INTARCON

Electronic Board Instructions

For the specialist

Electronic control for refrigeration units

XM670K v.5.6

CE

TÜVRheinland CERTIFIED ISO 9001

RoHS COMPLIANT

ErP ecodesign

v.1.0

Store near the unit
Subject to technical changes

Table of contents

1 User Guide

All important information for the operation of the XM670K controller is summarised in this "Electronic Board Instructions".

Read the instructions of the electronic control and use the product only after having understood the instructions for use.

If you have any questions, please contact your INTARCON specialist dealer. The current address is available on the last page.

1.1 Structure of the Instructions

1.1.1 Warnings

Structure of warnings

The warnings are structured as follows:

⚠ SIGNAL!	**The source of the danger!** Consequences of non-compliance. ► Measure to avoid danger.

Classification of warnings

Warnings are differentiated according to the type of hazard as follows:

⚠ DANGER!	Warns of an imminent threat of danger, which will result in death or serious injury if not avoided.

⚠ WARNING!	Warns of a potentially hazardous situation, which will result in death or serious injury if not avoided.

⚠ CAUTION!	Warns of a potentially hazardous situation, which will result in moderate or minor injury if not avoided.

NOTE	Warns of a potentially hazardous situation, which will result in damage to property or the environment if not avoided.

Tips, notes and recommendations

ⓘ *Provides the user with advice, notes or recommendations on the efficient use of the product.*

1.1.2 Additional symbols

Handling instructions

Handling instructions call for an operation or a work step to be carried out. Handling instructions must always be carried out individually and in the specified sequence.

Structure of the handling instructions:

➲ Instructions for an operation.

Results if needed.

1.2 Requirements for staff

➲ Ensure that only authorised and trained people operate, maintain or repair the unit.

➲ Ensure that all persons using, maintaining or repairing the unit are of the specified minimum age.

➲ Ensure that staff training includes theoretical information (technology and safety) and practical training on the unit.

➲ Ensure that personnel have read and understood the instruction and documentation provided.

➲ Ensure that personnel to be trained, taught, instructed or generally trained work in the unit only under the constant supervision of an experienced person.

➲ Regularly check that staff are working with safety and risk in mind.

➲ Clearly define staff responsibilities for operation, overhaul, maintenance and repair.

1.3 Target groups

These instructions are intended for authorised specialists only:

➲ Electrical work may only be carried out by qualified electricians.

➲ Initial commissioning must be carried out exclusively by the manufacturer or by a specialist appointed and authorised by the manufacturer.

➲ Replacement of the controller must be carried out by a qualified electrician.

1.4 Related documents

➲ For safe and correct use of the unit, observe the documents supplied in addition and the relevant standards and laws.

Documents to be observed:

- Safety data sheets of the units and consumables used.

1.5 Custody of documents

➲ Keep the regulation instructions close to the unit.

1.6 Symbols on the product

1.6.1 Warnings

- Warns of the risk of fire.

- Warns against electric shock.

- Indicates that the power must be switched off before opening the body.

- Requires the reading of the regulation manual.

2 Safety and Dangers

⚠ DANGER!	**Risk of electric shock!**
	▶ Before starting any work on the unit, disconnect the power supply and ensure that it cannot be switched on again.
	▶ Observe country-specific standards and guidelines before working with electrical equipment.

➲ Follow the regulation instructions.

➲ Installation, maintenance, cleaning and repair work may only be carried out by authorised qualified personnel who are familiar with the applicable national regulations.

3 Personal Protective Equipment

Assembly personnel, electricians, maintenance personnel and auxiliary personnel are responsible for the following:

- Use of personal protective equipment.
- Regular cleaning and care of protective equipment.
- Immediate replacement of damaged parts of protective equipment.

Components of protective equipment:

- Safety helmet
- Protective goggles
- Hearing protectors
- Face mask
- Protective gloves
- High-visibility clothing (reflective, high-visibility colour)
- Safety shoes
- Special protective clothing
  - against burns
  - against hypothermia
  - against chemical burns
  - against punctures and cuts
  - against electrostatic charges (for the handling of flammable refrigerants)

4 Description

The XM670K is an electronic controller range equipment with medium or low temperature applications, with up to 2 power stages. This electronic regulation can be connected in a small local area network (LAN) and is capable of managing up to 8 different devices, which can operate as an individual controller or following the commands received from the other controllers connected in the local network.

It has 6 relay outputs whose labels are:

- compressor
- solenoid valve / alarm
- defrost (hot gas or heaters)
- condenser fans (in DM -xD used as relay for the pump)
- evaporator fans
- compressor 2 / room light (in CV_CR-NPD the activation of compressor 2 is done with a timer after the activation of compressor 1).

It also has an analogue output An OUT (0-10V) used to control the EC fans, 6 configurable probes and 3 voltage-free digital inputs

The devices have a HOT-KEY connection port that facilitates the programming of the parameters by means of a data key.

The RS485 connection enables intercommunication between the devices and the monitoring and supervision systems of the XWEB series, as well as their control from a PC via ModBus RTU protocol.

➲ For more information, please refer to the wiring diagram of the specific equipment.

5 Anticipated Misuse

Use the unit only within the operating conditions approved by the manufacturer.

The units are designed and tested to use the voltage and frequency indicated by the hardware.

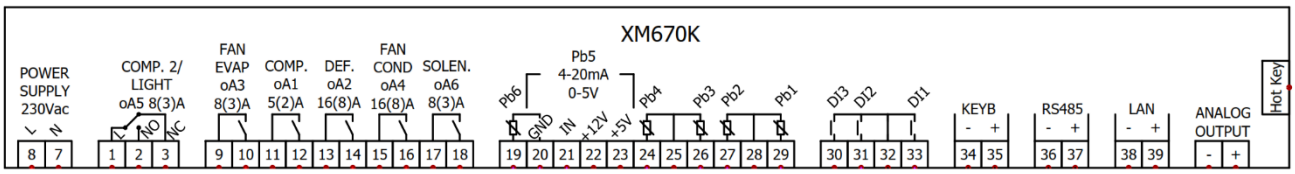
6 Product Designation

The control unit is called XM670K and the power supply voltage is 230 V alternating current.

7 Composition

- Container: 8 DIN.
- Connections: screw connectors ≤ 2.5 mm2 and disconnectable connectors.
- Power supply: 230 V AC.
- Absorption: 9 VA max.
- Probe inputs: 5 configurable probes for NTC/PTC/Pt1000 types.
- Probe input type 4 ÷ 20 mA or 0 ÷ 5 V.
- Digital inputs: 3 voltage-free contact inputs.
- Relay outputs: total admissible current MAX. 16 A.
    - Solenoid valve / alarm: SPDT relay 8(3) A, 250 Vac.
    - Condenser fans : SPST relay 16(8) A, 250 Vac.
    - Defrost / frost protection: SPST relay 16(8) A, 250 Vac.
    - Compressor: SPST relay 5(2) A, 250 Vac.
    - Evaporator fans: SPST relay 8(3) A, 250 Vac.
    - Room light / compressor 2: SPS relay 8(3) A, 250 Vac.
- Analogue output:
    - Output An OUT: 0 ÷ 10 V.
- RS485 connection (for ModBUS RTU connection).
- LAN connection.
- Connection for display.
- Data storage in non-volatile memory (EEPROM).
- Working temperature: 0 ÷ 60 °C.
- Storage temperature: -25 ÷ 60 °C.
- Relative humidity: 20 ÷ 85% (non-condensing).
- Measuring and adjustment range: PTC sensor: -50 ÷ 150 °C;
- NTC probe: -40 ÷ 110 °C.
- Resolution: 0.1 °C:-19.9 ÷ 99.9 or 1 °F.
- Accuracy at 25 °C: ±0,1 °C ±1 digit.

