cL	Pr1
i1F	Digital input configuration	EAL, bAL, PAL, dor; dEF; Htr, AUS	dor	Pr1
did	Digital input alarm delay	0÷255min	15	Pr1
nPS	Number of activation of pressure switch	0 ÷15	15	Pr2
odc	Compress status when open door	no; Fan; CPr; F_C	no	Pr2
rrd	Regulation restart with door open alarm	n – Y	y	Pr2
HES	Differential for Energy Saving	(-30°C÷30°C) (-54°F÷54°F)	0	Pr2
Adr	Serial address	0÷247	1	Pr2
PbC	Kind of probe	Ptc; ntc	ntc	Pr1
onF	on/off key enabling	nu, oFF; ES	nu	Pr2
dP1	Room probe display	--	--	Pr1
dP3	Third probe display	--	--	Pr1
dP4	Fourth probe display	--	--	Pr2
rSE	Real set point value	actual set	--	Pr2
rEL	Software release	--	--	Pr2
Ptb	Map code	--	--	Pr2

Dixell **EMERSON** Climate Technologies
Dixell S.r.l. - Z.I. Via dell'Industria, 27 - 32010 Pieve d'Alpago (BL) ITALY
Tel. +39.0437.9833 r.a. - Fax +39.0437.989313 - EmersonClimate.com/Dixell - dixell@emerson.com

Controller Operating Instructions

Dixell *Installing and operating instructions* **EMERSON**

Digital controller with defrost and fans management

XR60CX

CONTENTS

1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.
- Dixell Srl reserves the right to change the composition of its products, even without notice, ensuring the same and unchanged functionality.

1.2 ⚠ SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixell S.r.l." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

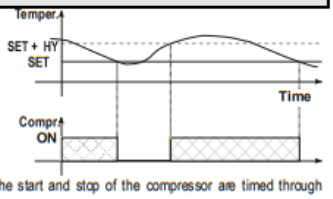
2. GENERAL DESCRIPTION

Model **XR60CX**, format 32 x 74 mm, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigerating units. It has three relay outputs to control compressor, fan, and defrost, which can be either electrical or reverse cycle (hot gas). It is also provided with three NTC or PTC probe inputs, the first one for temperature control, the second one, to be located onto the evaporator, to control the defrost termination temperature and to managed the fan, the third one, optional, to connect to the HOT KEY terminals to signal the condenser temperature alarm or to display a temperature. The digital input can operate as fourth temperature probe.
The HOT KEY output allows to connect the unit, by means of the external module XJ485-CX, to a network line **ModBUS-RTU** compatible such as the Dixell monitoring units of X-WEB family. It allows to program the controller by means the HOT KEY programming keyboard.
The instrument is fully configurable through special parameters that can be easily programmed through the keyboard.

3. CONTROLLING LOADS

3.1 COMPRESSOR

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.



In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "**COn**" and "**COF**".

3.2 DEFROST

Two defrost modes are available through the "**tdF**" parameter: defrost through electrical heater (**tdF = EL**) and hot gas defrost (**tdF = in**). Other parameters are used to control the interval between defrost cycles (IdF), its maximum length (MdF) and two defrost modes: timed or controlled by the evaporator's probe (P2P).
At the end of defrost dripping time is started, its length is set in the Fdt parameter. With Fdt =0 the dripping time is disabled.

3.3 CONTROL OF EVAPORATOR FANS

The fan control mode is selected by means of the "**FnC**" parameter:
FnC = C_n: fans will switch ON and OFF with the compressor and **not run** during defrost;
FnC = o_n fans will run even if the compressor is off, and not run during defrost;
After defrost, there is a timed fan delay allowing for drip time, set by means of the "**Fnd**" parameter.
FnC = C_Y fans will switch ON and OFF with the compressor and **run** during defrost;
FnC = o_Y fans will run continuously also during defrost

An additional parameter "**FSt**" provides the setting of temperature, detected by the evaporator probe, above which the fans are always OFF. This is used to make sure circulation of air only if his temperature is lower than set in "FSt".

3.3.1 Forced activation of fans

This function managed by the **Fct** parameter is designed to avoid short cycles of fans, that could happen when the controller is switched on or after a defrost, when the room air warms the evaporator. **Functioning:** if the difference of temperature between the evaporator and the room probes is more than the value of the Fct parameter, the fans are switched on. With Fct=0 the function is disabled.

3.3.2 Cyclical activation of the fans with compressor off.

When Fnc = c-n or c-Y (fans in parallel to the compressor), by means of the Fon and FoF parameters the fans can carry out on and off cycles even if the compressor is switched off. When the compressor is stopped the fans go on working for the Fon time. With Fon =0 the fans remain always off, when the compressor is off.

4. FRONT PANEL COMMANDS

SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

(DEF) To start a manual defrost

(UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.

(DOWN) To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.

To switch the instrument off, if onF = oFF.

Not enabled.

KEY COMBINATIONS:

▲ + ▼	To lock & unlock the keyboard.
SET + ▼	To enter in programming mode.
SET + ▲	To return to the room temperature display.

4.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
❄	ON	Compressor enabled
❄	Flashing	Anti-short cycle delay enabled
❄	ON	Defrost enabled
❄	Flashing	Drip time in progress
🌀	ON	Fans enabled
🌀	Flashing	Fans delay after defrost in progress.
🔔	ON	An alarm is occurring
❄	ON	Continuous cycle is running
☀	ON	Energy saving enabled
°C/°F	ON	Measurement unit
°C/°F	Flashing	Programming phase

5. MAX & MIN TEMPERATURE MEMORIZATION

5.1 HOW TO SEE THE MIN TEMPERATURE

1. Press and release the ▼ key.
2. The "Lo" message will be displayed followed by the minimum temperature recorded.
3. By pressing the ▼ key again or by waiting 5s the normal display will be restored.

5.2 HOW TO SEE THE MAX TEMPERATURE

1. Press and release the ▲ key.
2. The "Hi" message will be displayed followed by the maximum temperature recorded.
3. By pressing the ▲ key again or by waiting 5s the normal display will be restored.

