HIGH CAPACITY PROPANE FREEZER/ REFRIGERATOR

Equipment Manual

H&K Model Number HCFRC30.01P

This manual is for the exclusive use of
Licensees and employees of
McDonald's Systems Inc.

Manufactured by:

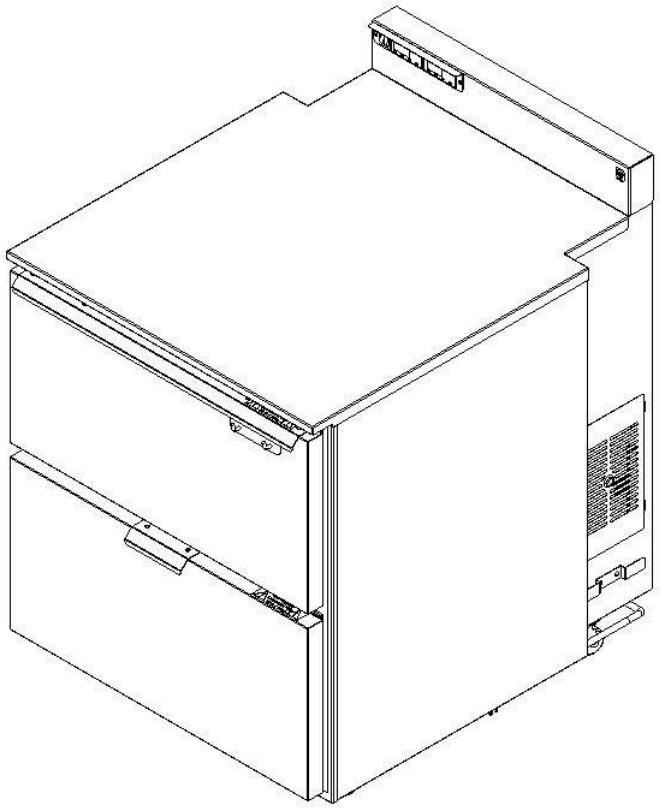
H&K International
2200 Skyline Drive
Mesquite, TX 75149 U.S.A.

Telephone: (214) 818-3500
Fax: (214) 818-3596

Distributed by:

H&K International
2200 Skyline Drive
Mesquite, TX 75149 U.S.A.

Telephone: (214) 818-3500



Revision E, July 2017

Printed in USA

Table of Contents

This unit contains a flammable refrigerant. Exercise caution when installing and servicing this item. See page 3 of this manual detail

Refrigeration Warnings

CAUTION: This unit contains a flammable refrigerant

- Under no circumstances can a mechanical device be used to defrost evaporator.
- Do not puncture refrigeration tubing.
- The unit is to be repaired by only a trained technician with experience with flammable refrigerants.
- Consult this manual before attempting to install or service a product with a flammable refrigerant.
- Unit must be disposed of in accordance with Federal or local regulations.

Warnings

This Installation & Operating Manual contains important instructions and safety information. Read and understand the contents of this manual before attempting to install, operate, or service the unit**.**

- Disconnect all power sources before attempting any service work.
- A licensed technician should do all servicing and repairs.
- Use of abrasive pads to clean the unit will result in scratching and spoiling the finish of the unit.
- Do not leave the door open for extended period of time.

Introduction

The High Capacity Propane Freezer/Refrigerator Combo is designed to hold the temperature of products between 33°F to 40°F (1°C to 4.4°C) for Refrigerator and 0°F to -10°F (-18°C to -23°C) for Freezer, during normal and peak sales periods. This new innovative modular design can be fitted with Drawers or Doors and allows easy access to refrigerator mechanical for serves**.**

Power Requirements

All electrically operated appliances must be electrically grounded in accordance with local codes, or in the absence of local codes, with National Electric Code, ANSI/NFPA No. 70-1990.

Power supply: 120V/60hz/1ph
Current = 10.2 Amps
Maximum Fuse/Circuit Breaker = 20A

Installation instructions

Inspection

Upon receipt, examine the equipment carefully for any damage. If damage has occurred, notify the freight carrier and H&K immediately.

Uncrate the Unit

This unit will arrive crated in a skid-mounted carton.

CAUTION! The shipping container may have staples, nails, banding under tension and possible wood splinters, which can cause injuries. Wear gloves and eye protection to reduce the risk of injury when uncrating.

- Cut the banding holding the cardboard carton to the shipping pallet, using heavy scissors or tin snips. Use caution to avoid contact with cut banding.
- Lift the cardboard carton straight up and off the unit.
- Cut the banding that holds the refrigerator to the shipping pallet or skid. Use caution to avoid contact with the cut banding.

Note: Leave unit on skid until ready to install

- Peel the protective adhesive film from all exposed areas (front, sides and interior)

CAUTION! This unit is very heavy; do not attempt to remove this unit from its packaging without assistance.

Remove Packing & Loose Components

Remove any tape and foam blocking used to secure the loose components.

Wash and Sanitize Unit Interior & Shelving Components

> **NOTE!** Use only McDonald's approved cleaning and sanitizing agents according to instructions.

Wipe down, sanitize and dry the refrigerator interior.

Operating Instructions

Temperature Setting

The combo has been tested and preset at the factory to maintain a temperature between 33ºF (0°C) and 40ºF (4.4°C). The temperature controller located on the front panel displays the internal temperature of the refrigerator.

To view current set point or if the temperature is not reading within the range specified above, the electronic controller can be adjusted using the following procedure:

Controller			
			
	**Info / Setpoint button**		**Increase / Manual activation button**
	**Manual defrost / Decrease button**		**Exit / Stand-by button**

Set point ***(Display and modification of desired temperature value)***
Press button "i" key and hold for more than 1/2 second, to display set point value
By keeping button "i" pressed, use button ▼ and ▲ to set the desired value When button "i" is released, the new value is stored.