Waterloop (DM-xD) equipment in electronic control versions and CV/CR-NPD



8 Trials and Tests

All INTARCON units have been previously tried and tested in the factory with regard to the electronic control:

- Functional test
- Checking of safety devices; verifying their proper installation, compliance with regulations, and operation of the safety line.

9 Security Devices

INTARCON units incorporate the following security measures:

- Protection circuit breakers.
- General earth connection of the control panel.
- Voltage control (optional)
- Voltage and phase failure monitoring (optional)

10 Emergency System

The electronic regulation of the units incorporates emergency control and alarm systems for the following reasons:

- Failure of temperature probes.
- High and low condenser pressure.
- Local LAN connection failure
- Electronic board failure.

ⓘ *See section "24 Alarm messages" for all possible causes of failure.*

11 Transport

11.1 Contents of the delivery

Delivery includes (as spare part):

- Electronic regulation.
- Documentation.

11.2 Transport conditions

➲ Observe the symbols on the packaging.

11.3 Inspection of goods

➲ Check the unit for transport damage by visual inspection. In the event of damage, record the transport incident at the following web address: https://www.intarcon.com/incidencias-de-transporte/

➲ Document defects (e.g. with photos) and report them to the manufacturer, specifying manufacturing information and model designation. Pay attention to loose parts, dents and scratches.

11.4 Unpacking

Before and during unpacking:

➲ Comply with safety and environmental regulations at the installation site.

➲ Dispose of packaging material in an environmentally friendly manner in accordance with local regulations.

11.5 Unit storage

NOTE	Store the unit in a dry place protected from the outside.

12 Prior to Installation

12.1 Preliminary considerations

➲ Check the quality of the power supply before switching on and commissioning the control unit

12.2 Installation conditions

Installation requirements

➲ Maintain a distance of 1500 mm from the control panel side to ensure adequate access.

➲ Avoid direct heat radiation.

➲ Avoid installation in areas with magnetic interference pulses that have an impact on the operation of the unit.

➲ Avoid installation in an explosive environment.

➲ Avoid installation in commercial premises subject to potential fire hazards (consult applicable national standards and local regulations).

➲ Comply with local regulations for installation, operation, maintenance and removal of the unit.

13 Assembly

⚠ BEWARE!	**Risk of injury due to lack of protective equipment!** ▶ Use personal protective equipment. ▶ Ensure that personal protective equipment is properly worn and that tools are used correctly.

13.1 Power supply

⚠ DANGER!	**Risk of electric shock!** ▶ Any work on the electrical circuit must be carried out by qualified personnel. ▶ Before carrying out any work on the unit, ensure that it is de-energised.

Before making the electrical connection, check the state of the control panel and follow the recommendations below:

➲ Refer to the wiring diagram supplied by the manufacturer.

➲ Use electrical cables with the appropriate characteristics according to the consumption of the unit.

➲ Install the appropriate protection device, circuit breaker and differential, in the electrical supply line. When more than one equipment is installed, each line must be provided with its own protection system.

➲ The sizing of the cables is the responsibility of the installation company. To calculate the cross-section of the electrical supply wires, consider the electrical data on the nameplate, the length of the supply, type

of wiring, etc.; comply with the regulations for electrical installations.

13.1.1 Basic electrical checks

➲ Check that the power supply complies with the specifications on the nameplate of the unit.

➲ Check that the power supply voltage is within the range specified in the electrical data table.

NOTE	**Incorrect power supply voltage**
	Operating the unit with an incorrect power supply voltage is considered misuse and will invalidate the manufacturer's warranty. The voltage value between phases (for three-phase equipment) must be equal to that indicated on the nameplate of the unit, with an admissible tolerance of 5 %, otherwise contact the electricity company and do not start up the unit until the appropriate corrective measures have been applied.

➲ Check that there is no excessive unbalance between phases (in three-phase equipment).

➲ Check the power supply on the electronics board. The measurement can be performed with a multimeter that complies with the standards according to IEC 61010-1:2011.

13.1.2 Electrical connection

Before making the electrical connection, check the state of the control panel and follow the recommendations below:

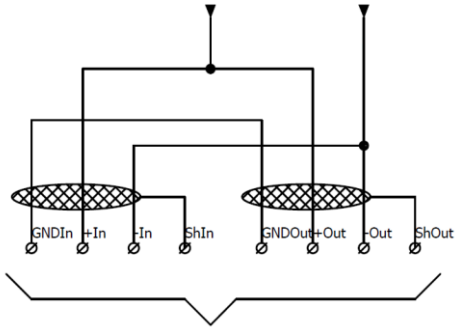
➲ Refer to the wiring diagram supplied by the manufacturer.

➲ The XM670K control unit is supplied with an input voltage of 230V alternating current.

➲ Units with a three-phase power supply have a 5-wire electrical supply, with the green-yellow wire always being the earth connection.

13.1.3 Modbus RTU communication

ⓘ *The unit has two terminals + and - for connection to an RS-485 network for communication via Modbus RTU protocol.*



➲ Each unit has 4 input terminals (In) + 4 output terminals to another unit (Out) designed for connection via a 3-wire RS-485 network plus shield (GND, +, -, Sh) for communication using Modbus RTU protocol.

➲ Refer to the electrical diagram supplied.

➲ Check the wiring and continuity of the RS485 communication network if using a monitoring system (optional).

14 Commissioning of the Unit

⚠ DANGER!	**Risk of electric shock!**
	▶ Ensure that commissioning is carried out by qualified personnel only. ▶ Before power supplying the unit, make sure that nobody is working on the unit.

14.1 Pre-commissioning actions

Before starting up the system, the complete installation must be checked. This requires the following checks to be carried out:

➲ Check that the unit has not been damaged in transit or storage.

➲ Check that all components correspond to the specifications.

➲ Check that all safety devices, documentation and equipment required by the applicable standard are present.

14.2 Commissioning

Team

➲ Check the location and recommended distances of the unit and control panels in accordance with the manufacturer's instructions.

➲ Check the direction of rotation of compressors and condenser fans.

➲ Check that there are no extraneous noises or vibrations.

Electrical installation

➲ Connect the unit to a suitable earthed socket outlet protected by a personal protective device (residual current circuit breaker) in accordance with the specifications on the rating plate.

➲ The power supply voltage at the individual control units and switchgear shall correspond to the nominal operating voltage of that unit or switchgear (see nameplate of the unit), with a tolerance of ± 5 %.

