INFINITY
REFRIGERATION

Refrigeration System Installation & Operation Manual

IQUBE Packaged Refrigeration Unit (Side Mount)

February 2020

QUBE

Contents : Installation Instructions , Controller Guide , Trouble Shooting / Maintenance , Wiring Diagram and Warranty

INFINITY
REFRIGERATION

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Inspection

Important : Upon arrival of the equipment, please carefully check each shipment against the bill of lading. Before signing the delivery receipt (accepting the shipment), visually inspect the packaging for any signs of damage or if any equipment listed on the bill of lading is missing. If there are any damages or missing equipments, it should be noted on the delivery receipt and a claim should be filed directly with the freight carrier. Equipments should not be returned to the manufacturer before prior approval as any damages/losses become the responsibility of the freight carrier. After receiving the unit, unpack the equipment with care to avoid any damages. It is recommended to keep the equipment on its pallet until it is moved to its final destination.

General Safety Information

Installation and maintenance should only be performed by licensed contractor or technician.
Make sure to disconnect any power source to the unit before any service work is done.
Caution should be taken when moving or rigging the unit as the metal edges and coil surfaces may be sharp and are potential injury hazards (wearing gloves is recommended).
Do not run the fan motors if the fan guard is off to avoid injuries and electrical shock.
Remember to keep fingers away from any moving parts.
Avoid touching any refrigerant lines as they can be very hot and cause burns.
Avoid performing any service work in the rain (outdoor type) to prevent electrical shocks.
Make sure that the structural integrity of the walk in box can withstand the weight of the unit. (See page 5, Table 1-2 for weights).

Performance and Electrical Specifications

Table 1. Electrical - Extended Temperature (Air & Electric Defrost)

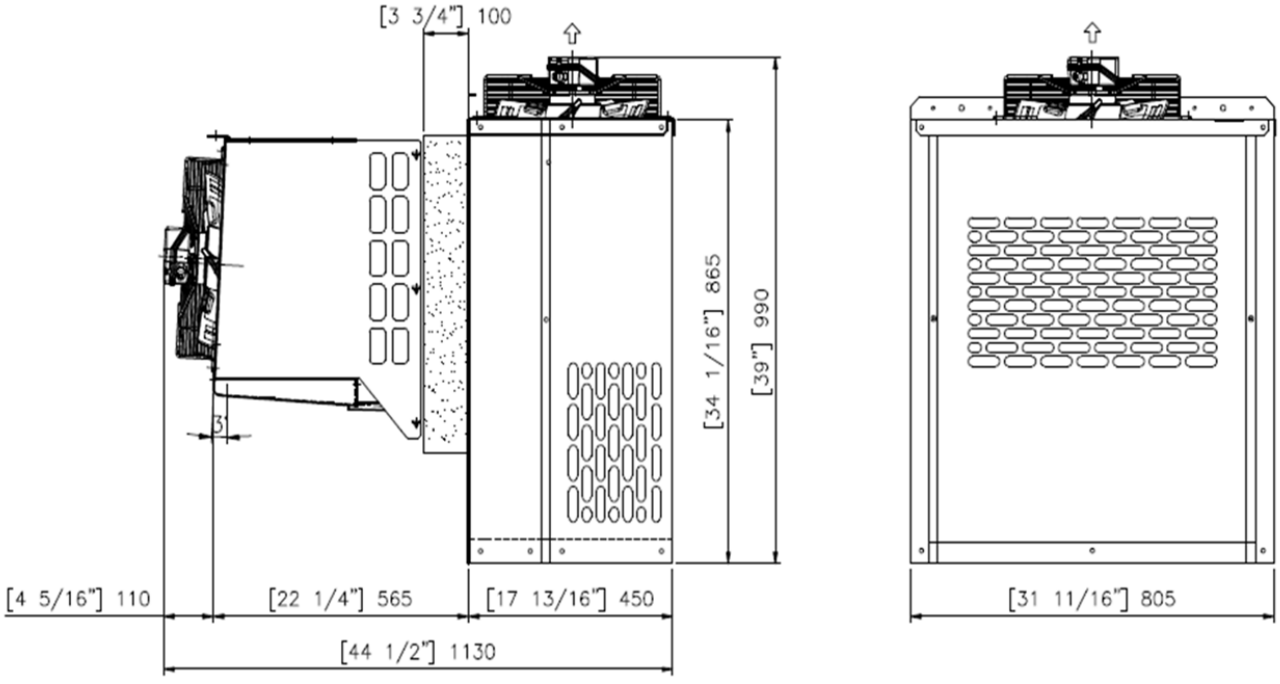
Model	Voltage/ Phase/Hz	MCA	MOPD	Unit Amps	RLA	LRA	Evap Fan Qty	Refrigerant Charge R404A (Oz)	Fig.	Approx Net Weight
IQS020XRB	208-230/60/1	20.5	35	18.5	15.7	61	1	34	1	275 LB
IQS030XRB	208-230/60/1	26.8	45	24.2	20.7	95	1	36	1	291 LB