Controller Operating Instructions

5.3 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

1. Hold press the SET key for more than 3s, while the max. or min temperature is displayed. (rSt message will be displayed)
2. To confirm the operation the "rSt" message starts blinking and the normal temperature will be displayed.

6. MAIN FUNCTIONS

6.1 HOW TO SEE THE SETPOINT

1. Push and immediately release the **SET** key: the display will show the Set point value;
2. Push and immediately release the **SET** key or wait for 5 seconds to display the probe value again.

6.2 HOW TO CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the **"°C" or "°F"** LED starts blinking;
3. To change the Set value push the ▲ or ▼ arrows within 10s.
4. To memorise the new set point value push the **SET** key again or wait 10s.

6.3 HOW TO START A MANUAL DEFROST

Push the **DEF** key for more than 2 seconds and a manual defrost will start.

6.4 HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

1. Enter the Programming mode by pressing the **Set** + ▼ keys for 3s (the **"°C" or "°F"** LED starts blinking).
2. Select the required parameter. Press the "**SET**" key to display its value
3. Use "**UP**" or "**DOWN**" to change its value.
4. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET + UP** or wait 15s without pressing a key.
NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.5 THE HIDDEN MENU

The hidden menu Includes all the parameters of the instrument.

6.5.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the **Set** + ▼ keys for 3s (the **"°C" or "°F"** LED starts blinking).
2. Released the keys, then push again the Set+▼ keys for more than 7s. The Pr2 label will be displayed immediately followed from the HY parameter.
   NOW YOU ARE IN THE HIDDEN MENU.
3. Select the required parameter.
4. Press the "**SET**" key to display its value
5. Use ▲ or ▼ to change its value.
6. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET** + ▲ or wait 15s without pressing a key.
NOTE1: if none parameter is present in Pr1, after 3s the "noP" message is displayed. Keep the keys pushed till the Pr2 message is displayed.
NOTE2: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.5.2 HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing **"SET + ▼"**.
In HIDDEN MENU when a parameter is present in First Level the decimal point is on.

6.6 HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 s the **UP + DOWN** keys.
2. The "POF" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
3. If a key is pressed more than 3s the "POF" message will be displayed.

6.7 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the ▲ and ▼ keys, till the **"Pon"** message will be displayed.

6.8 THE CONTINUOUS CYCLE

When defrost is not in progress, it can be activated by holding the "▲" key pressed for about 3 seconds. The compressor operates to maintain the "**ccS**" set point for the time set through the "**CCt**" parameter. The cycle can be terminated before the end of the set time using the same activation key "▲" for 3 seconds.

6.9 THE ON/OFF FUNCTION

With "**onF = oFF**", pushing the **ON/OFF** key, the instrument is switched off. The **"OFF"** message is displayed. In this configuration, the regulation is disabled.
To switch the instrument on, push again the ON/OFF key.

WARNING: Loads connected to the normally closed contacts of the relays are always supplied and under voltage, even if the instrument is in stand by mode.

7. PARAMETERS

REGULATION

Hy Differential: (0,1 ÷ 25,5°C / 1÷255 °F) Intervention differential for set point. Compressor Cut IN is Set Point + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
LS Minimum set point: (- 50°C÷SET/-58°F÷SET): Sets the minimum value for the set point.
US Maximum set point: (SET÷110°C/ SET÷230°F). Set the maximum value for set point.
Ot Thermostat probe calibration: (-12.0÷12.0°C; -120÷120°F) allows to adjust possible offset of the thermostat probe.
P2P Evaporator probe presence: n= not present: the defrost stops by time; **y**= present: the defrost stops by temperature.
OE Evaporator probe calibration: (-12.0÷12.0°C; -120÷120°F). allows to adjust possible offset of the evaporator probe.
P3P Third probe presence (P3): n= not present:, the terminal operates as digital input.; **y**= present:, the terminal operates as third probe.
O3 Third probe calibration (P3): (-12.0÷12.0°C; -120÷120°F). allows to adjust possible offset of the third probe.
P4P Fourth probe presence: (n = Not present; y = present).
o4 Fourth probe calibration: (-12.0÷12.0°C) allows to adjust possible offset of the fourth probe.
OdS Outputs activation delay at start up: (0÷255min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.
AC Anti-short cycle delay: (0÷50 min) minimum interval between the compressor stop and the following restart.
rtr Percentage of the second and first probe for regulation (0÷100; 100 = P1, 0 = P2): it allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1-P2)/100 + P2).
CCt Compressor ON time during continuous cycle: (0.0÷24.0h; res. 10min) Allows to set the length of the continuous cycle: compressor stays on without interruption for the CCt time. Can be used, for instance, when the room is filled with new products.
CCS Set point for continuous cycle: (-50÷150°C) it sets the set point used during the continuous cycle.
COn Compressor ON time with faulty probe: (0÷255 min) time during which the compressor is active in case of faulty thermostat probe. With COn=0 compressor is always OFF.
COF Compressor OFF time with faulty probe: (0÷255 min) time during which the compressor is OFF in case of faulty thermostat probe. With COF=0 compressor is always active.

DISPLAY

CF Temperature measurement unit: °C=Celsius; **°F**=Fahrenheit. WARNING: When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, Ot, ALU and ALL have to be checked and modified if necessary).
rES Resolution (for °C): (in = 1°C; dE = 0.1 °C) allows decimal point display.
Lod Instrument display: (P1; P2, P3, P4, SET, dtr): it selects which probe is displayed by the instrument: **P1** = Thermostat probe; **P2** = Evaporator probe; **P3** = Third probe(only for model with this option enabled); **P4** = Fourth probe, **SET** = set point; **dtr** = percentage of visualization.
rEd X- REP display (*optional*): (P1; P2, P3, P4, SET, dtr): it selects which probe is displayed by X- REP: **P1** = Thermostat probe; **P2** = Evaporator probe; **P3** = Third probe(only for model with this option enabled); **P4** = Fourth probe, **SET** = set point; **dtr** = percentage of visualization.
dLy Display delay: (0 ÷20.0m; risul. 10s) when the temperature increases, the display is updated of 1 °C/1°F after this time.
dtr Percentage of the second and first probe for visualization when Lod = dtr (0÷100; 100 = P1, 0 = P2): if Lod = dtr it allows to set the visualization according to the percentage of the first and second probe, as for the following formula (dtr(P1-P2)/100 + P2).