The device starts up after a delay time.

15 Operation

15.1 VX-760 control unit

It consists of a 3-digit digital sight glass, a 7-button keypad and LEDs indicating operating modes, faults and alarms.

Control buttons

KEY	STATUS
	Switches the equipment on or off.
	Turns the room light on or off.
	A short press enters the quick access menu. In programming mode it allows you to increment the displayed value or browse the parameter list. Press and hold for 5 seconds to access the SECTION menu.
	In programming mode it is possible to browse the list of parameters or to decrease the displayed value.
SET	To display and modify the setpoint temperature.
	Press and hold for 3 seconds to manually start a defrost cycle.
	If pressed, the energy saving mode is activated, increasing the value defined in the HES parameter above the setpoint.

Key combination

KEY	STATUS
SET +	Enter programming mode. Hold down both keys for 3 seconds.
+	Exit programming mode. Press and hold for 3 seconds to activate the rapid cooling cycle.
+	Lock and unlock the keyboard.

15.2 LM-660 (XL) Control unit

Control buttons

KEY	STATUS
SET	To display and modify the setpoint temperature.
	In programming mode, it allows a parameter to be selected and its value to be confirmed.
	By pressing and holding for 3 seconds when the max. and min. temperatures are displayed, the record is deleted.
	If the key is pressed briefly, the quick access menu is entered.
	Pressing the key for more than 5 seconds activates access to the SECTION menu.
	In the list of parameters, it allows you to move through the parameters and increase their value.
AUX	In the list of parameters, it allows you to move through the parameters and decrease their value.
	By holding down for 3 seconds, the defrost cycle is started.

Key combination

KEY	STATUS
+	Locks and unlocks the keyboard. With the keyboard locked, only the key can be used.
SET +	Enter key can be used to enter programming mode.
SET +	Hold down both keys for 3 seconds.

Illuminated lights

The function of each icon and LED is described in the following table:

LED	STATUS	MEANING
	ON	Active compressor.
	INTERMITTENT	Compressor anti-short-cycle. Open safety chain (pressure switches, klixon fans, compressor thermal relays,...).
	ON	The equipment is currently defrosting.
	INTERMITTENT	Dripping time after defrosting.
	ON	Active alarm.
	ON	Active Energy Saving (Energy Saving).
	ON	Active fans.
	INTERMITTENT	Drip time. Fan start-up delay after defrost.
AUX	ON	LED unavailable.
°C/ºF/Bar/PSI	ON	Units of measurement.
°C/ºF/Bar/PSI	INTERMITTENT	Active parameter list.
	ON	The controller is working in global "ALL" mode.
	INTERMITTENT	Access to remote device connected to the LAN.

Control functions

To switch the equipment on or off

- Switch on the equipment. Press the key , the controller will switch on showing the room temperature on the display.
- Switch off the equipment. Press the key and "OFF" will be displayed. In this situation all relays will be deactivated as well as the regulation; if a monitoring system is connected, it will not register any valid data and no alarm situation.

NOTE	When the equipment is switched off, the room light can be switched on and off by pressing the button on the remote control.

To enter the quick access menu.

- Press the key .
- The first label "An" appears. By pressing the keys or you can navigate within the menu.

To display and modify the setpoint temperature.

- Press the key and the setpoint will be displayed.
- The unit of measurement tell-tale shall start flashing.
- Press the keys or to modify the value.
- Press the key to save the setpoint temperature.

To start a manual defrost - To start a manual defrost - To start a manual defrost - To start a manual defrost

- Press the key for 3 seconds.

To access the **Pr1** list of user parameters.

- Press the keys and for a few seconds (the unit of measurement lamp will start flashing),
- The display will show the first parameter in the list.

To access the **Pr2** list of protected parameters.

- Access the list of user parameters,
- Select the "Pr2" parameter and press ,
- The message "PAS" followed by "0 - -" shall be displayed.
- Press the keys or to change the flashing digit and confirm the value by pressing , until the access code is entered.

ⓘ *Each parameter of Pr2 can be moved to Pr1 or vice versa by simultaneously pressing the keys and . When a parameter is in Pr1 the temperature decimal point will be on.*

To modify a parameter

- Enter the list of parameters.
- Select the desired parameter with the keys or and press to display its value.
- Press the keys or to change the value.
- Press to save the new value and move on to the next parameter.
- To exit parameters press and or wait 15 seconds.

To lock the keyboard.

- Press the keys and for 3 seconds.
- The message "PoF" will be displayed and only the setpoint and the max. and min. temperature records can be viewed and the room light can be switched on or off.
- To unlock the keypad, press the keys and for 3 seconds, "Pon" will appear on the display for a few moments.

15.3 Quick access menu

Press the key to enter the quick access menu. Use the keys or to scroll through the menu.

In this menu you can view the instantaneous reading of the different temperature probes, view the status of the digital inputs and relay outputs and consult the number of devices connected in LAN (if any), as well as the Adr address of the device itself.

To display the status of the digital inputs or relay outputs, simply navigate through the menu to the desired value and press the key SET , then press and hold down the key to display the configured value.

For example, if the compressor is running, the value associated relay output 1 (**oU1**) will appear **ON**, if we leave the key pressed it will show the value **CPr** (compressor).

Below is an overview of the parameters that appear in this quick access menu and their meaning.

QUICK ACCESS MENU				
CODE	DESCRIPTION	CONFIGURATION		
		SIGILUS, INTARSPLIT, INTARBOX WATERLOOP (MDM/BDM-S)	CV/CR-NPD	WATERLOOP (MCC/BCC)
An	Instantaneous value of the analogue output.			
dP1	Display of the instantaneous value of the probe 1.*.	Room temperature probe		
dP2	Display of the instantaneous value of the probe 2.*.	Defrost temperature probe		
dP3	Display of the instantaneous value of the probe 3.*.	Suction temperature sensor		Condensation temperature probe
dP4	Display of the instantaneous value of the probe 4.*.	Liquid temperature probe		Anti-freeze resistance temperature probe
LSn	Display of the number of devices connected in LAN.			
LAn	Identifies the serial address of the equipment on the local LAN.			
in1	Digital input status display 1.	High-pressure switch		
in2	Digital input status display 2.	Low-pressure switch		N/A
in3	Digital input status display 3.	Micro door switch		
ou1	Display of the status of relay 1 output.	Compressor relay output (CPr)		
ou2	Display of the status of relay output 2.	Defrost relay output (dEF)		Frost protection relay output (AUS)
ou3	Display of the status of relay output 3.	Evaporator fan relay output (FAn)		
ou4	Display of relay output status 4.	Condensing circuit pump relay output (Cnd)		Aero-cooler fan relay output (Cnd)
ou5	Display of relay output status 5.	Room light relay output (LiG)		De-escalation relay output (dEF)
ou6	Display of relay output status 6.	Liquid solenoid relay output (SOL)		Alarm relay output (ALr)

* If *Err* appears on the display when a probe value is displayed, the probe is out of range or not connected.

Note: If a probe is disabled, its code will not appear in the menu.