A complete manual of the controller is attached with unit.

Operating Procedure

Start-Up:

The Combo is turned ON by plugging the cord into a Wall outlet. Turn Power switch on back left of Refrigerator on. If Display on the front of the Refrigerator shows Temperature the Refrigerator is on. If the Display shows OFF then press and hold the On/Off button on the Display for 5 seconds. The evaporator fan will run immediately, the compressor & the condenser fan will run after 1 minute delay. Let the unit run for 30 minutes before placing product in the Combo.

Temperature Setting:
The unit has been tested at the factory and the control has been preset to maintain a temperature between 33° and 40°F (1° and 4.4°C) for Refrigerator and 0°F to - 10°F (-18°C to -23°C) for Freezer.

Condensate Disposal:
The condensate from the Combo is disposed via a drain to a condensate evaporator located in the side of the condensing unit.

Loading and Restocking

- **DO NOT** over-load the refrigerator. All refrigeration requires good air circulation to maintain uniform temperatures.
- **DO NOT** let plastic bags, packaging or containers block or obstruct the Evaporator air intake and return openings.
- **DO NOT** leave the drawer open, except to remove product or to restock.

Cleaning

CAUTION! Do not use a pressurized spray to clean the HCFRC30.01P.

CAUTION! Do not use abrasives or strong chemicals to clean any surfaces of the HCFRC30.01P.

WARNING! Do not spray liquids directly onto the power switch, into the compressor compartment at the top of the cabinet, or into the evaporator. Doing so will void the warranty and risk serious personal injury.

Exterior Cleaning

The exterior of the unit should be cleaned with EXCEED Glass & Multi-Surface Cleaner. Do not use abrasive cleaners to clean the exterior of the cabinet as this might damage the stainless steel finish. Do not use steel wool or any strong chemicals.

Interior Cleaning

The anodized aluminum interior of the refrigerator can be cleaned using a soft sponge and EXCEED Glass & Multi-Surface Cleaner. Do not allow liquid to puddle in the unit. Wipe the inner liner dry after cleaning.

Preventative Maintenance

WARNING! Failure to properly perform scheduled preventative maintenance may void manufacturer's warranty.

WARNING! Verify refrigerator is disconnected from the power source before attempting any preventative maintenance. Failure to disconnect the electric power could result in electric shock, burns, injuries or death.

CAUTION! The fins on a condenser coil are very sharp, and some refrigeration components can be very hot, resulting in possible cuts and/or burns. Avoid physical contact with the fins on the condenser coil or any related refrigeration lines. Gloves are recommended when accessing the internal components of any refrigerated equipment.

Clean the Condenser Coils (Quarterly)

For proper operation of the condensing unit, the condenser fins should be cleaned and vacuumed every one (1) month. The front grill is designed to be removable without the use of tools for this purpose. Tools:

- Brush
- Vacuum cleaner with attachments.
- Safety Gloves

Procedure

1. Remove appropriate cover to access fins to be cleaned.
2. Vacuum fins to remove any dust or debris that has accumulated.
3. Carefully brush any remaining greasy dust or debris.
4. Replace cover after cleaning.

Remove panel: Lift panel and pull out.

Use a soft bristled brush to clean greasy on the coil

Check to see if the door gasket is in good condition

Check the Door Gasket (Quarterly)

Check to see if drawer gasket broken. If the drawer gasket is broken, and cannot seal the cabinet properly, please call 1-800-521-3987 to order replacement gasket.

Product Warranty

H&K International makes the following limited warranties to the original purchaser only for this equipment and replacement parts:

H&K warrants all components to be free of defects in material and workmanship, if properly installed, operated and maintained, for period of (2) years from the date of the delivery.

The company's obligation under this warranty is limited to repairing or replacing any part or parts of the refrigerator determined to be defective by an authorized representative of H&K.

The company reserves the privilege of determining if such repairs are to be made in the field or at the H&K factory.

The company assumes no liability for expenses or repairs made by other parties except by written consent.

Corrections of such defects by repair or replacement shall constitute fulfillment of all company obligations to the purchaser.

H&K shall not be liable for loss, damages or expenses arising from misuse, abuse, alteration, accident or improper installation of the refrigerator such as:

- Improper or unauthorized repair;
- Failure to follow proper installation instruction;
- Improper maintenance;
- Damage in shipment;
- Abnormal use;
- Improper power supply;
- Natural disaster;

Special Conditions

This warranty also does not cover:

- Overtime or holiday charges;
- Consequential damages (the cost of repairing or replacing other property which is damaged), loss of time, profits, use of any other incidental damages of any kind.

Expected life of this equipment is 7 to 10 years provided that it is maintained properly through H&K approved suppliers using only approved component parts and that the unit is cleaned regularly and not abused.

Troubleshooting

Warning: UNPLUG THE POWER CORD Before open the panel of the machinery Compartment for checking any issue.