Table 2. Performance - Extended Temperature (Air & Electric Defrost)

Model	Compressor	Capacity (BTUH) @ Ambient Temp 90˚F - 110˚F							
		90˚ F		95˚F		100˚F		110˚F	
		Holding / Room Temperature˚ F							
		35˚ F	0˚ F	35˚ F	0˚ F	35˚ F	0˚ F	35˚ F	0˚ F
IQS020XRB	ZB15KQE-PFV	18760	9317	17900	9068	17025	8653	15205	7760
IQS030XRB	ZB21KQE-PFV	28015	13880	26730	13520	25430	12920	22725	11630

Dimensional Data

Fig. 1 Indoor Unit Opening Size 29 15/16" x 24 7/16"



[Inches] Millimeter

Unit Placement Requirement

General Information

Important: The following guidelines must be considered when deciding where to place the equipment. If these guidelines are not followed correctly, it can result in premature failure and may contribute to poor operation of the equipment. Improper installation will void the warranty of the equipment.

1. Confirm that the structural integrity of the box can withstand the weight of the unit(s).(Shown in Table 1, page 5).

2. Shipping skid should not be removed from the equipment until it is ready to be raised to the walk-in box.

3. Air-Cooled Condensing equipment need adequate supply of ambient air to the condensing unit for optimal performance. The room where the unit will be installed will need proper ventilation or be large enough to sustain the heat rejection of the unit. Do not enclose the unit in an unventilated space as it will lead to poor operation of the equipment. Do not place the unit in area of steam, hot air or fume exhaust.

4. Minimum clearance of 2FT around the unit is required for servicing.

5. Units are designed to work in ambient temperatures of -30˚F ~ 110˚F

6. Unit should be located away from noise sensitive areas. Make sure the unit has adequate support to avoid excessive noise and vibration.

Recommended Unit Placement

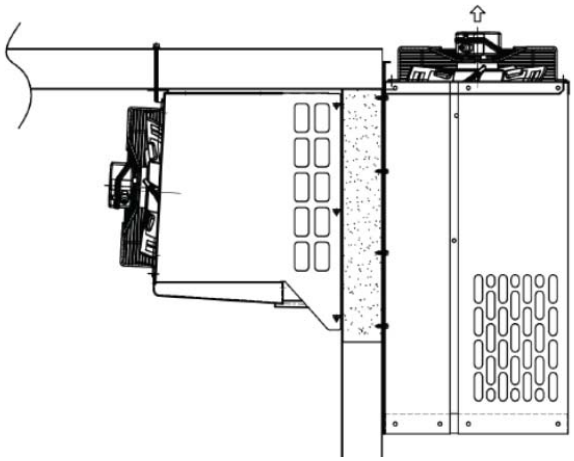
Some general rules to be considered during placement of the units:

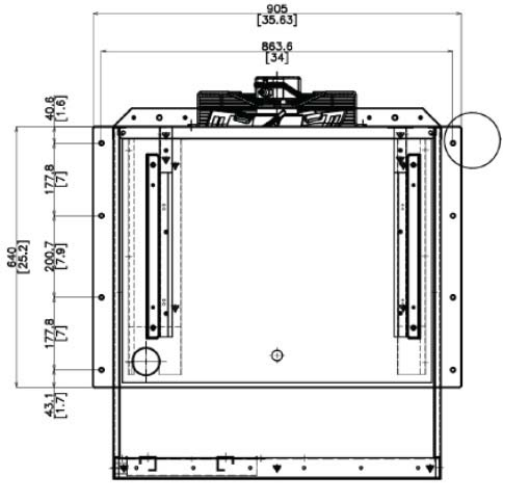
1. Again, make sure the structural integrity of the unit can support the weight of the unit. Do not attempt to install the unit with any of the panel cam locks unlocked or removed.