DEFROST

dFP Probe selection for defrost termination: nP = no probe; **P1** =thermostat probe; **P2** = evaporator probe; **P3** =configurable probe; **P4** = Probe on Hot Key plug.
tdF Defrost type: EL = electrical heater; in = hot gas
dtE Defrost termination temperature: (-50÷50 °C/ -58÷122°F) (Enabled only when EdF=Pb) sets the temperature measured by the evaporator probe, which causes the end of defrost.
IdF Interval between defrost cycles: (0÷120h) Determines the time interval between the beginning of two defrost cycles.
MdF (Maximum) length for defrost: (0÷255min) When **P2P = n**, (not evaporator probe: timed defrost) it sets the defrost duration, when **P2P = y** (defrost end based on temperature) it sets the maximum length for defrost.
dSd Start defrost delay: (0÷99min) This is useful when different defrost start times are necessary to avoid overloading the plant.
dFd Temperature displayed during defrost: (**rt** = real temperature; **it** = temperature at defrost start; **SEt** = set point; **dEF** = "dEF" label)
dAd MAX display delay after defrost: (0÷255min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.
Fdt Drip time: (0÷120 min) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
dPo First defrost after start-up: (y = immediately; n = after the IdF time)
dAF Defrost delay after continuous cycle: (0÷23.5h) time interval between the end of the fast freezing cycle and the following defrost related to it.

FANS

FnC Fans operating mode: **C-n**= runs with the compressor, OFF during defrost;
o-n = continuous mode, OFF during defrost;
C-Y = runs with the compressor, ON during defrost;
o-Y = continuous mode, ON during defrost;
Fnd Fans delay after defrost: (0÷255min) Interval between end of defrost and evaporator fans start.
Fct Temperature differential avoiding short cycles of fans (0÷59°C; Fct=0 function disabled). If the difference of temperature between the evaporator and the room probes is more than the value of the Fct parameter, the fans are switched on.
FSt Fans stop temperature: (-50÷50°C/122°F) setting of temperature, detected by evaporator probe, above which fans are always OFF.
Fon Fan ON time: (0÷15 min) **with** Fnc = C_n or C_y, (fan activated in parallel with compressor). it sets the evaporator fan ON cycling time when the compressor is off. With Fon =0 and FoF ≠ 0 the fan are always off, with Fon=0 and FoF =0 the fan are always off.
FoF Fan OFF time: (0÷15 min) **with** Fnc = C_n or C_y, (fan activated in parallel with compressor). it sets the evaporator fan off cycling time when the compressor is off. With Fon =0 and FoF ≠ 0 the fan are always off, with Fon=0 and FoF =0 the fan are always off.
FAP Probe selection for fan management: nP = no probe; **P1** =thermostat probe; **P2** = evaporator probe; **P3** =configurable probe; **P4** = Probe on Hot Key plug.

ALARMS

ALC Temperature alarms configuration: (Ab; rE)

Controller Operating Instructions

Ab= absolute temperature: alarm temperature is given by the ALL or ALU values. rE = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the "SET+ALU" or "SET-ALL" values.

ALU MAXIMUM temperature alarm: (SET÷110°C; SET÷230°F) when this temperature is reached the alarm is enabled, after the "ALd" delay time.

ALL Minimum temperature alarm: (-50.0 ÷ SET°C; -58÷230°F when this temperature is reached the alarm is enabled, after the "ALd" delay time.

AFH Differential for temperature alarm/ fan recovery: (0,1÷25,5°C; 1÷45°F) Intervention differential for recovery of temperature alarm. It's also used for the restart of the fan when the FSt temperature is reached

ALd Temperature alarm delay: (0÷255 min) time interval between the detection of an alarm condition and alarm signalling.

dAO Exclusion of temperature alarm at startup: (from 0.0 min to 23.5h) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

CONDENSER TEMPERATURE ALARM

AP2 Probe selection for temperature alarm of condenser: nP = no probe; **P1** =thermostat probe; **P2** = evaporator probe; **P3** =configurable probe; **P4** = Probe on Hot Key plug.

AL2 Low temperature alarm of condenser: (-55÷150°C) when this temperature is reached the LA2 alarm is signalled, possibly after the Ad2 delay.

Au2 High temperature alarm of condenser: (-55÷150°C) when this temperature is reached the HA2 alarm is signalled, possibly after the Ad2 delay.

AH2 Differential for temperature condenser alarm recovery: (0,1÷25,5°C; 1÷45°F)

Ad2 Condenser temperature alarm delay: (0÷255 min) time interval between the detection of the condenser alarm condition and alarm signalling.

dA2 Condenser temperature alarm exclusion at start up: (from 0.0 min to 23.5h, res. 10min)

bLL Compressor off with low temperature alarm of condenser: n = no: compressor keeps on working; **Y = yes,** compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

AC2 Compressor off with high temperature alarm of condenser: n = no: compressor keeps on working; **Y = yes,** compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

DIGITAL INPUT

i1P Digital input polarity: oP: the digital input is activated by opening the contact; **CL:** the digital input is activated by closing the contact.

i1F Digital input configuration: EAL = external alarm: "EA" message is displayed; **bAL** = serious alarm "CA" message is displayed. **PAL** = pressure switch alarm, "CA" message is displayed; **dor** = door switch function; **dEF** = activation of a defrost cycle; **AUS** =not enabled; **Htr** = kind of action inversion (cooling – heating); **FAn = not set it; ES** = Energy saving.

did: (0÷255 min) **with i1F= EAL or i1F = bAL digital input alarm delay:** delay between the detection of the external alarm condition and its signalling.
with i1F= dor: door open signalling delay
with i1F = PAL: time for pressure switch function: time interval to calculate the number of the pressure switch activation.

nPS Pressure switch number: (0 ÷15) Number of activation of the pressure switch, during the "**did**" interval, before signalling the alarm event (i2F= PAL).
If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.

odc Compressor and fan status when open door: no = normal; **Fan** = Fan OFF; **CPr** = Compressor OFF; **F_C** = Compressor and fan OFF.

rrd Outputs restart after doA alarm: no = outputs not affected by the doA alarm; **yES =** outputs restart with the doA alarm;

HES Temperature increase during the Energy Saving cycle : (-30,0°C÷30,0°C/-22÷86°F) it sets the increasing value of the set point during the Energy Saving cycle.