ⓘ *Refer to the electrical diagram supplied with the unit for the exact configuration.*

15.4 Time planning / Energy saving cycle configuration

NOTE	Before commissioning the equipment, it is recommended to configure the parameters in this section.

The configuration of the energy saving cycle allows you to set a higher set point temperature than usual in order to reduce the energy consumption of the equipment in specific periods of time (weekends/nights when there is no product rotation, few room openings, etc.). During the energy saving cycle, the set point is increased by the value contained in "**HES**" so that the operating set point is SET+HES. Naturally, the operating set point must comply with the rules governing product preservation.

Before setting the time schedule, it shall be necessary to activate the internal clock by changing the parameter "**CbP**" to **Y**.

➲ To access the RTC time planning menu, press the keys SET and for 3 seconds (the unit of measurement indicator will start flashing) and RTC will appear. If it does not appear, use the keys or until the RTC parameter is found and press the key SET

➲ Description of the parameters of the RTC submenu.

	PARAMETER	RANGE	DESCRIPTION
Internal clock	CbP	n - Y	Enable internal clock.
	Hur	0 ÷ 23h	Current time for the internal clock.
	Min	0 ÷ 59min	Current minutes for the internal clock.
	dAY	SUn - Mon - tUE - tEU - UEd - tHU - Fri - SAT	Current day of the week for the internal clock: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, respectively.
Internal calendar	Hd1	SUn - Mon - tUE -UEd - tHU -Fri - SAT - nu	First public holiday of the week. nu: do not assign any day.
	Hd2	SUn - Mon - tUE -UEd - tHU -Fri - SAT - nu	Second public holiday of the week. nu: do not assign any day.
	Hd3	SUn - Mon - tUE -UEd - tHU -Fri - SAT - nu	Third public holiday of the week. nu: do not assign any day.
Energy saving cycle (Energy Saving)	ILE	0.0 ÷ 23.5 (resolution 30min)	Start time of the energy saving cycle in the weekday period.
	dLE	0.0 ÷ 24.0 (resolution 30 min)	Duration of the energy saving cycle during working days.
	ISE	0.0 ÷ 23.5 (resolution 30min)	Start time of the energy saving cycle for public holidays.
	dSE	0.0 ÷ 24.0 (resolution 30min)	Duration of the energy saving cycle during public holidays.
	_HES	[-30.0 ÷ 30.0] °C	Temperature set point increase during the energy saving cycle.

If no energy saving cycle is to be configured, the parameters must have the following settings:

Hd1=nu; **Hd2=nu**; **Hd3=nu**; **iLE=**0.0; **dLE=**0.0; **iSE=**0.0; **dSE=**0.0; **HES=**0.0

Example of time scheduling with energy saving cycle (Energy Saving).

It is assumed that the following hourly planning is to be carried out, during which the setpoint is increased by 4°C.

HES= 4°C

Saturdays and Sundays are considered public holidays.

Hd1= SAT

Hd2= SUN

Hd3= nu

The energy saving cycle on weekdays starts at 11:00 a.m. and ends at 17:00 p.m. (6 hours).

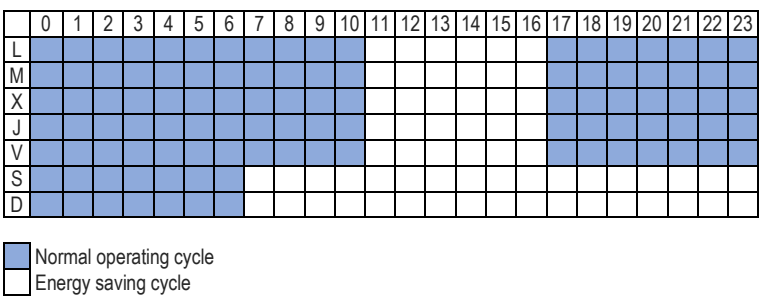
iLE=11.0

dLE=6.0

During the weekend (public holidays) the energy saving cycle starts at 7:00 a.m. and ends at 00:00 p.m. (17 hours). Therefore:

iSE=7.0

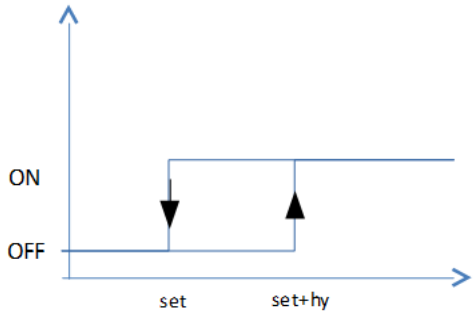
dSE=17.0



15.5 Operating logic

Equipment with a compressor

A setpoint temperature is set for the room. When the temperature in the room is higher than the **SET** setpoint plus a "**Hy**" differential, the refrigeration cycle starts and stops when the temperature in the room is equal to the setpoint.



In this operating mode, the digital display of the control unit shows the room temperature. The setpoint temperature can be displayed by pressing the key SET and its value can be changed using the keys and .

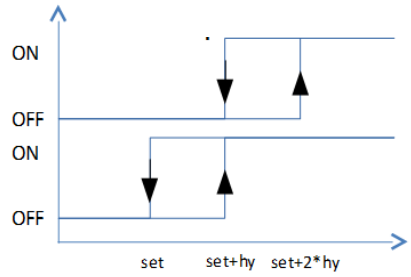
To protect the compressor against successive starts and stops, the regulation incorporates an anti-short-cycle timer.

During the cooling cycle, the solenoid valve is activated whenever the compressor is activated. If the low pressure switch opens (pressure outside the design operating limits of the equipment), the solenoid valve is activated to increase the compressor suction pressure in an attempt to reset the low pressure switch in order to continue cooling production.

Units with two compressors

The operating logic in units with a second compressor is as follows. When the temperature in the room is higher than the SET point plus a differential 'Hy', the first compressor starts up. If the room temperature is higher than the SET point + 'Hy' + 'Hy', the second compressor starts up. The first compressor stops when the room

temperature is SET + ‘Hy’ and the second compressor stops when the room temperature is at set point.



The electronic control alternately rotates the operation of the compressors to distribute the working time.

If the high condensing temperature alarm ‘CSd’ is generated, the electronic control stops the second compressor to try to reduce the head pressure.

When the electronic control governs a second compressor, the room light output is not available.

Stop by opening of digital input 1 (High pressure switch)

If an opening number of the digital input equal to the parameter "**nPS**" is reached within a time interval "**d1d**", the alarm buzzer is triggered, the message "**HP**" is displayed, the compressor is switched off and the regulation is blocked. The unit does not try to start again. The electronic regulation must be switched off and on again to reset this alarm.

Stop by opening of digital input 2 (Low pressure switch)

On activation of the low pressure switch, the compressor is automatically switched off and the short-circuit protection timer is activated (parameter "**AC**"), after the time interval "**AC**" has elapsed, the pressure switch is reset by opening the solenoid valve. If an opening number of the digital input equal to the parameter "**nPS**" is reached within a time interval "**d2d**", the alarm buzzer is triggered, "**LP**" is displayed, the compressor is switched off and the regulation is blocked. This alarm "**LP**" is also generated by a pressure switch opening (without reset) during a time interval "**d2d**". The unit does not try to start again. The electronic regulation must be switched off and on again to reset this alarm.