2. Air flow should cover the entire room. Stocking too high and close to the evaporator section will also cause poor air circulation.

3. NEVER locate the evaporator section of the unit over doors. This will cause issues with the system performance.

(Please refer to the following diagrams for minimum clearances for the unit)





Installation Procedure

General Information

Important: Installation and maintenance should be performed by licensed contractors or technicians who are familiar with local regulations and commercial refrigeration. Please follow the General Safety Information on page 4.

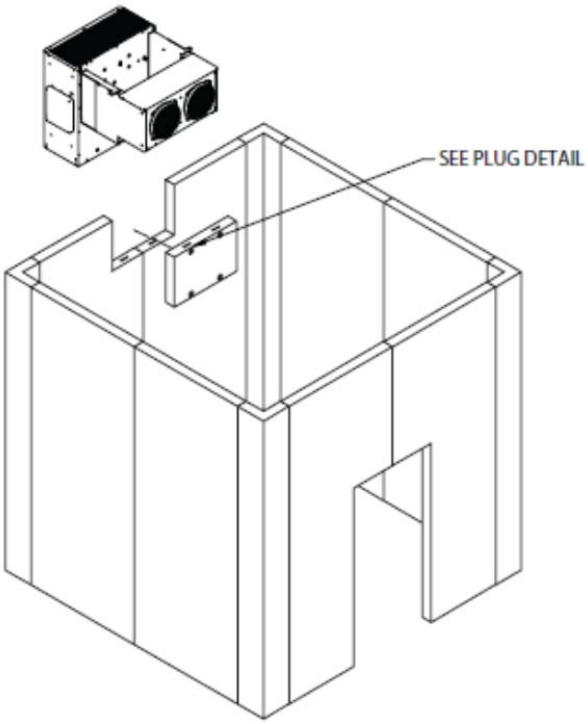
Indoor Application

1. Inspect equipment for any shipping or concealed damages. At final destination before placing the unit on the walk-in box, remove shipping skid.
2. After removing the shipping skid, remove the grill of the unit to prevent damages during mounting.
3. To locate the placement of the unit, please refer to pages 9-10.
4. A finished opening should be provided to the dimensions shown in Page 6-8. Again, make sure to confirm the structural integrity of the box will withstand the weight of the unit with the cutout. Please refer to the Box Manufacturer's instructions for any necessary procedure to be taken for the exposed foam in the walk in panels.
5. Cabinet Figure 1 can be set in place by hands. Cabinet Figure 2 and 3 have lifting eyes, a spread bar is recommended to prevent stress to the cabinet of the unit.
6. Do not remove or unlock any of the cam locks of the walk in panel for placement of the unit.
7. Top of the walk in should be clean to provide a good sealing surface.

8. When lifting the unit, condenser compartment should not have any parts removed.
9. Before dropping the unit into the cutout made, make sure to place the unit properly with airflow of the unit in mind. (Please refer to drawing on Page 8). Airflow should be towards the door, not directly to the walk in wall.
10. Gently drop the unit into the cut out. Before mounting, the unit needs to leveled, which should be no more than 1/8inch drop per foot or within 1˚. Bolts should be insulated or non conductive to prevent sweating.
11. After mounting, you can also seal the around the trim pieces with silicone. Try not to seal the condenser part of the unit
12. Wire the power cord (if supplied) or hardwire. Make sure to consider any local code or regulations on electrical/wiring. Before powering the unit, make sure to have proper voltage to the unit and phase to the unit. Power should be wired to L1 & L2 of the contactor, not T1 & T2. **Important:** *Do not use extensions cords to power the unit. Do not remove the ground prong as it is required. It is not recommended to use generators to power the unit.*
13. Before powering the unit, check all the wiring in the unit to ensure that there were no wires loosened during transit. Also check any mechanical connections like bolts to make sure none of them are loose.
14. Drain lines are not required as any condensate is evaporated in the condenser drain pan the by liquid line in the condenser.