OTHER

Adr Serial address (1-247): Identifies the instrument address when connected to a ModBUS compatible monitoring system.

PbC Type of probe: it allows to set the kind of probe used by the instrument: **PbC** = PBC probe, **ntc** = NTC probe.

onF on/off key enabling: nu = disabled; **oFF** = enabled; **ES = not set it.**

dP1 Thermostat probe display

dP2 Evaporator probe display

dP3 Third probe display- *optional*.

dP4 Fourth probe display.

rSE Real set point: (readable only), it shows the set point used during the energy saving cycle or during the continuous cycle.

rEL Software release for internal use.

Ptb Parameter table code: readable only.

8. DIGITAL INPUT (ENABLED WITH P3P = N)

The free voltage digital input is programmable in different configurations by the "**i1F**" parameter.

8.1 DOOR SWITCH INPUT (i1F = dor)

It signals the door status and the corresponding relay output status through the "**odc**" parameter: **no** = normal (any change); **Fan** = Fan OFF; **CPr** = Compressor OFF; **F_C** = Compressor and fan OFF. Since the door is opened, after the delay time set through parameter "**did**", the door alarm is enabled, the display shows the message "**dA**" and **the regulation restarts is rtr = yES.** The alarm stops as soon as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

8.2 GENERIC ALARM (i1F = EAL)

As soon as the digital input is activated the unit will wait for "**did**" time delay before signalling the "**EAL**" alarm message. The outputs status don't change. The alarm stops just after the digital input is de-activated.

8.3 SERIOUS ALARM MODE (i1F = bAL)

When the digital input is activated, the unit will wait for "**did**" delay before signalling the "**CA**" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

8.4 PRESSURE SWITCH (i1F = PAL)

If during the interval time set by "**did**" parameter, the pressure switch has reached the number of activation of the "**nPS**" parameter, the "**CA**" pressure alarm message will be displayed. The compressor and the regulation are stopped. When the digital input is ON the compressor is always OFF. **If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.**

8.5 START DEFROST (i1F = dFr)

It starts a defrost if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "MdF" safety time is expired.

8.6 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (i1F = Htr)

This function allows to invert the regulation of the controller: from cooling to heating and viceversa.

8.7 ENERGY SAVING (i1F = ES)

The Energy Saving function allows to change the set point value as the result of the SET+ HES (parameter) sum. This function is enabled until the digital input is activated.

8.8 DIGITAL INPUTS POLARITY

The digital input polarity depends on the "**i1P**" parameter.
i1P=CL: the input is activated by closing the contact.
i1P=OP: the input is activated by opening the contact

9. TTL SERIAL LINE – FOR MONITORING SYSTEMS

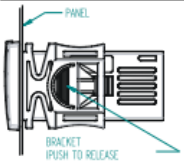
The TTL serial line, available through the HOT KEY connector, allows by means of the external TTL/RS485 converter, **XJ485-CX**, to connect the instrument to a monitoring system **ModBUS-RTU** compatible such as the X-WEB500/3000/300.

10. X-REP OUTPUT – OPTIONAL

As optional, an X-REP can be connected to the instrument, trough the HOY KEY connector. The X-REP output **EXCLUDES** the serial connection.

To connect the X-REP to the instrument the following connectors must be used CAB-51F(1m), CAB-52F(2m), CAB-55F(5m),

11. INSTALLATION AND MOUNTING



Instrument **XR60CX** shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied.
The temperature range allowed for correct operation is 0÷60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

12. ELECTRICAL CONNECTIONS

The instrument is provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

12.1 PROBE CONNECTION

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

13. HOW TO USE THE HOT KEY

13.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "**Hot key**" and push ▲ key; the **"uPL"** message appears followed a by flashing **"End"**
3. Push "**SET**" key and the **End** will stop flashing.
4. Turn OFF the instrument remove the **"Hot Key"**, then turn it ON again.

NOTE: the "**Err**" message is displayed for failed programming. In this case push again ▲ key if you want to restart the upload again or remove the "**Hot key**" to abort the operation.

13.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)

1. Turn OFF the instrument.
2. Insert a **programmed "Hot Key" into the 5 PIN receptacle** and then turn the Controller ON.
3. Automatically the parameter list of the **"Hot Key"** is downloaded into the Controller memory, the "**doL**" message is blinking followed a by flashing **"End".**
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the **"Hot Key"**..

NOTE the message "**Err**" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "**Hot key**" to abort the operation.

14. ALARM SIGNALS

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output acc. to par. "Con" and "COF"
"P2"	Evaporator probe failure	Defrost end is timed

Controller Operating Instructions

Dixell *Installing and operating instructions* **EMERSON**

Message	Cause	Outputs
"P3"	Third probe failure	Outputs unchanged
"P4"	Fourth probe failure	Outputs unchanged
"HA"	Maximum temperature alarm	Outputs unchanged.
"LA"	Minimum temperature alarm	Outputs unchanged.
"HA2"	Condenser high temperature	It depends on the "Ac2" parameter
"LA2"	Condenser low temperature	It depends on the "bLL" parameter
"dA"	Door open	Compressor and fans restarts
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF

14.1 ALARM RECOVERY

Probe alarms **P1**", "**P2**", "**P3**" and "**P4**" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.
Temperature alarms "**HA**", "**LA**" "**HA2**" and "**LA2**" automatically stop as soon as the temperature returns to normal values.
Alarms **"EA"** and **"CA"** (with i1F=bAL) recover as soon as the digital input is disabled.
Alarm "**CA**" (with i1F=PAL) recovers only by **switching off and on** the instrument.