Electricity

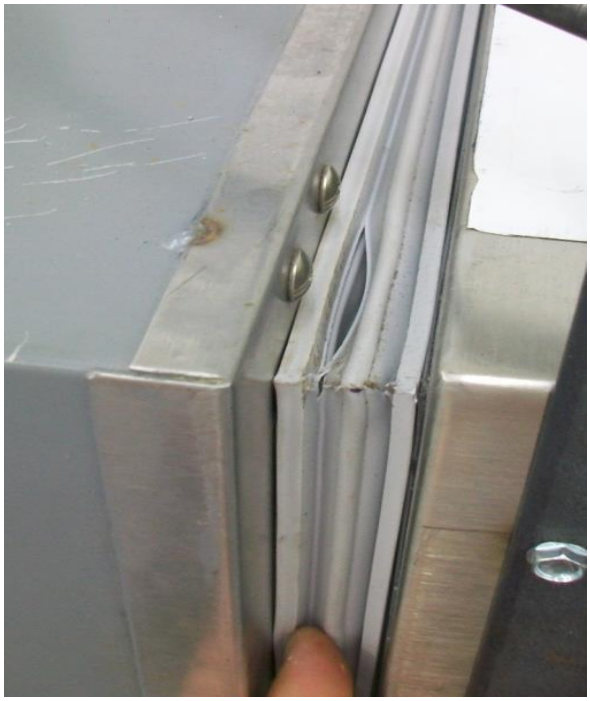
PROBLEM	***POSSIBLE CAUSE***	***WHAT TO DO***
Unit does not run after plug into the receptacle on the side of the table.	Unit is not “fully” plugged in.	Verify unit is plugged into outlet.
	The receptacle on the Wall isn’t working.	Plug the refrigerator into another extension outlet. If the receptacle on the Wall is not working, use alternate and contact licensed electrician to repair it.
	Circuit breaker has been tripped.	Check circuit breaker to see if it has tripped. Reset if necessary. If these steps do not fix problem, c**all H&K at 800-7882445.**
Combo is running but it won’t reach target operating temperature of 33°F (1°C) to 41° F (5°C) for Refrigerator and 0°F to -10°F (-18°C to 23°C) for Freezer.	Condenser Coil is dirty or clogged with debris.	Use a vacuum cleaner or soft brush to clean coils, per Preventative Maintenance instructions. If these steps do not fix problem, **Call H&K at 800-788-2445 for service**.
	Drawer is left opened for extended periods.	Review product loading and general use instructions with crew to ensure drawer is open for restocking and order filling only.
	Room temperature and/or humidity exceed recommended maximums. 100ºF (38ºC) 50% RH max.	Adjust store air conditioning. If these steps do not fix problem, **Call H&K at 800-7882445.**
	Drawer gasket has been broken and door is not properly sealed.	Check drawer gasket condition according to the reference pictures below this table. **Call H&K at 800-521-3987 if need to order replacement gasket.**

Controller reads “P1”	The sensor probe has failed and must be replaced.	**Call H&K at 800-788-2445 for service**
Controller reads “P2”	The evaporator probe has failed and must be replaced.	**Call H&K at 800-788-2445 for service**
Controller read ‘def”	Unit is currently in defrost cycle.	If unit does not go back to normal operation after 1 hour, **Call H&K at 800788-2445 for service**
Controller read ‘rec”	Unit is currently is in recovery after defrost.	If unit does not go back to normal operation after 1 hour, **Call H&K at 800788-2445 for service**

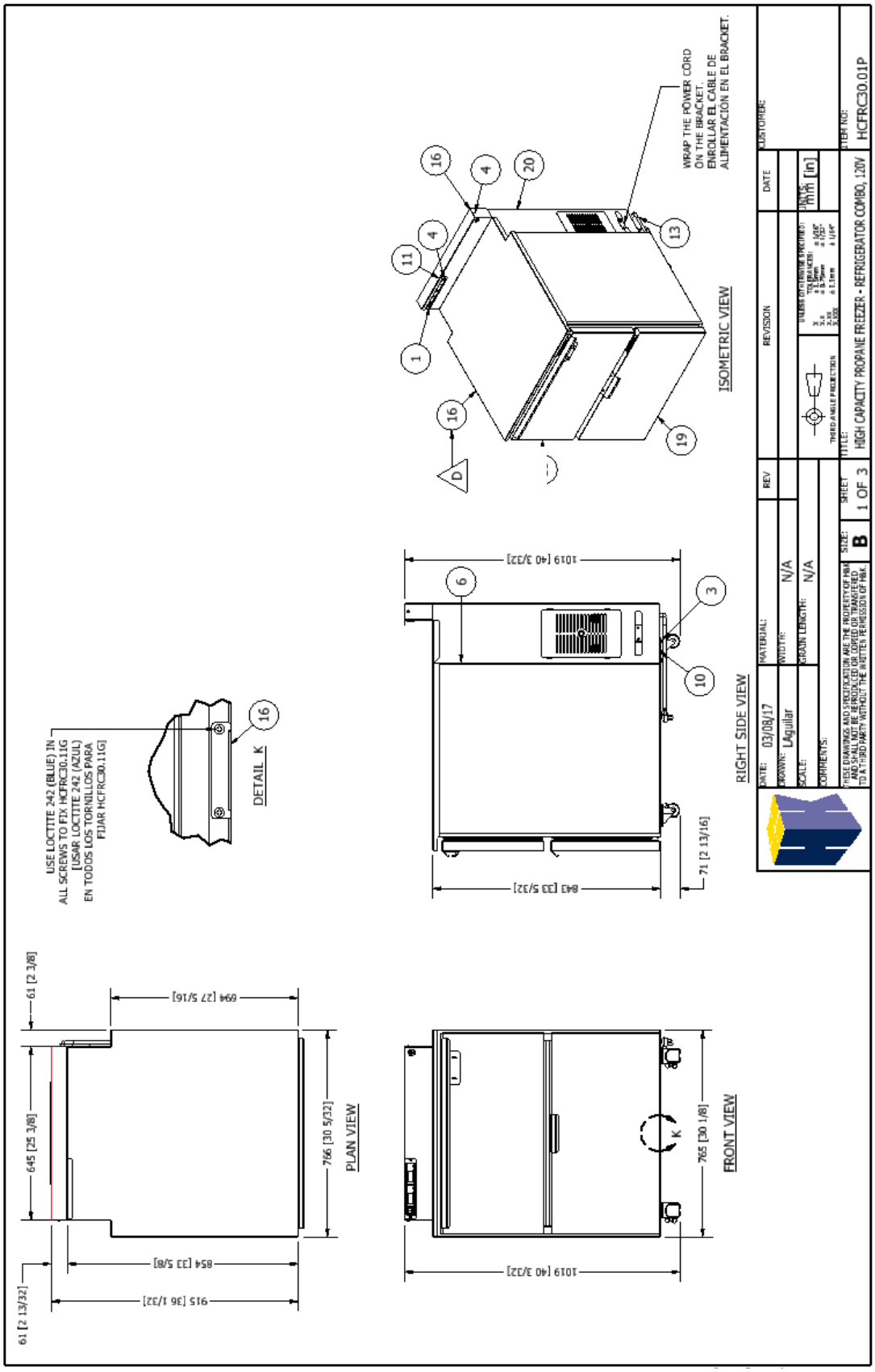
Gasket condition reference pictures:

Gasket in good conditions

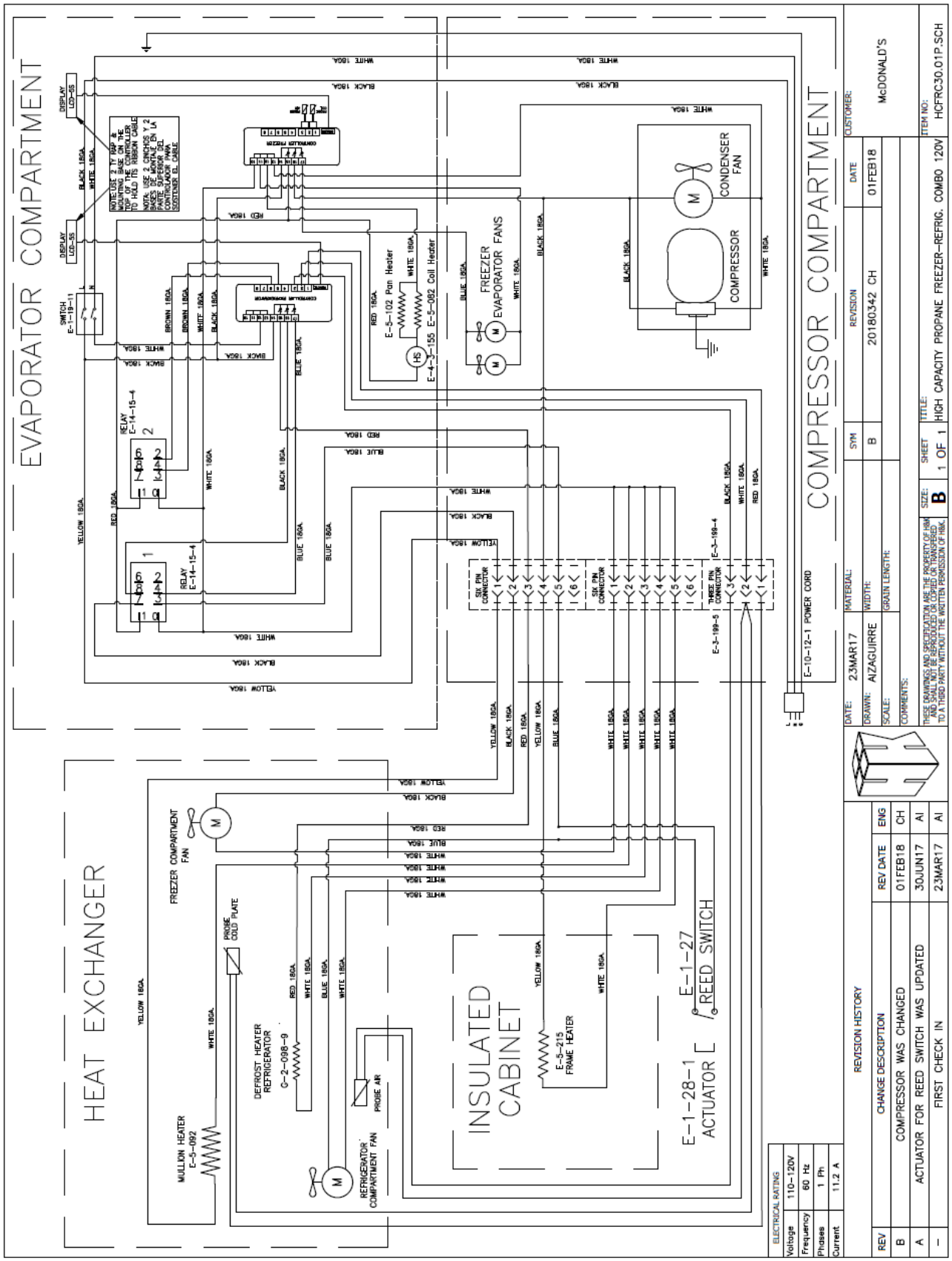
Gasket broken, need to be replaced



Assembly Drawing



Wiring Diagram



Refrigeration Specification

Refrigerant	**R-290**
Operating pressure	LSP = 24 psig HSP = 100 psig
Electrical Data	Power supply: 120V/60hz/1ph Current = 11.2 Amps Max Fuse/Circuit Breaker = 20A
System charge	4.41oz (125g)

Replacement Parts

DESCRIPTION	H&K PART NO.
Compressor	P-1-353
Capillary tube	7 ft (2.134 m) of P-1-56-1200
Dryer	P-1-24-2
Controller	G-R02043
Probe	E-4-3-157
Power cord	E-10-12-1

Appendix: Controller Manual

BIT25 INSTRUCTIONS FOR USE

Thank you for having chosen an LAE electronic product. Before installing the instrument, please read this instruction booklet carefully in order to ensure safe installation and optimum performance.