Before Powering the Unit

When installation is complete (placement and wiring), double check all wiring for good connection and for any loose hardware. If any loose wiring or hardware is found, fasten them. Remove the controller cover found on the left side of the condenser coil.



Sequence of Operation

IQUBEs are designed to be controlled with the CAREL (PJEZ) controller. The controller comes preprogrammed for medium to low temp applications. When power is applied to the unit, the controller should automatically be on. The switch underneath the controller must be switched on as the switch controls the compressor circuit. When the unit is powered on, the sequence of operation varies by model (sequence shown below per model).

Table 3. Medium Temp Models | EZY SETTING = 1

Intended for 38˚F application. Air defrost (off cycle defrost). Programmed to have 4 defrost cycles (every 6hours).

Controller Status		Compressor	Condenser Fans	Evaporator Fans	Defrost	Notes
Off	Controller Display alternates from "OFF" and room temperature.	Off	Off	Off	Off	Press and hold the "^" button for 3 seconds. This will turn the controller on.
On	lights are displayed on the left of the controller	Off	Off	On	On	If unit starts in a defrost sequence but there is no ice to be defrosted, press and hold "v" to terminate defrost.
On	lights are displayed on the left of the controller.	On	On	On	Off	Refrigeration Cycle begins, Defrost timer begins (every 6 hours). Unit cools until desired temperature is reached.
On	Controller displays desired temperature(around 38˚F).	Off	Off	On	Off	Evap. fans are on at all times.
On	Box temperature rises above 40˚F.	On	On	On	Off	There is a 2˚F differential. Compressor is off for a minimum of 4 minutes.
On	Defrost cycle is initiated after 6 hours or manually.	Off	Off	On	On	Air defrost sequence initiated every 6 hours. Setting can be changed (refer to controller setting)
On	Defrost sequence terminates after 40mins or when room temperature reaches 40˚F and are displayed	On	On	On	Off	Refrigeration cycle starts over after defrost cycle.

Power is provided to the controller, compressor and fan motors. When powered on and the controller calls for cooling, the controller closes and energizes the compressors contactor coils. This will start the compressor and all fan motors. When the desired boxed temperature is reached, the controller opens and de-energizes the

compressors contactor. Evaporator fan motors will be running at all times. When box temperature rises to 40˚F and minimum compressor off time has expired, the controller will re-energize the compressor contactor. Cycles begins again.

Table 4. Low Temperature Models | EZY SETTING = 2

Intended for -10˚F - 0˚F application. Electric defrost. Programmed to have 4 defrost cycles (every 6 hours).

Controller Status		Compressor	Condenser Fans	Evaporator Fans	Defrost	Notes
Off	Controller Display alternates from "OFF" and room temperature.	Off	Off	Off	Off	Press and hold the "^" button for 3 seconds. This will turn the controller on.
On	lights are displayed on the left of the controller. Automatic defrost initiated.	Off	Off	Off	On	If unit starts in a defrost sequence but there is no ice to be defrosted, press and hold "v" to terminate defrost.
On	Defrost is terminated after 60mins or after the defrost sensor reaches above 65˚F	Off	Off	Off	Off	Could be manually terminated.
On	lights are displayed on the left of the controller. Cooling cycle is initiated	Off	Off	Off	Off	Refrigeration cycle begins, defrost timer begins (every 6 hours). 2 minute drip time is initiated
On	2 minute drip time expires.	On	On	Off	Off	Compressor and condenser fan motor starts. Evaporator motors delayed for 2 minute to freeze coil.
On	Evaporator fan motors start	On	On	On	Off	Fan delay 2 mins.
On	Controller displays desired temperature(around -10˚F-0˚F, depends on setting temperature).	Off	Off	On	Off	
On	Box temperature rises above -8˚F - 2˚F. (depends on desired temperature setting	On	On	On	Off	There is a 2˚F differential. Compressor is off for a minimum of 4mins.
On	Defrost cycle is initiated after 6 hours or	Off	Off	Off	On	Electric defrost initiated.

	manually.					
On	Defrost sequence terminates after 60mins or when coil temperature reaches 65˚F and  are displayed	On	On	Off	Off	Refrigeration cycle starts over after defrost cycle. 2 min drip time begins.
On	Evaporator fan motors start	On	On	On	Off	Fan delay for 2mins.