14.2 OTHER MESSAGES

Pon	Keyboard unlocked.
PoF	Keyboard locked
noP	**In programming mode**: none parameter is present in Pr1 **On the display** or in dP2, dP3, dP4: the selected probe is nor enabled
noA	**None alarm is recorded.**

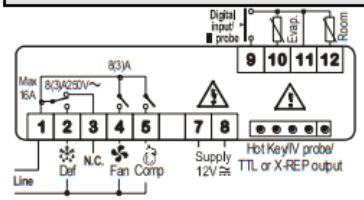
15. TECHNICAL DATA

Housing: self extinguishing ABS.
Case: XR60CX frontal 32x74 mm; depth 60mm;
Mounting: XR60CX panel mounting in a 71x29mm panel cut-out
Protection: IP20; **Frontal protection: XR60CX** IP65
Connections: Screw terminal block ≤ 2,5 mm² wiring.
Power supply: according to the model: 12Vac/dc, ±10%; 24Vac/dc, ±10%; 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz
Power absorption: 3VA max
Display: 3 digits, red LED, 14,2 mm high; **Inputs**: Up to 4 NTC or PTC probes.
Digital input: free voltage contact
Relay outputs: compressor SPST 8(3) A, 250Vac; SPST 16(6)A 250Vac or 20(8)A 250Vac
defrost: SPDT 8(3) A, 250Vac
fan: SPST 8(3) A, 250Vac or SPST 5(2) A
Data storing: on the non-volatile memory (EEPROM).
Kind of action: 1B; **Pollution grade:** 2;**Software class:** A.;
Rated impulsive voltage: 2500V; **Overvoltage Category**: II
Operating temperature: 0÷60 °C;**Storage temperature:** -30÷85 °C.
Relative humidity: 20÷85% (no condensing)
Measuring and regulation range: NTC probe: -40÷110°C (-40÷230°F);
PTC probe: -50÷150°C (-58÷302°F)
Resolution: 0,1 °C or 1°C or 1 °F (selectable); **Accuracy (ambient temp. 25°C)**: ±0,7 °C ±1 digit

16. CONNECTIONS

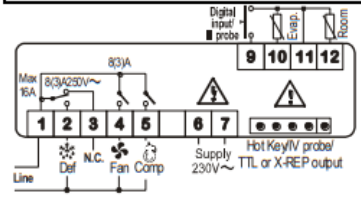
The X-REP output excludes the TTL output.. It's present in the following codes:
XR60CX- xx**2**xx, XR60CX –xx**3**xx;

16.1 XR60CX – 8A OR 16A COMP. RELAY - 12VAC/DV OR 24 VAC/DV



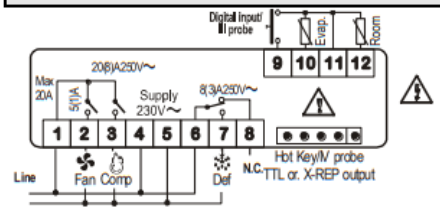
NOTE: The compressor relay is 8(3)A or 16(6)A according to the model.
24Vac/dc supply: connect to the terminals 7 and 8.

16.2 XR60CX – 8A OR 16A COMP. RELAY - 120VAC OR 230 VAC



NOTE: The compressor relay is 8(3)A or 16(6)A according to the model.
120Vac supply: connect to the terminals 6 and 7.