DESCRIPTION

Fig.1 - Front panel

i Info / Setpoint button.

Manual defrost / Decrease button.

INDICATIONS

Thermostat output

Fan output

Defrost output

II° Activation of 2nd parameter set

Alarm

M Increase button / Manual activation.

Exit / Stand-by button.

INSTALLATION

- The BIT-25 controller has a size 86x82x44 mm (WxHxD).
- Make sure that electrical connections comply with the paragraph "wiring diagrams". To reduce the effects of electromagnetic disturbance, keep the sensor and signal cables well separate from the power wires.
- Place the probe T1 inside the room in a point that truly represents the temperature of the stored product.
- If present, place the probe T2 on the evaporator where there is the maximum formation of frost.
- If probe T3 is connected to DI2, its function is determined by the parameter **T3M**. With **T3M**=DSP the probe measures the temperature to be displayed. With **T3M**=CND the probe measures the condenser temperature, it must therefore be placed between the fins of the condensing unit.

OPERATION

DISPLAY

During normal operation, the display shows either the temperature measured or one of the following indications:

dEF	Defrost in progress	hi	Room high temperature alarm
oFF	Controller in stand-by	Lo	Room low temperature alarm
cL	Condenser clean warning	E1	Probe T1 failure
do	Door open alarm	E2	Probe T2 failure
hc	Condenser high temperature alarm	E3	Probe T3 failure
ALr	Generic Alarm		

INFO MENU

The information available in this menu is:

t1	Instant probe 1 temperature	tLo	Minimum probe 1 temperature recorded
t2 *	Instant probe 2 temperature	cnd **	Compressor working weeks
t3 *	Instant probe 3 temperature	Loc	Keypad state lock
th1	Maximum probe 1 temperature recorded		

: displayed only if enabled (see §Configuration Parameters)* * : displayed only if **ACC** > 0*

Access to menu and information displayed.

- Press and immediately release button i .
- With button ▼ or ▲ select the data to be displayed.
- Press button i to display value.
- To exit from the menu, press button ✖ or wait for 10 seconds.

Reset of THI, TLO, CND recordings

- With button ▼ or ▲ select the data to be reset.
- Display the value with button i.
- While keeping button i pressed, use button ✖.

SETPOINT : display and modification

- Press button i for at least half second, to display the setpoint value.
- By keeping button i pressed, use button ▼ or ▲ to set the desired value (adjustment is within the minimum **SPL** and the maximum **SPH** limit).
- When button i is released, the new value is stored.

STAND-BY

Button ⏻, when pressed for 3 seconds, allows the controller to be put on a standby or output control to be resumed (with **SB**=YES only).

KEYPAD LOCK

The keypad lock avoids undesired, potentially dangerous operations, which might be attempted when the controller is operating in a public place. In the INFO menu, set parameter **LOC**=YES to inhibit all functions of the buttons. To resume normal operation of keypad, adjust setting so that **LOC**=NO.

SELECTION OF SECOND PARAMETER GROUP

It's possible to select control parameters between two different pre-programmed groups, in order for the fundamental control parameters to be adapted quickly to changing needs. Changeover from Group **I** to Group **II** (and vice versa) may take place MANUALLY by pressing button M for 2 seconds (with **IISM**=MAN), or AUTOMATICALLY when **IISM**=DI2 and the AUXILIARY INPUT DI2 is activated (the activation of DI2 selects Group **II**). If **IISM**=NON, switchover to Group **II** is inhibited. The activation of Group **II** is signalled by the lighting up of the relevant LED on the controller display.

SETPOINT ADJUSTMENT VIA POTENTIOMETER

With **DI2**=PSP the setpoint is set via a 10KΩ linear potentiometer connected to DI2. The setpoint changes between **PSL** (10KΩ) and **PSL+PSR** (0Ω) proportionally. With **POF**=YES, if the potentiometer is turned to the minimum (0Ω), the controller will be put on standby. If the second parameter group is active, the setpoint used will be **IISP**.

DEFROST

Automatic defrost. Defrost starts automatically when the defrost timer matches the time value set with **DFT**.

- Timed defrost. With **DFM**=TIM defrosts take place at regular intervals of **DFT** hours. For example, with **DFM**=TIM and **DFT**=06, a defrost will take place every 6 hours.
- Optimized defrost. With **DFM**=FRO the timer is increased only when the condition for frost to form in the evaporator occurs. Once the **DFT** value is reached, defrost takes place. If the evaporator works at 0°C, defrost frequency depends on the thermal load and climatic conditions. With setpoints much lower than 0°C, defrost frequency mainly depends on the refrigerator operating time.
- Defrost time count backup. At the power-up, if **DFB**=YES, the defrost timer resumes the time count from where it was left off before the power interruption. Vice versa, with **DFB**=NO, the time count re-starts from 0. In stand-by, the accumulated time count is frozen.

Manual or remote defrost start. It's possible to manually start a defrost, by pressing button ❄ for 2 seconds, or defrost may be started remotely, if **DI1**=RDS (**DI2**=RDS), through the making of the auxiliary contact DI1 (DI2).

Defrost type. Once defrost has started, Compressor and Defrost outputs are controlled according to parameter **DTY**. If **FID**=YES, the evaporator fans are active during defrost.