Under normal operation, defrost sequence will be initiated after 6hour (or different) has passed. During defrost, the controller will de-energize the compressor and fan motors while energizing the defrost heaters. There is a heater relay in all controllers. When defrost sequence has completed itself (either by preset coil temperature or duration), the defrost heaters de-energize and drip time/fan delay sequence begins. During this sequence, the compressor and condenser fan motor will be energized. After drip time and fan delay has been satisfied, the evaporator fan motors will kick in. The evaporator fan motor may be delayed more than 2mins if the coil temperature is above 35˚F. Refrigeration cycle resumes.

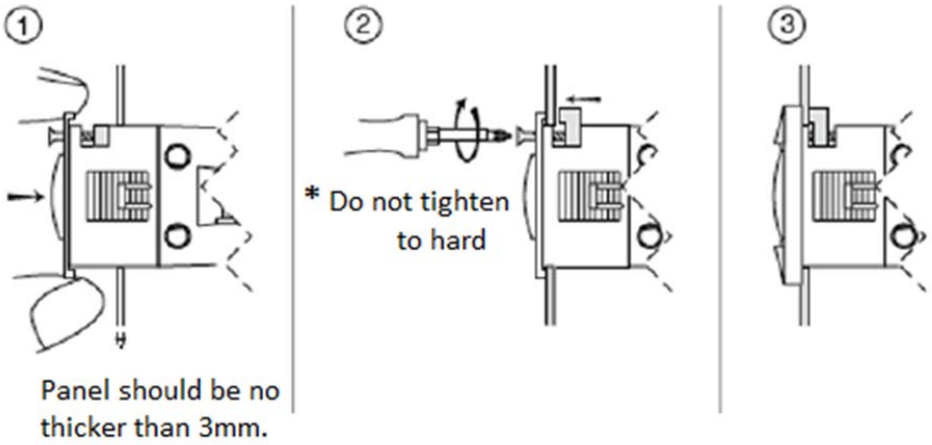
Controller Operation

PJEZ Carel Controller

IQUBE units are controlled by the CAREL (PJEZ) controller. CAREL (PJEZ) controller can be fully configured for electronic refrigeration systems. The controller comes factory set and does not need to be changed, unless needed.

Installation and Removal of Controller

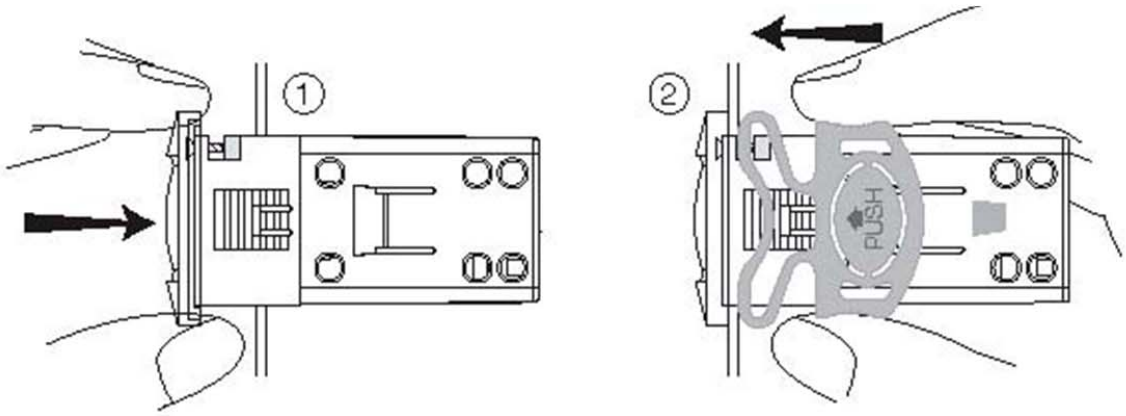
Installing the controller from the front using screws



1. Remove front frame of the controller and double check for catch placement. Place controller into the slot. Unscrew the top screw a little bit. This screw must never fall off the face of the controller.
2. While holding the controller in place, use a screw driver to tighten until you hear the catch "click". If you do not hear the "click" sound, unscrew again and rescrew. Make sure not to tighten the screw so hard.