16.3 XR60C – 20A COMP. RELAY - 120VAC OR 230 VAC

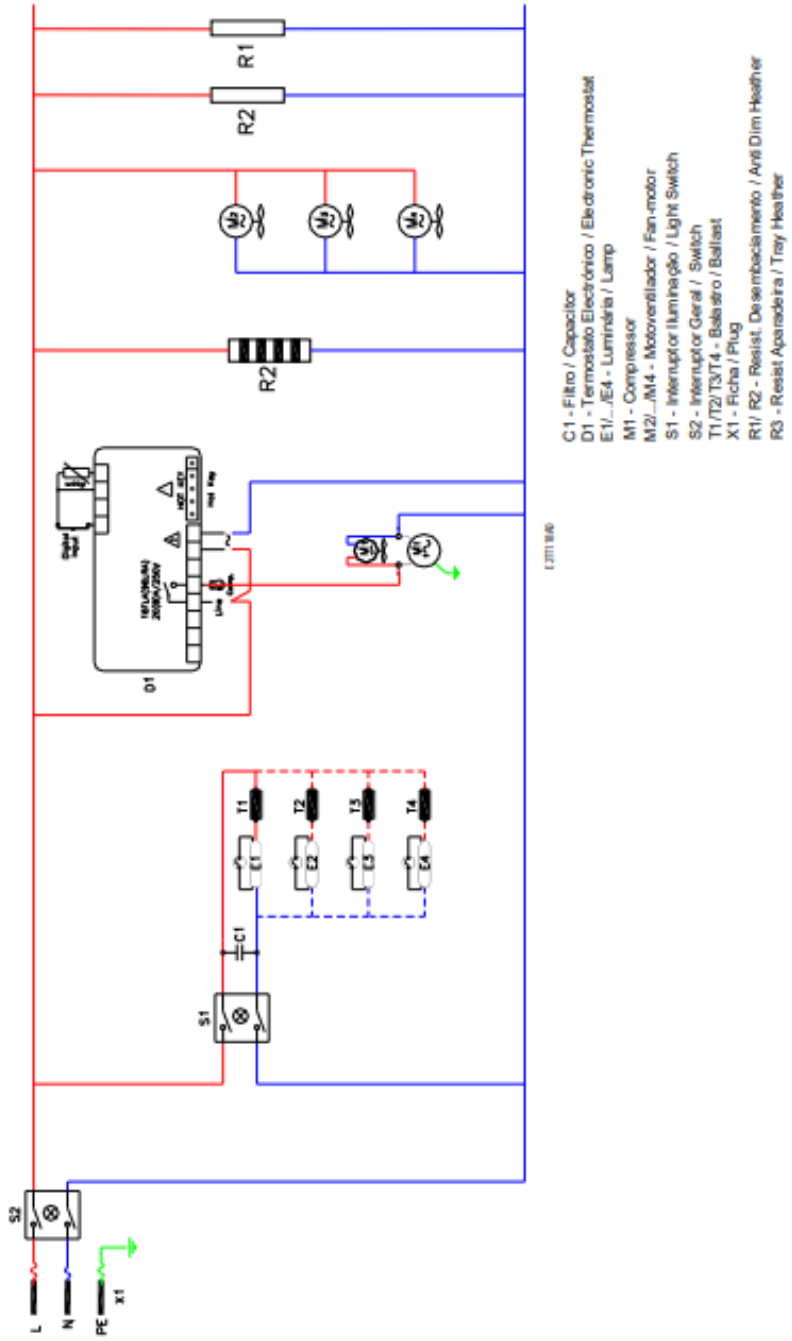


120Vac supply: connect to the terminals 5 and 6.