Defrost termination. The actual defrost duration is influenced by a series of parameters.

- Time termination: **T2**=NO. the evaporator temperature is not monitored and defrost will last as long as time **DTO**.
- Temperature termination: **T2**=YES. In this case, if the sensor T2 measures the temperature **DLI** before the time **DTO** elapses, defrost will be terminated in advance.

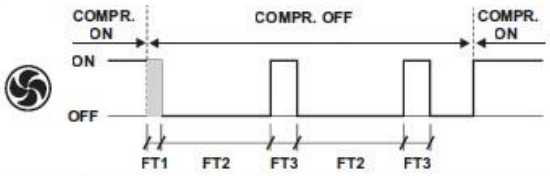
Resuming thermostatic cycle. When defrost is over, if **DRN** is greater than 0, all outputs will remain off for **DRN** minutes, in order for the ice to melt completely and the resulting water to drain. Moreover, the fans will re-start only when the evaporator temperature is lower than **FDD** (if **T2**=YES), or after **FTO** minutes have elapsed.

*Caution: if **DFM**=NON all defrost functions are inhibited; if **DFT**=0, automatic defrost functions are excluded; during a high pressure alarm or a DI1 (DI2) generic alarm, defrost is suspended; during defrost, high temperature alarm is bypassed.*

CONFIGURATION PARAMETERS

- To get access to the parameter configuration menu, press button ⏻ + i for 5 seconds.
- With button ▼ or ▲ select the parameter to be modified.
- Press button i to display the value.
- By keeping button i pressed, use button ▼ or ▲ to set the desired value.
- When button i is released, the newly programmed value is stored and the following parameter is displayed.
- To exit from the setup, press button ✖ or wait for 30 seconds.

PAR	RANGE	DESCRIPTION
SPL	-50..SPH	Minimum limit for SP setting.
SPH	SPL...110°C	Maximum limit for SP setting.
SP	SPL... SPH	Setpoint (value to be maintained in the room).
HYS	1.0...10.0°C	OFF/ON thermostat differential.

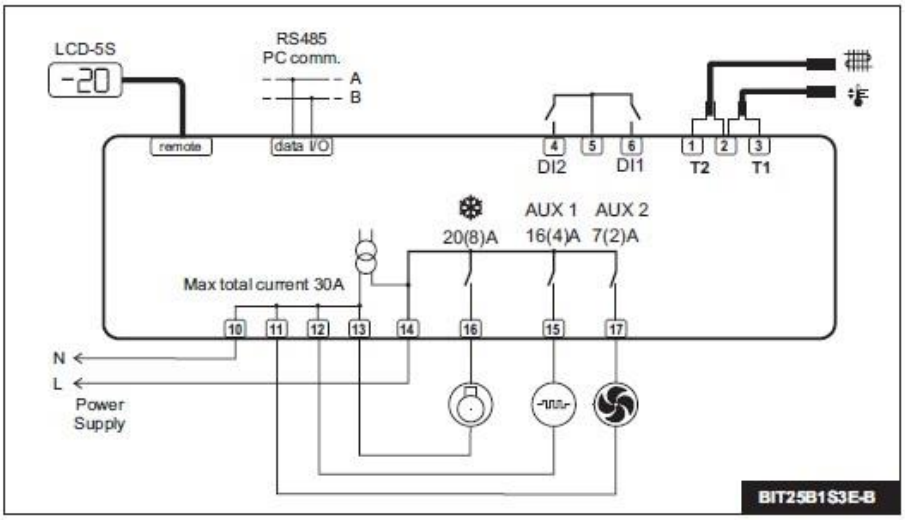
	CRT	0...30min	Compressor rest time. The output is switched on again after CRT minutes have elapsed since the previous switchover. We recommend to set CRT=03 with HYS<2.0°.
	CT1	0...30min	Thermostat output run when probe T1 is faulty. With CT1=0 the output will always remain OFF.
	CT2	0...30min	Thermostat output stop when probe T1 is faulty. With CT2=0 and CT1>0 the output will always be ON. *Example:* CT1=4, CT2= 6: In case of probe T1 failure, the compressor will cycle 4 minutes ON and 6 minutes OFF.
	CSD	0..30min	Compressor stop delay after the door has been opened (active only if D1=DOR or DI2=DOR).
	DFM	NON; TIM; FRO	Defrost start mode **NON** : defrost function is disabled *(the following parameter will be* FCM*).* **TIM** : regular time defrost. **FRO** : the defrost time count is only increased when the conditions occur for frost to form on the evaporator (optimised time increase).
DFM = TIM or FRO	**DFT**	0...99 hours	Built-in timer value for an automatic defrost to take place.
	DFB	NO/YES	Defrost timer backup. With DFB=YES, after a power interruption, the timer resumes the count from where it was left off with ±30 min. approximation. With DFB=NO, after a power interruption, the defrost timer will re-start to count from zero.
	DLI	-50...110°C	Defrost end temperature.
	DTO	1...120min	Maximum defrost duration.
	DTY	OFF; ELE; GAS	Defrost type **OFF**: off cycle defrost (Compressor and Heater OFF). **ELE**: electric defrost (Compressor OFF and Heater ON). **GAS**: hot gas defrost (Compressor and Heater ON).
	DPD	0...240sec	Evaporator pump down. At the beginning of defrost, defrost outputs (determined by DTY) are OFF for DPD seconds.
	DRN	0...30min	Pause after defrost (evaporator drain down time).
	DDM	RT; LT; SP; DEF	Defrost display mode. During defrost the display will show: **RT**: the real temperature; **LT** : the last temperature before defrost; **SP** : the current setpoint value; **DEF** : "dEF".
	DDY	0...60min	Display delay. The display shows the information selected with parameter DDM during defrost and for DDY minutes after defrost termination.
	FID	NO/YES	Fans active during defrost.
	FDD	-50...110°C	Evaporator fan re-start temperature after defrost (referred to T2 probe).
	FTO	0...120min	Maximum evaporator fan stop after defrost.
	FCM	NON; TMP; TIM	Fan mode during thermostatic control. **NON** : The fans remain ON all the time; **TMP** : Temperature-based control. The fans are ON when the compressor is ON. When the compressor is turned OFF, the fans remain ON as long as the temperature difference T2-T1 is greater than FDT. The fans are turned ON again with FDH differential. (T1 = Air temperature, T2 = Evaporator temperature); **TIM** : Timed-based control. The fans are ON when the compressor is ON. When the compressor is OFF, the fans switch ON and OFF according to parameteres FT1, FT2, FT3. 
	FDT	-12.0...0.0°C	Evaporator-Air temperature difference for the fans to turn OFF after the compressor has stopped.