3. When mounted properly, replace the front panel of the controller.

Installing the controller by using rear brackets



1. Insert the controller to the controller slot.
2. Secure the controller by sliding the brackets in the guide of the side of the controllers. Make sure direction of the bracket is like above. The bracket will be difficult to take out if they were inserted backwards. Slide the brackets in all the way to secure the controller.

General Safety of Electrical Connections

WARNINGS:

Electrical connections must only be completed by a licensed electrician.

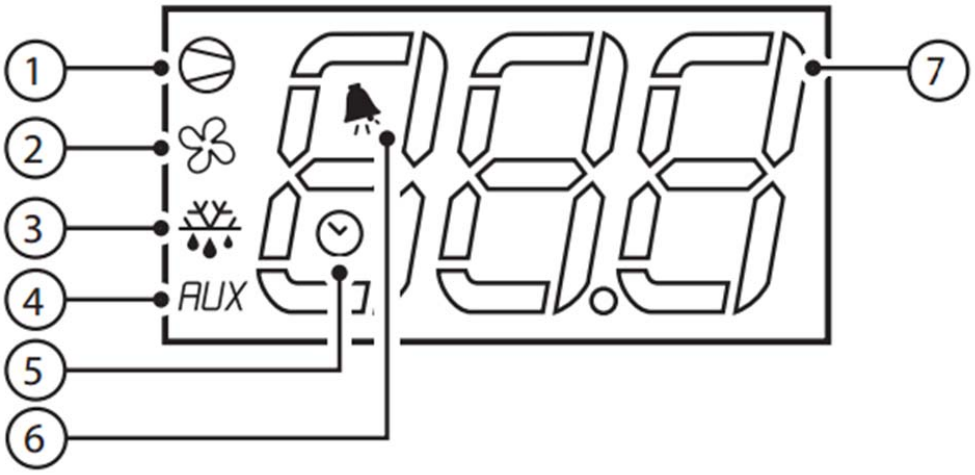
Power supply that is different from specified may cause serious damage to the system. As much as possible, separate the probes and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance. Never lay power cables (including the electrical cables) and probe signal cables in the same conduit. Do not install the probe cables in the immediate vicinity of power devices (circuit breakers, contactors and etc). Reduce the path of the probe and sensor cables as much as possible, and avoid spiral paths that enclose power devices. The probes must be connected using shielded cables (minimum cross section of each wire should be 0.5mm^2).

Avoid direct contact with internal electrical components.

Connection errors (and connections other than those indicated in this manual) may involve danger to the safety of users and cause faults on the controller and components connected.

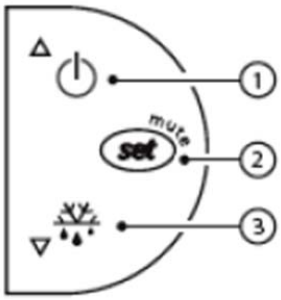
Fit the unit will all the electromechanical safety devices required to guarantee correct operation and the complete safety of the user.

Display



Button	Function	Normal Operation			Start Up
		On (solid)	Off	Flashing	
1	Compressor	On	Off	Calling	On
2	Fan	On	Off	Calling	On
3	Defrost	On	Off	Calling	On
4	AUX	Acitve Output	Non-Active Output	-	On
5	Clock	RTC available tEN=1 and at least one time band has been set.	RTC not available tEN=0 and no time band has been set		On)if tEN=1
6	Alarm	Alarm in progess	No alarm		On
7	Digits	3 Digits with decimal point and range of -199 - 999. Values in C˚or F˚ (See parametes /4, /5, /6 for type of probe displayed).			