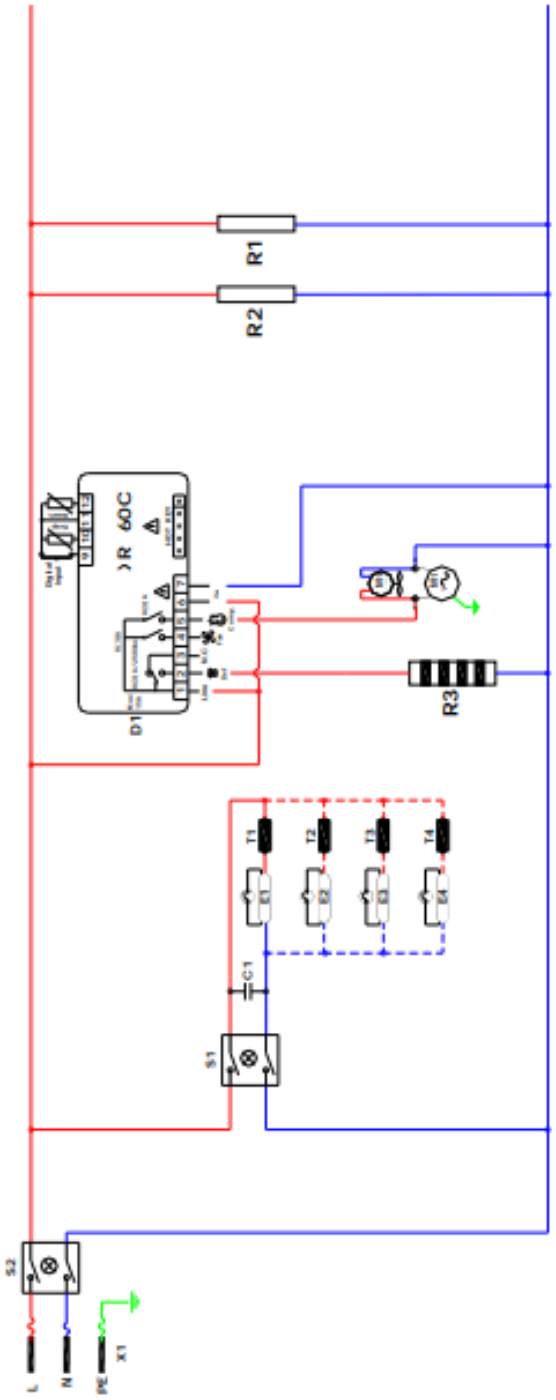
17. DEFAULT SETTING VALUES

Label	Name	Range	°C/°F	
Set	Set point	LS÷US	-5.0	- - -
Hy	Differential	0,1÷25.5°C/ 1÷ 255°F	2.0	Pr1
LS	Minimum set point	-50°C÷SET/-58°F÷SET	-50.0	Pr2
US	Maximum set point	SET÷110°C/ SET ÷ 230°F	110	Pr2
Ot	Thermostat probe calibration	-12÷12°C /-120÷120°F	0.0	Pr1
P2P	Evaporator probe presence	n=not present; Y=pres.	Y	Pr1
OE	Evaporator probe calibration	-12÷12°C /-120÷120°F	0.0	Pr2
P3P	Third probe presence	n=not present; Y=pres.	n	Pr2
O3	Third probe calibration	-12÷12°C /-120÷120°F	0	Pr2
P4P	Fourth probe presence	n=not present; Y=pres.	n	Pr2
O4	Fourth probe calibration	-12÷12°C /-120÷120°F	0	Pr2
OdS	Outputs delay at start up	0÷255 min	0	Pr2
AC	Anti-short cycle delay	0 ÷ 50 min	1	Pr1
rtr	P1-P2 percentage for regulation	0 ÷ 100 (100=P1 , 0=P2)	100	Pr2
CCt	Continuos cycle duration	0.0÷24.0h	0.0	Pr2
CCS	Set point for continuous cycle	(-55.0÷150.0°C) (-67÷302°F)	-5	Pr2
COn	Compressor ON time with faulty probe	0 ÷ 255 min	15	Pr2
COF	Compressor OFF time with faulty probe	0 ÷ 255 min	30	Pr2
CF	Temperature measurement unit	°C ÷ °F	°C	Pr2
rES	Resolution	in=integer; dE= dec.point	dE	Pr1
Lod	Probe displayed	P1;P2	P1	Pr2
rEdP	X-REP display	P1 - P2 - P3 - P4 - SEt - dtr	P1	Pr2
dLy	Display temperature delay	0 ÷ 20.0 min (10 sec.)	0	Pr2
dtr	P1-P2 percentage for disply	1 ÷ 99	50	Pr2
tdF	Defrost type	EL=el. heater; in= hot gas	EL	Pr1
dFP	Probe selection for defrost termination	nP; P1; P2; P3; P4	P2	Pr2
dtE	Defrost termination temperature	-50 ÷ 50 °C	8	Pr1
IdF	Interval between defrost cycles	1 ÷ 120 ore	6	Pr1
MdF	(Maximum) length for defrost	0 ÷ 255 min	30	Pr1
dSd	Start defrost delay	0÷99min	0	Pr2
dFd	Displaying during defrost	rt, it, SEt, DEF	it	Pr2
dAd	MAX display delay after defrost	0 ÷ 255 min	30	Pr2
Fdt	Draining time	0÷120 min	0	Pr2
dPo	First defrost after startup	n=after IdF; y=immed.	n	Pr2
dAF	Defrost delay after fast freezing	0 ÷ 23h e 50'	0.0	Pr2
Fnc	Fan operating mode	C-n, o-n, C-y, o-Y	o-n	Pr1
Fnd	Fan delay after defrost	0÷255min	10	Pr1
Fct	Differential of temp. for forced fan active.	0÷50°C	10	Pr2
FSt	Fan stop temperature	-50÷50°C/-58÷122°F	2	Pr1
Fon	Fan on time with compressor off	0÷15 (min.)	0	Pr2
FoF	Fan off time with compressor off	0÷15 (min.)	0	Pr2
FAP	Probe selection for fan management	nP; P1; P2; P3; P4	P2	Pr2
ALc	Temperat. alarms configuration	rE= related to set; Ab = absolute	Ab	Pr2
ALU	MAXIMUM temperature alarm	Set÷110.0°C; Set÷230°F	110	Pr1
ALL	Minimum temperature alarm	-50.0°C÷ Set/ -58°F÷Set	-50.0	Pr1
AFH	Differential for temperat. alarm recovery	(0,1°C÷25,5°C) (1°F÷45°F)	1	Pr2
ALd	Temperature alarm delay	0 ÷ 255 min	15	Pr2
dAO	Delay of temperature alarm at start up	0 ÷ 23h e 50'	1.3	Pr2
AP2	Probe for temperat. alarm of condenser	nP; P1; P2; P3; P4	P4	Pr2
AL2	Condenser for low temperat. alarm	(-55 ÷ 150°C) (-67÷ 302°F)	-40	Pr2
AU2	Condenser for high temperat. alarm	(-55 ÷ 150°C) (-67÷ 302°F)	110	Pr2
AH2	Differ. for condenser temp. alar. recovery	(0,1°C ÷ 25,5°C) (1°F ÷ 45°F)	5	Pr2
Ad2	Condenser temperature alarm delay	0 ÷ 254 (min.) , 255=nU	15	Pr2
dA2	Delay of cond. temper. alarm at start up	0.0 ÷ 23h 50'	1.3	Pr2
bLL	Compr. off for cond. low temp. alarm	n(0) - Y(1)	n	Pr2
AC2	Compr. off for cond. high temp. alarm	n(0) - Y(1)	n	Pr2
i1P	Digital input polarity	oP=opening;CL=closing	cL	Pr1
i1F	Digital input configuration	EAL, bAL, PAL, dor, dEF, Htr, AUS	dor	Pr1
did	Digital input alarm delay	0÷255min	15	Pr1
Nps	Number of activation of pressure switch	0÷15	15	Pr2
odc	Compress and fan status with open door	no; Fan; CPr; F_C	F-c	Pr2
rrd	Regulation restart with door open alarm	n – Y	y	Pr2
HES	Differential for Energy Saving	(-30°C÷30°C) (-54°F÷54°F)	0	Pr2
PbC	Kind of probe	Ptc; ntc	1	Pr2
Adr	Serial address	1÷247	1	Pr2
onF	on/off key enabling	nu, oFF; ES	ntc	Pr1
dP1	Room probe display	–	nu	Pr2
dP2	Evaporator probe display	–	--	Pr1
dP3	Third probe display	–	--	Pr1
dP4	Fourth probe display	–	--	Pr1