Security elements:

The control allows an additional digital input to be enabled. The common digital input is used as an additional digital input. The security line is associated with this additional digital input. When activated, the alarm "**PCo**" is displayed on the screen and blocks all outputs, then automatically resets with a maximum number of retries "**nPS**". If you open the security line "**nPS**" times the alarm "**PCb**" is displayed and the device is blocked.

Two-compressor systems

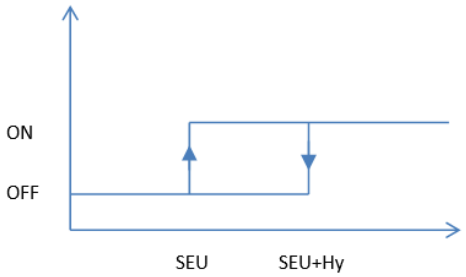
The operating logic for units with a second compressor is as follows. We control electrically as if it were a single circuit to which we include a timer that will switch the second compressor after 10 seconds. The two compressors are governed by a single compressor output **ou1**.

15.6 Rapid cooling

To activate the continuous fast cooling mode, it will be necessary to press the keys SET + for 3 seconds. In this way the unit will temporarily change the set point of the unit, the unit will start and stop when the new set point assigned in the "**CCS**" parameter is reached. When this mode is activated, the icon will flash slowly. During this process it is not possible to activate defrost either by time or manually.

15.7 Modo EVI (Inyección de vapor)

When using a compressor with EVI (vapour injection) for low temperatures, the activation of this injection can be controlled by the ‘**SEU’** parameter. If the room temperature is lower than the value indicated in ‘**SEU’** and the compressor is on, the relay will be active. If the temperature is higher than ‘**SEU’** plus the differential ‘**Hy’**, the relay will be inactive. One of the relay outputs must be configured as **UAP** (uninterruptible power supply). If there are two compressors, the EVI mode relay output only acts when the first compressor is running. Even if the compressors rotate, only the EVI will act with the first compressor.



15.8 Pump-down

With this function, the control incorporates a delay in compressor shutdown when the liquid solenoid valve closes, so that the refrigerant stored in the discharge is collected in the suction line of the compressor. When one of the compressors starts to run again, the solenoid valve is opened beforehand to break the vacuum created in the suction line.

To set the pump-down mode, it is necessary to set the parameter "**PdC**" to **tiM**, pump-down active by time. If the parameter is set to **nu** it will be deactivated. The parameters "**MPt**" (maximum time the compressor remains active after the solenoid valve closes) and "**LPr**" (maximum time the solenoid valve remains open before the compressor starts) will be used to manage the compressor off-delay and start-up delay (once the solenoid valve opens) respectively during pump-down mode.

15.9 Defrosting

The defrost can be started by manual activation (by pressing the key  for 3 seconds), automatic defrost (when the interval set in parameter "**idF**" expires), smart defrost (the expiry time only counts if the evaporating temperature is lower than indicated in parameter "**SdF**"), or by the defrost start command from the local LAN

ⓘ *Synchronised defrost, for this case "15.11. Communication via local LAN".*

The unit is factory set to evaporator temperature controlled defrost mode. In this mode, defrosting ends when the evaporator temperature reaches a value determined by the "**dtE**" parameter, or after the time set by the "**MdF**" parameter has elapsed. After defrosting, the unit remains stopped for the drip-off time (determined by the "**Fdt**" parameter) to allow the evaporator coil to drain.

The unit has been configured in the factory so that the fans remain stopped during defrost (except for units with air defrost) (configurable with parameter "**FnC**").

After defrost and during the commissioning of the refrigerant cycle, the internal fan remains stopped for the time set by the "**Fnd**" parameter.

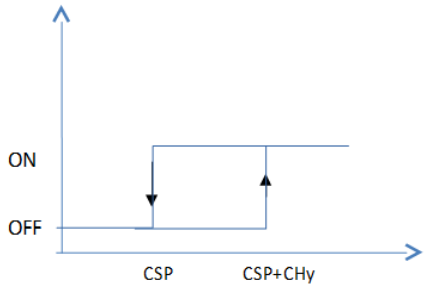
In order to adapt the defrost cycle to the needs of the installation, it is possible to configure a calendar and defrost start times of up to 6 cycles per day, making it possible to differentiate between working days and holidays.

	PARAMETER	RANGE	DESCRIPTION
	CbP	n - Y	Enable internal clock.
Internal clock	**Hur**	0 ÷ 23h	Current time for the internal clock.
	Min	0 ÷ 59min	Current minutes for the internal clock.
	dAY	SUn - Mon - tUE - tEU - UEd - tHU - Fri - SAT	Current day of the week for the internal clock: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, respectively.
Internal calendar	**Hd1**	SUn - Mon - tUE -UEd - tHU -Fri - SAT - nu	First public holiday of the week. nu: do not assign any day.
	Hd2	SUn - Mon - tUE -UEd - tHU -Fri - SAT - nu	Second public holiday of the week. nu: do not assign any day.
	Hd3	SUn - Mon - tUE -UEd - tHU -Fri - SAT - nu	Third public holiday of the week. nu: do not assign any day.
Defrost cycle	**Ld1**	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of first defrost on working day.
	Ld2	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of second defrost on working day (minimum Ld1).
	Ld3	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of third defrost on working day (minimum Ld2).
	Ld4	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of fourth defrost on working day (minimum Ld3).
	Ld5	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of fifth defrost on working day (minimum Ld4).
	Ld6	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time sixth defrost on working day (minimum Ld5).
	Sd1	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of first defrost on public holidays.
	Sd2	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of second defrost on public holiday (minimum Sd1).
	Sd3	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of third defrost on public holiday (minimum Sd2).
	Sd4	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of fourth defrost on public holidays (minimum Sd3).
	Sd5	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time of fifth defrost on public holiday (minimum Sd4).
	Sd6	nu - 0.0 ÷ 23.5 (resolution 30min)	Start time sixth defrost on public holiday (minimum Sd5).

15.10 Condenser control

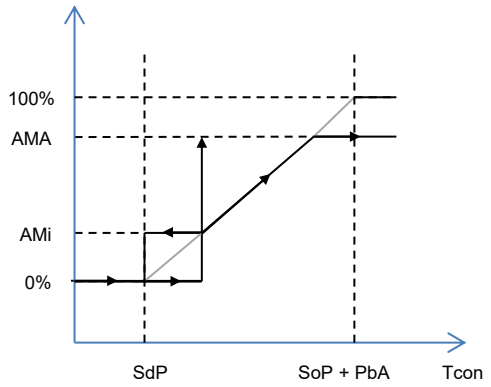
The XM670K electronic controller incorporates a digital condensing temperature control. The condenser control can be of various types (depending on equipment):

➲ All/nothing condenser control (DM-xD). The control acts on the stop/start of the condenser pump depending on the reference probe for condensing control defined in parameter "**CnP**". A condenser set point parameter "**CSP**" and a condenser differential are defined in parameter "**CHy**". The pump will be activated when the value defined in parameter "**CSP**" + "**CHy**" is reached. When the condensing value reaches the value set in "**CSP**" the pump will be deactivated.