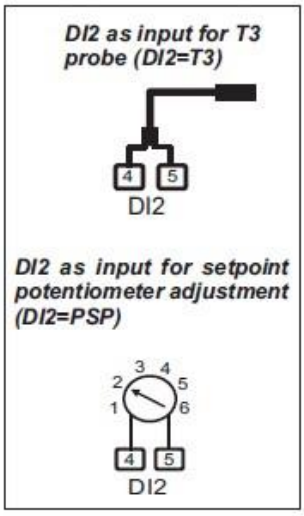
	FDH	1.0 ...12.0°C	Temperature differential for fan re-start. *Example*: FDT = -1.0, FDH=3.0. In this case, after the compressor has stopped, the fans are OFF when T2 > T1 - 1.0 (FDT), whereas the fans are ON when T2 < T1 - 4.0 (FDT-FDH).
	FT1	0...180sec	Fan stop delay after compressor stop.
	FT2	0 ... 30min	Timed fan stop. With FT2=0 the fans remain on all the time.
	FT3	0 ... 30min	Timed fan run. With FT3=0, and FT2 > 0, the fans remain off all the time.
	ATM	NON; ABS; REL	Alarm threshold management. **NON** : all temperature alarms are inhibited (*the following parameter will be* ADO). **ABS** : the values programmed in ALA and AHA represent the real alarm thresholds. **REL** : the values programmed in ALR and AHR are alarm differentials referred to SP and SP+HYS.  Temperature alarm with relative thresholds (ATM=REL).
ATM = ABS	**ALA**	-50 ... 110°C	Low temperature alarm threshold.
ATM = ABS	**AHA**	-50 ... 110°C	High temperature alarm threshold.
ATM = REL	**ALR**	-12.0...0.0°C	Low temperature alarm differential. With ALR=0 the low temperature alarm is excluded.
ATM = REL	**AHR**	0.0 ...12.0°C	High temperature alarm differential. With AHR=0 the high temperature alarm is excluded.
ATM = ABS or REL	**ATI**	T1; T2; T3	Probe used for temperature alarm detection.
ATM = ABS or REL	**ATD**	0 ... 120min	Delay before alarm temperature warning.
	ADO	0 ... 30min	Delay before door open alarm warning.
	AHM	NON; ALR; STP;	Operation in case of high condenser alarm **NON** : high condenser alarm inhibited *(the following parameter will be* ACC*)*. **ALR** : in case of alarm, "HC" flashes in the display and the buzzer is switched on. **STP** : in addition to the alarm symbols displayed, the compressor is stopped and defrosts are suspended.
	AHT	-50...110°C	Condensation temperature alarm (referred to T3 probe). [only if AHM=ALR or AHM=STP]
	ACC	0 ... 52 weeks	Condenser periodic cleaning. When the compressor operation time, expressed in weeks, matches the ACC value programmed, "CL" flashes in the display. With ACC=0 the condenser cleaning warning is disabled and CND disappears from Info Menu.
	IISM	NON; MAN; DI2	Switchover mode to second parameter set **NON** : inhibition to use the second parameter group (*the following parameter will be* SB). **MAN** : button [M] switches the two parameter groups over. **DI2** : switchover to the second parameter group when the auxiliary DI2 input makes.