Electrical Wiring

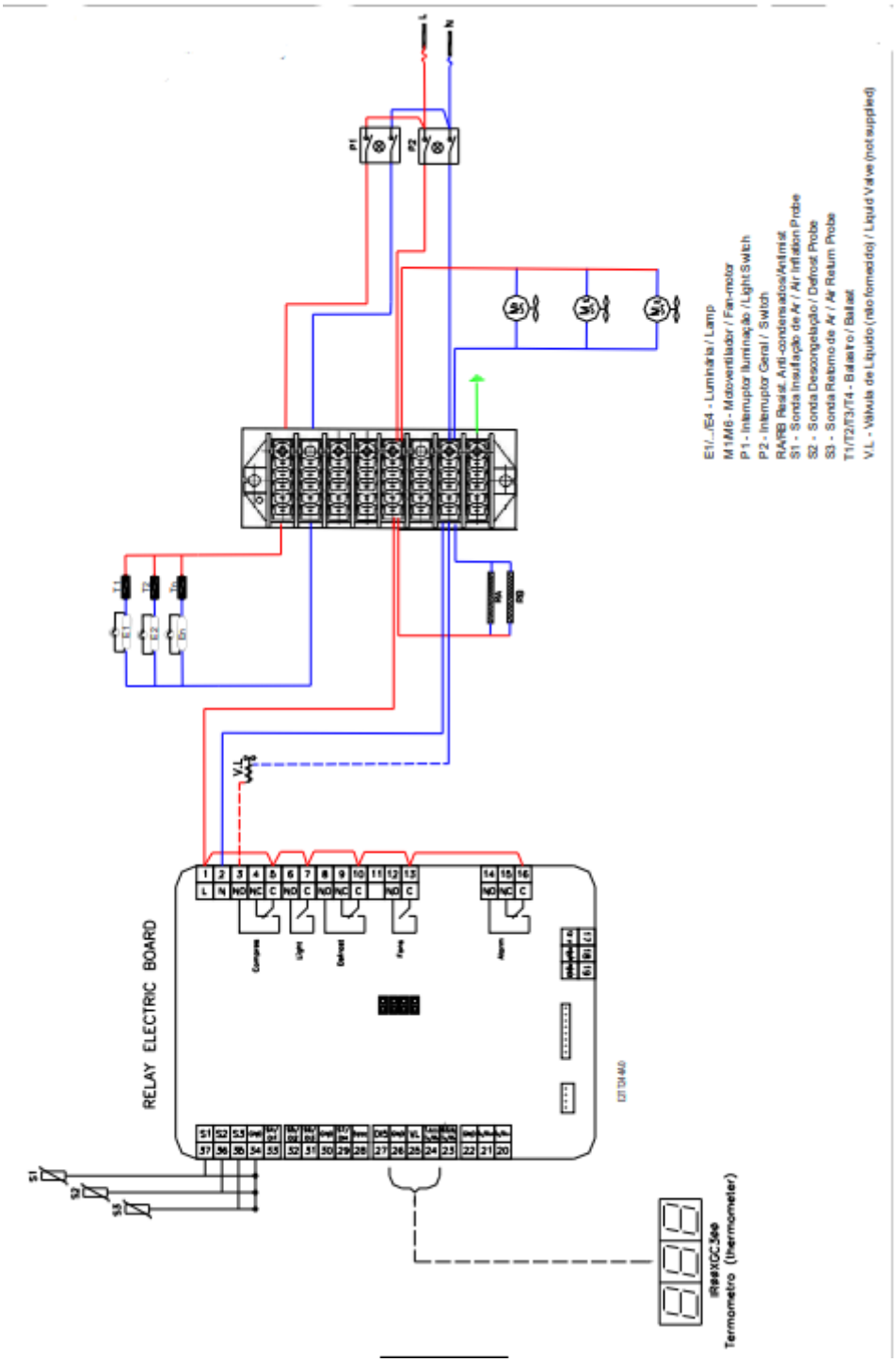


Electrical Wiring

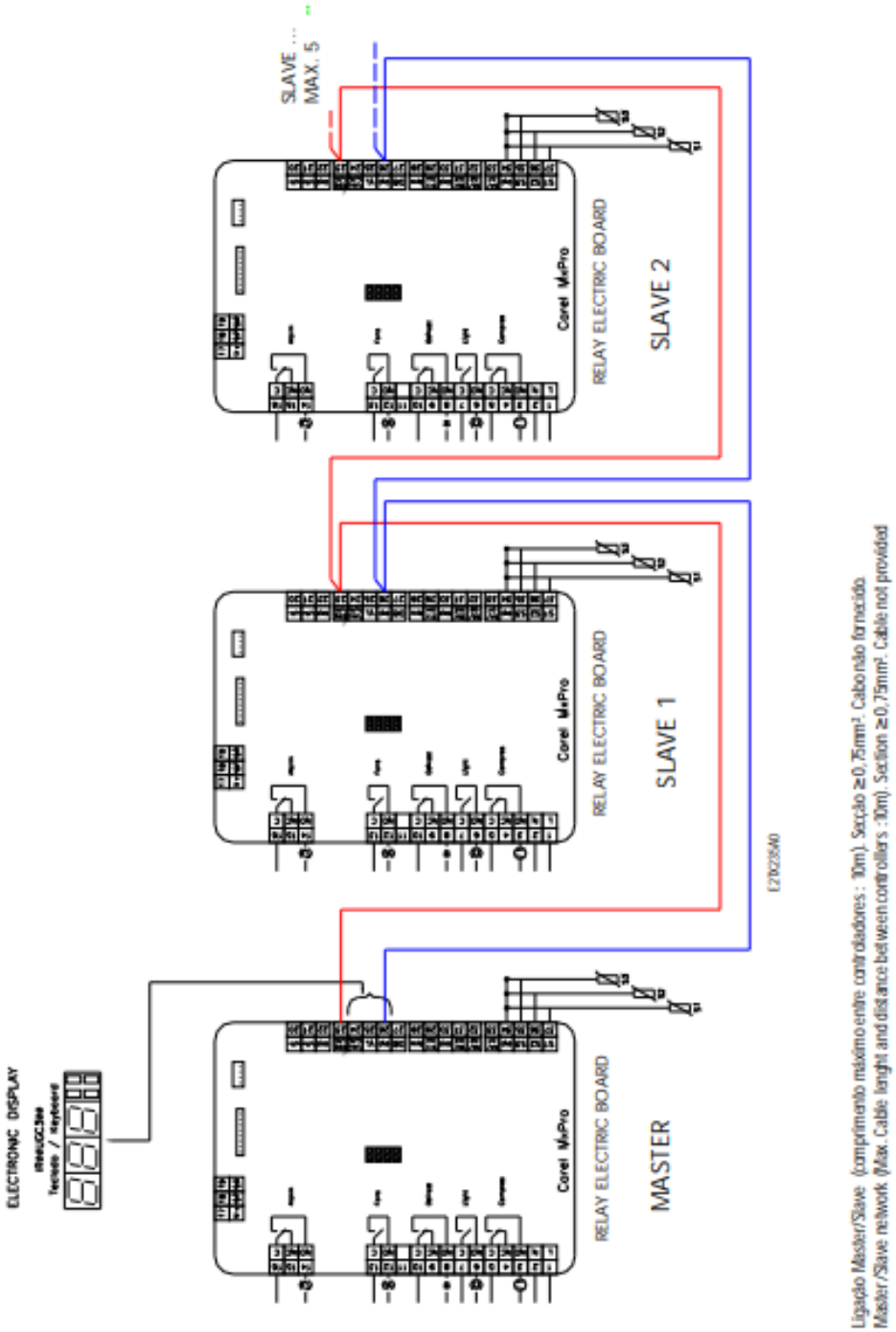


C1 - Filtro / Capacitor
D1 - Termostato Electrónico / Electronic Thermostat
E1/...E4 - Luminária / Lamp
M1 - Compressor
S1 - Interruptor iluminação / Light Switch
S2 - Interruptor Geral / Switch
T1/T2/T3/T4 - Balastro / Ballast
X1 - Ficha / Plug
R1/ R2 - Resist. Desembaciamento / Anti Dim Heather
R3 - Resist Descongelação / Defrost Heather

Electrical Wiring



Electrical Wiring



Maintenance & Service Records

Date	Unit	Action

Notes

GENERAL OPERATING MANUAL

FOR ARTISAN HORIZONTAL
DISPLAY FRIDGES

artisan™

Phone 1300 278 472 **Email** sales@artisangroup.au