➲ Proportional condenser control by voltage variation of the fans (CV/CR-NPD). This speed control is performed via the analogue output (An Out). The control modulates the condenser fan speed according to the condenser sensor reading defined in the "**CdP**" parameter. For condenser regulation, it is necessary to select the **Cnd** value in the "**trA**" parameter. The condenser set point is defined by the value of the "**SdP**" parameter, and the fan proportional band parameter "**PbA**" sets the temperature band in which the fan varies its speed from 0% (temperature equal to "**SdP**") and 100% (temperature equal to "**SdP**" + "**PbA**").

If a time lag for the start of the proportional ramp is required, this can be defined in the "**ASr**" parameter. The "**AMi**" parameter defines the minimum value (%) at which the fans are to be activated; similarly, the "**AMA**" parameter defines the maximum value (%) at which the fans are to operate.



15.11 Communication via LAN local network

The communication between devices via LAN (Local Area Network) allows several devices to be operated with a single control display, as well as the synchronisation of various functions.

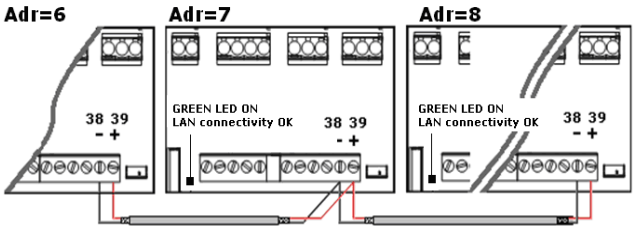
To connect the equipment to the LAN network, use shielded cable to connect negatives to negatives (terminals 38 on the XM670K board) and positives to positives (terminals 39 on the XM670K board) as shown in the following image:

If the LAN is properly connected, the LED next to the Hot Key port on the XM670K board will light green. This LED flashes if the LAN connection is misconfigured.

NOTE	Each XM670K electronic controller must have a different address number ("**Adr**" parameter). If a ModBus connection exists at the same time as the LAN, the "**Adr**" is also the ModBus address.

The maximum interconnection distance between equipment is 30 metres.

LAN network supports a maximum of 8 connected devices



Section menu (Equipment connected via LAN)

This menu allows the user to access the functions for LAN management.

It is possible to control both the local equipment and other remote equipment connected to the LAN with a single control unit. The possibilities are:

- **LOC:** The keyboard acts only on the equipment to which it is physically connected.
- **ALL:** Commands given via the keypad are sent to all equipment present on the LAN.
- **SE+Device No.:** Displays the device number of the LAN network (**Adr**).

NOTE	When the "**ALL**" mode is selected, the "defrost start" and "power save" signals of the local equipment will be executed on all equipment in the LAN.

To change these functions, follow the instructions below:

➲ Press the key for more than 6 seconds, and the label "SEC" will appear.

➲ Press SET , and with the arrows or select the section to be controlled, which can be LOC (local), ALL (all), or SE+No. device (remote device). If ALL is

selected, the symbol will light up, and if a remote device is selected, the symbol will flash.

➲ Press SET to confirm and exit.

NOTE	To define the LAN address of each device (they must be different), this must be done by changing the value of the "**Adr**" parameter and always working in local mode.

NOTE	LAN administration, probe configuration, service and other parameters cannot be modified in **ALL** mode.

NOTE	If any of the equipment connected to the LAN is switched off or if the polarity of the network is not respected, a "**nod**" alarm will be displayed.

NOTE	If any of the units connected to the LAN network has an active alarm, the control unit will display the message **AS1**, **AS2**, **AS3**, **AS4**, **AS5**, **AS6**, **AS7** or **AS8**; always referring **AS1** to the local device. For this reason it is advisable to assign the value **Adr=1** to the equipment where the control unit will be physically connected.

NOTE	To display the alarm message of the equipment, go to the section menu and select **SE+Device number**, in this way the keypad acts on the selected equipment and displays the active alarm of the device. For example, if an alarm is active in device number 2 (**Adr=2**) of the LAN network, the keypad will display the **AS2** alarm and it will be necessary to go to the section menu and select **SE2** for the keypad to act on that device and display the alarm code (PA, HA, ...).

Synchronisation between devices connected via LAN local area network

When connecting several units via LAN, the XM670K controller offers different synchronisation possibilities between them, especially when the units are installed in the same refrigeration room. These synchronisation options are as follows:

SYNCHRONISATION OF LAN NETWORK EQUIPMENT	
LMd	Defrost start synchronisation • **LMd=y**→ When one of the devices starts defrost, the defrost start command will automatically be sent to all devices connected to the LAN. • **LMd=n**→ The unit does not send the defrost command to the other units.
dEM	End of defrost synchronisation • **dEM=y**→ The end of defrost is synchronised. All units wait for the rest of the units to finish defrosting before starting refrigeration again. Once the last evaporator reaches the end of defrost temperature "**dTe**" or its maximum defrost time "**MdF**" has expired, the drip-off time "**Fdt**" is counted and once this time has elapsed, refrigeration starts again. • **dEM=n**→ The end of defrost is independent.
LSP	Set point temperature synchronisation • **LPS=y**→ Changing the set point on the local unit will also update it on the other units connected to the LAN. • **LPS=n**→ The set point is only modified in the local equipment.
LdS	Display synchronisation • **LdS=y**→ The value shown on the display of the local device is also sent to the other devices connected to the LAN. • **LdS=n**→ The value shown on the display of the local unit was not sent to the other units in the LAN.
LOF	Stop/Start Synchronization • **Lof=y**→ The Stop/Start command given by the local equipment acts on the other equipment connected to the LAN. • **Lof=n**→ The Stop/Start command given by the home team acts only on the home team.
LLi	Synchronisation of room light switch-on (only units with a single compressor). • **LLi=y**→ The room light ON command given by the local unit also acts on the other units connected to the LAN. • **LLi=n**→ The room light ON command only acts on the local device.
LES	Energy Saving Synchronisation (Energy Saving) • **LES=y**→ The energy saving command given by the local device also acts on the other devices connected to the LAN. • **LES=n**→ The energy saving command given by the local device does not act on the other devices connected to the LAN.
LAU	Auxiliary relay synchronisation. • **LAU=y**→ The auxiliary relay command given by the local unit also acts on the other units connected to the LAN. • **LAU=n**→ The auxiliary relay command only acts on local equipment.
LSd	Remote probe display • **LSd=y**→ The value measured by a remote probe (sent from a section with parameter LdS = 1) will be displayed on the local control. • **LSd=n**→ The value measured by the remote sensor is not displayed on the local control.
StM	LAN cold synchronisation • **StM=y**→ The cooling command given on the local unit also acts on the other units connected to the LAN. • **StM=n**→ The cold command only acts on local equipment.