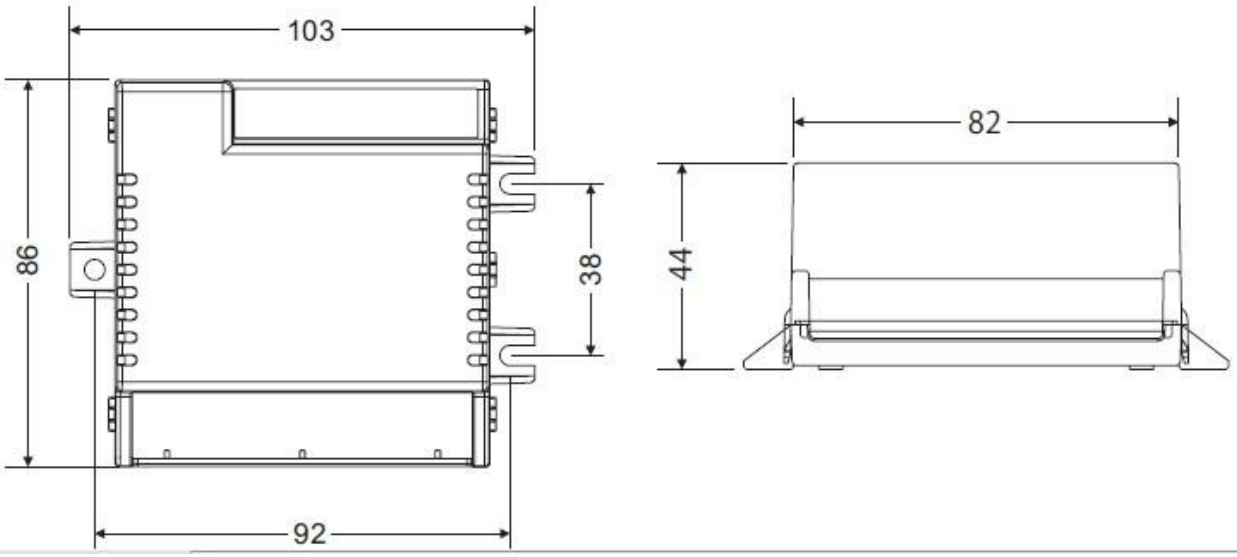
IISM = MAN or DI2	**IISL**	-50... IISH	Minimum limit for IISP setting.
	IISH	IISL... 110°C	Maximum limit for IISP setting.
	IISP	IISL... IISH	Setpoint in mode 2.
	IIHY	1.0... 10.0°C	OFF/ON differential in mode 2.
	IIFC	NON; TMP; TIM	Fan control in mode 2. See FCM.
	IIDF	0...99 hours	Built-in timer value for an automatic defrost to take place, in mode 2.
SB		NO/YES	Stand-by button ⏻ enabling.
DI1		NON; DOR; ALR; RDS.	DI1 digital input operation **NON** : digital input 1 not active. **DOR** : door input. **ALR** : when contact opens an alarm is generated (if AHM=STP, the compressor is stopped and defrosts are suspended). **RDS** : when contact makes a defrost is started (remote control).
DI2		NON; DOR; ALR; RDS; IISM; T3; PSP	DI2 digital input operation **NON** : digital input 2 not active. **DOR** : door input. **ALR** : when contact opens an alarm is generated (if AHM=STP, the compressor is stopped and defrosts are suspended). **RDS** : when contact makes a defrost is started (remote control). **IISM** : when contact makes the second parameter group is active. **T3** : probe T3 input. **PSP** : potentiometer setpoint input.
DI2 = T3	**T3M**	DSP; CND.	Auxiliary probe T3 operation **DSP** : temperature T3 to be displayed. **CND** : condenser temperature measurement.
	OS3	-12.5..12.5°C	Probe 3 offset.
DI2 = PSP	**PSL**	-50...70°C	Minimum setpoint adjusted via potentiometer.
	PSR	0.0...15.0 °C	Range of setpoint adusted via potentiometer Example: with PSL=2.0 and PSR=8.0, the setpoint changes between 2.0°C and 10.0°C (PSL+PSR).
	POF	NO/YES	Potentiometer standby enabling. With POF=YES, when the potentiometer is turned to the minimum, the controller will be put on standby.
LSM		NON; MAN; D1O; D2O; D2C.	Light control mode **NON** : light output not controlled. **MAN** : light ouput controlled through button M **D1O** : when DI1 is open, light output is on. **D2O** : when DI2 is open, light output is on. **D2C** : when DI2 is closed, light output is on.
OA1		NON; FAN; DEF; LGT; 0-1; ALO; ALC	AUX 1 output operation **NON** : output disabled (always off). **FAN** : output enabled for fan control. **DEF** : output enabled for defrost control. **LGT** : output enabled for light control. **0-1** : the relay contacts follow the on/standby state of controller. **ALO** : contacts open when an alarm condition occurs. **ALC** : contacts make when an alarm condition occurs.

OA2	See **OA1**	AUX2 output operation. See OA1.
OS1	-12.5..12.5°C	Probe T1 offset.
T2	NO/YES	Probe T2 enabling (evaporator).
OS2	-12.5..12.5°C	Probe T2 offset.
TLD	1...30 min	Delay for minimum temperature (TLO) and maximum temperature (THI) logging.
SCL	1°C; 2°C; °F	Readout scale. **1°C** : measuring range -50…110°C (0.1°C resolution within -9.9 ÷ 19.9°C interval, 1°C outside) **2°C** : measuring range -50…110°C **°F** : measuring range -58…180°F
SIM	0...100	Display slowdown.
ADR	1...255	BIT25 address for PC communication.

WIRING DIAGRAMS







Control Settings-Combo Refrigerator

Parameter	Freezer Value	Refrigerator Value	Parameter	Freezer Value	Refrigerator Value
SPL	-12	33	FT2	03	00
SPH	10	40	FT3	00	00
SP	-10	33	ATM	ABS	NON
C-H	REF	REF	ALA	-20	
HYS	10	03	AHA	15	
CRT	04	00	ATI	T1	
CT1	07	05	ATD	120	
CT2	07	08	ADO	00	00
CSD	00	00	AHM	NON	NON
DFM	TIM	TIM	ACC	00	00
DFT	08	12	IISM	NON	NON
DFB	YES	YES	SB	YES	YES
DLI	50	58	DI1	NON	RDS
DTO	30	30	DI2	NON	NON
DTY	ELE	ELE	LSM	NON	NON
DPD	05	00	OA1	DEF	DEF
DRN	07	07	OA2	FAN	FAN
DDM	DEF	DEF	OS1	02	-01
DDY	30	30	T2	YES	YES
FID	NO	NO	OS2	00	00
FDD	24	30	TLD	30	30
FTO	08	30	SCL	F	F
FCM	TIM	TIM	SIM	03	03
FDT	00	00	ADR	01	01
FDH	01	01	RES	NO	NO
FT1	00	00			