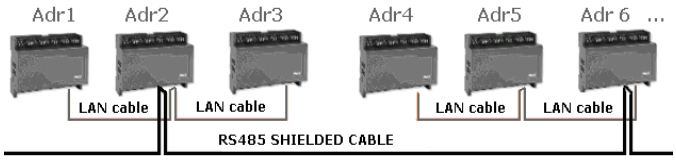
15.12 External communication

It is possible to connect the unit to an RS485 network via ModBUS-RTU protocol compatible with the XWEB monitoring system.

For ModBus connection of the devices, connect negatives to negatives (RS485 - terminal) and positives to positives (RS485 + terminal).

NOTE	Each XM670K electronic controller must have a different address number ("**Adr**" parameter). If a ModBus connection exists at the same time as the LAN, the **Adr** is also the ModBus address.

If several devices are connected in a LAN network, connect the RS485 connection to only one of them as shown in the following picture:



There is also a TTL input that can be used to download data from a hot key.

15.13 Digital inputs

The XM670K controller supports up to 3 voltage-free digital contact inputs.

NOTE	Opening one of the digital inputs will cause the indicator to flash.

High pressure switch and safety elements (i1F=PAL). Digital input 1

Shutdown by opening of digital input 1: If an opening number of the digital input equal to the parameter "**nPS**" is reached within a time interval "**d1d**", the alarm buzzer is triggered, the message "**HP**" is displayed, the compressor is switched off and the regulation is blocked. The unit does not try to start again. The electronic regulation must be switched off and on again to reset this alarm.

Low pressure switch (i2F=PBL). Digital input 2

Only the low pressure switch is connected to this digital input.

Shutdown by opening digital input 2 (low pressure): Upon activation of the low pressure switch, the compressor is automatically switched off and the solenoid valve is opened. If a digital input opening number equal to the parameter **"nPS"** is reached within a time interval **"d2d"**, the alarm buzzer is triggered, **"LP"** is displayed, the compressor is switched off and the regulation is blocked. This alarm "**LP**" is also generated by a pressure switch opening (without reset) during a time interval "**d2d**". The unit does not try to start again. The electronic regulation must be switched off and on again to reset this alarm.

Digital input 3

This digital input can have one of the following configurations (parameter "**i3F**").

➲ **Door open (dor):** Indicates to the device that the door of the room is open. When the door is opened, the compressor and fans regulate based on the value of the "**OdC**" parameter:

PARAMETER	VALUE	ACTION
OdC	no	Fans and compressor do not interrupt their operation.
	FAn	Fans off
	CPr	Compressor off
	F_C	Compressor and fans off

After the time defined in parameter "**d3d**", the open door alarm is activated and the message "**dA**" is displayed. The alarm is automatically reset as soon as the digital input is deactivated.

If the door is not closed after a time defined in the "**rrd**" parameter, the electronic control continues the cooling cycle.

In the open door situation, the high and low room temperature alarms are disabled.

- **Defrost activation (DEF): Starts** a defrost cycle if conditions are met.
- **Auxiliary activation (AUS):** When the digital input is activated, the auxiliary relay is also activated. When the digital input is deactivated, the auxiliary relay is also deactivated.
- **Light activation (LIG):** Allows to activate or deactivate the room light output with the activation of the digital input (only allowed in units with a compressor).
- **Remote Stop/Start (ONF):** When the digital input is activated, the equipment is switched off. When the digital input is deactivated, the equipment is switched on.
- **Energy Saving Activation (ES):** Enables/disables the energy saving cycle. The energy saving cycle runs continuously as long as the digital input remains active.
- **Holiday function activation (HDY):** Enables or disables the holiday function.

15.14 Intelligent self-diagnostic functions

The XM670K electronic control includes an intelligent self-diagnostic control that warns the user that an anomaly has occurred or is occurring in the operation of the equipment that could lead to a serious fault. The control unit warns by means of an on-screen code and an audible signal from the control unit. These warnings do not stop the equipment but are important enough to require an installer to supervise its operation to prevent further problems.

Intelligent self-diagnostic warnings:

dFA: Self-diagnosis of defrosting

If after starting a defrost the defrost probe temperature (**Pb2**) does not detect a temperature rise of 5 K (**ddt**) within a time interval of 5 minutes (**ddf**), the message "**dFA**" is generated on the display. This could be a symptom that the defrost heaters are not heating correctly.

dFL: Self-diagnosis of defrosting

If 5 (**AdC**) consecutive defrosts are carried out, completed by time instead of temperature, the message "**dFL**" is generated on the display. This could be a symptom that the evaporator is being blocked with ice. The message disappears when a defrost by temperature is completed.

FnA: Self-diagnosis of evaporator fans

If the temperature of the room probe (**Pb1**) is 15 K (**Ftd**) higher than the temperature of the defrost probe (**Pb2**) for at least 30 min (**FdF**), the message "**FnA**" is generated on the display. This could be a symptom that the evaporator fans are not working properly. The warning disappears when the temperature differential is less than 15 K (**Ftd**).

➲ To override the self-diagnostics the parameters shall have the following settings:

dFA -> ddF=0

dFL -> AdC=0

FnA -> Ftd=0

16 Maintenance

⚠ DANGER!	**Risk of cutting due to sharp ends!**
	► Wear safety gloves when working on the unit.

⚠ DANGER!	**Risk of electric shock!**
	► Any work on the electrical circuit must be carried out by qualified personnel.
	► Before carrying out any work on the unit, ensure that it is de-energised.

➲ During the service life of the system, the inspections and tests provided for in the national regulations must be carried out.

➲ Maintenance, even where no intervention or adjustment of the control is required and no specialised refrigerant engineering knowledge is required, shall be carried out by a suitably competent person, such that:

- accidents to personnel are prevented;
- damage to property is avoided;
- the system components remain in good working order;
- the purpose and availability of the system are maintained;
- energy loss is minimised.

In general, the metal parts of the unit (control, control panel, etc.) must be checked for corrosion. The condition of all electrical connections must also be checked.

16.1 Repair work

The following repair work on the unit must only be carried out by qualified personnel:

- Replacement or modification of electrical elements of the unit.
- Handling of protection elements, control panel, commissioning, stop and emergency switches.

In addition to the recommended maintenance tasks, the unit shall be affected by the applicable regulations in this area.

ⓘ *See "22. Maintenance checklist".*

17 List of parameters

ⓘ *Check parameter lists*

18 Decommissioning

For prolonged downtime of the unit:

➲ Unplug the unit from the mains.

For temporary downtime of the unit:

To carry out the indefinite decommissioning of the unit:

➲ Follow the "Instruction Manual".

19 Waste Management

All materials used for the manufacturing and packaging of the unit are environmentally friendly and/or recyclable.

➲ Dispose of electrical and electronic equipment separately for proper management in accordance with the provisions of Directive 2012/19/EU of the European Parliament.

20 Warranty

Validation of the warranty - The user must fill in the form on the INTARCON website: http://www.intarcon.com/contacto/registro-garantia/ within 20 days from the date of purchase. Failing this, the warranty will be valid from the date of manufacture of the device.

Risk coverage - The manufacturer guarantees the goods supplied against any manufacturing defect or malfunction for 24 months from the date of validation of the warranty or, failing this, from the date of manufacture.

During the warranty period, the manufacturer shall cover at its expense the repair of the product at its premises, the replacement of the product or the supply of spare parts for defective components, whichever is less burdensome and technically feasible; granting a renewed warranty period of 6 months for the repaired or replaced components. The cost and taxes on the refrigerant are expressly excluded from the warranty coverage if the refrigerant has not been supplied by the factory in hermetically sealed equipment.

The warranty does not cover on-site labour for the replacement of the product or spare parts, nor does it cover indirect damage or consequential loss attributable to the malfunction of the product. In particular, the manufacturer shall not be liable for the Fluorinated Gas Tax stipulated in Law 16/2013, emitted into the atmosphere as a result of a leak in refrigeration equipment subject to a leakage and resistance test by the refrigeration installer and to a periodic leakage check in accordance with Regulations 517-2014 on F-gases and Safety for Refrigeration Installations, RD 552/2019.

Execution of the warranty - Before making a warranty claim, the user must ensure that the instructions for use have been followed correctly and that the malfunction is not due to incorrect use of the appliance.

Normally, the dealer or installation company that sold and installed the appliance will deal with warranty claims and provide service under warranty. The user must contact them within a maximum of two months from the appearance of the defect.

Exclusions: Not covered by this warranty:

- Bodily injury or damage to property due to improper or negligent use or lack of diligence on the part of the user to prevent such damage, especially in connection with the preservation of the refrigerated goods.

- Damage caused by faulty installation or causes not attributable to the appliance.

- Consequential damages, to the fullest extent permitted by law, and consequential damages such as loss of production, commercial loss or loss of profit.

- Damage caused by acts of God or force majeure.

Extinction of the warranty: The warranty will be void in the following cases:

- If repairs, modifications or manipulations by unauthorised personnel are observed.

- In the event of intentional damage, malice or bad faith in the incorrect use of the device.

- If the device is found to have been knocked or dropped.

- If the serial number of the unit or the warranty documentation has been altered or made illegible

21 Alarm messages

MESSAGE	CAUSE	TEAM ACTION (status of outputs)	REARME
Pon	Active keyboard.	Outputs unchanged.	
PoF	Keyboard locked. To unlock, press and hold for 3 seconds at the same time. +	Outputs unchanged.	
rst	Alarm reset. Appears when an alarm is active and a key on the keypad is pressed.	Resetting the alarm relay.	
rtc	Internal clock not set. Set the parameters "Hur", "Min" and "dAY" as indicated in section 7.	Outputs unchanged.	
rtf	Faulty internal clock.	Outputs unchanged.	
EE	EEPROM faulty	Exits blocked.	
nod	A device connected to the LAN is disconnected or the polarity of the LAN is not respected.	Outputs unchanged.	
AS1	There is an active alarm on device no. 1 on the LAN.	Depending on the type of active alarm.	
AS2	There is an active alarm on device no. 2 on the LAN.	Depending on the type of active alarm.	
AS3	There is an active alarm on device no. 3 on the LAN.	Depending on the type of active alarm.	
AS4	There is an active alarm on device no. 4 on the LAN.	Depending on the type of active alarm.	
AS5	There is an active alarm on device no. 5 on the LAN.	Depending on the type of active alarm.	
AS6	There is an active alarm on device no. 6 on the LAN.	Depending on the type of active alarm.	
AS7	There is an active alarm on device no. 7 on the LAN.	Depending on the type of active alarm.	
AS8	There is an active alarm on device no. 8 on the LAN.	Depending on the type of active alarm.	
LA2	Low condenser temperature alarm (set in parameter A2L).	If enabled in bLL outputs blocked.	Automatic. When the temperature exceeds A2L+H2L.
HA2	High condenser temperature alarm (set in parameter A2U).	If enabled in CnL and A2C, fans active at 100% and compressors blocked.	Automatic. When the temperature is lower than A2U-H2H.
HP	Number of activations of the high pressure switch exceeded (nPS) in the period (d1d).	Blocked exits	Manual.
LP	Number of activations of the low pressure switch exceeded (nPS) in the period (d2d), or low pressure switch open for a time longer than d2d.	Blocked exits	Manual.
PCo	Open safety line. Virtual digital input (DI common).	Exits blocked.	Automatic.
PCb	Number of activations (nPS) of PCo exceeded.	Exits blocked.	Manual.
LPA	Low pressure switch alarm. Pump-down active. Alarm due to non-activation of the low pressure switch after starting refrigerant after timing LPr time.	Solenoid open and evaporator fan active.	Automatic. When resetting the pressure switch.
AMP	Low pressure switch alarm has not fallen within Mpt time when pressure pump-down is performed (PdC= PrS).		Automatic. When a new demand for cooling occurs
dPA	Alarm due to activation of the low pressure switch during a hot gas defrost.	The compressor stops and the solenoid opens.	Automatic. When resetting the pressure switch.
dA	Door open alarm (if digital input 3 is configured as door switch). VARIOUS USES. DIGITAL INPUT 3.	The compressor and fans resume regulation according to the "rrd" and "odc" parameters.	Automatic.
CPA	The condenser temperature/pressure does not increase Cdt degrees in CdF seconds.	Outputs unchanged.	Automatic. When the compressor stops.
HA	Room high temperature alarm.	Outputs unchanged.	Automatic. When the room temperature is lower than ALU-AHy or lower than Set+ALU-AHy (according to ALC).
LA	Low room temperature alarm.	Outputs unchanged.	Automatic. When the room temperature is higher than ALL+AHy or higher than Set+ALU-AHy (according to ALC).
P1	Probe failure alarm 1	Outputs unchanged	
P2	Probe failure alarm 2	Outputs unchanged	

MESSAGE	CAUSE	TEAM ACTION (status of outputs)	REARME
P3	Probe failure alarm 3	Outputs unchanged	
P4	Probe failure alarm 4	Outputs unchanged	
P5	Probe failure alarm 5	Outputs unchanged	
P6	Probe failure alarm 6	Outputs unchanged	

22 Maintenance checklist

➲ Copy maintenance checklist and fill in during maintenance.

Maintenance checklist

Company:		Telephone number:		Start of work:	Unit model:
Office number:		Size/type of cold room:			
Street:		Original installation (CW):		End of work:	Serial number:
Postcode:		Year of maintenance:			

☐	1	Check control parameters
☐	2	Check the correct functioning of the exhaust fan and/or leak detector, if any.
☐	3	Switch off the unit, unplug it from the mains and remove the registration panels.
☐	4	Check that all electrical connections are securely tightened.
☐	5	Reinstall the housing and reconnect the mains plug.
☐	6	Reboot the system

Date / signature (name of installer)	Date / signature (customer name)

Note: Any soiling caused by maintenance should be cleaned.

INTARCON

Head office and factory

Ctra. A-3132, km 15, Apdo. 410

14900 Lucena (Córdoba), SPAIN

Tlf.: +34 957 50 92 93