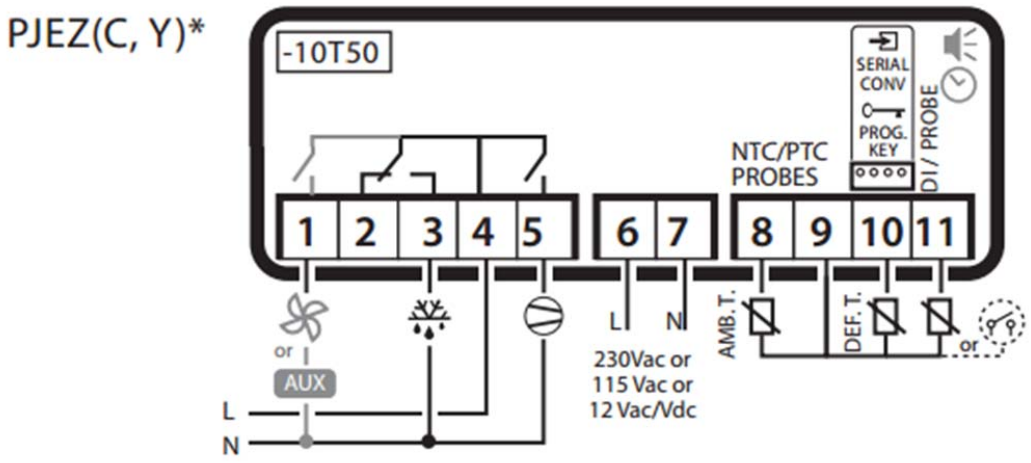
Keypads



Button	Normal Operation		Start Up	
	Pressed alone	Pressed together with		
1	Press and hold for more than 3 seconds to power on/off. Up button (navigation)	Pressed together with 3 activates/deactivates the continuous cycle.	-	
2	Prese and hold for 1 second to change set point. Press and hold for 3 or more seconds to access EZY settings. Enter "22" as password for PS parameter to acess full settings. -Press button briefly to mute alarm.	-	For 1 second RESET current EZY set	Pressed together with (2 and 3) for more than 3 seconds will reset the parameters
3	Press and hold for more than 3 seconds to activate or deactivate defrost. Down button (navigation)	Pressed together with 1 activates/deactivates the continuous cycle.	Displays firmware version if pressed for 1 second.	

	Press and hold set after changing a paramet to save parameters permanantly.			

Typical Controller Wiring (refer to wiring diagrams on page x - x for more details)



Preliminary Configurations

Once the electrical connections have been completed, simply power up the controller to make it operative.

Infinity Refrigeration recommends that the following parameters be checked at power up. Also check if the controller displays any alarm signals and fix accordingly.

Control Parameters		Defrost Parameters		Alarm Parameters	
st	Set Point	d0	Type of Defrost	Ad	Temperature Alarm Delay
rd	Set Point Differential	dl	Interval Between Defrost	AL	Low Temperature Threshold/Deviation
		dt	End Defrost Temperature	AH	High Temperature Threshold/Deviation
		dP	Maximum Defrost Duration		

Functions available from the keypad

On and Off

Switching the instrument ON : press UP for more than 3 s (when pressing the button, the display shows ON).

Switching the Instrument OFF : press UP for more than 3 s. The display shows the message "OFF", alternating with the temperature measured by the set probe.

In OFF status, the following functions are disabled (if featured by the model):

- Compressor control / duty setting / continuous cycle;
- Defrost;
- Fan control;
- Alarms : 'LO', 'HI', 'IA', 'cht', 'CHT';
- Door switch: A4=7/8
- Buzzer (when available).

While the following are enabled:

- Temperature display, alternating with the message "OFF";
- Parameter display and setting;
- Alarms: "E0", "E1", "E2";
- The internal timer relating to parameter 'dI' is updated. If 'dI' expires in OFF status, a defrost is performed when restarting;
- Auxiliary relay management, only in the following configurations:
    - H1= = 1/2 ("E0" alarm only);
    - H1= 3, A4= 6;

WARNINGS:

When first connected, easy is already on and ready to be used; the instrument can be switched on from a supervisor PC and via an external contact (setting A4 = 5). The latter has priority over the other modes.

Set Point Setting (desired temperature value)

The easy, easy compact devices control the desired temperature (set point) inside the cabinet or cold room directly and dynamically.

To view and modify the set point:

- press SET for 1 s, the set value will start fl ashing;
- increase or decrease the value using UP or DOWN;
- press SET to confirm the new value.

Manual Defrost

Press DOWN for more than 3 s (activated only if the temperature parameters are satisfied).

Continuous Cycle

Press UP+DOWN for more than 3 s (activated only if the temperature conditions are right and for easy split only when H6=0).

The continuous cycle is used to maintain refrigeration active in the cabinet or cold room, regardless of the temperature inside the unit. This may be useful for rapidly bringing the temperature below the set point value.

Rapid Display of the Temperature Read by the Other Probes

Press the DOWN button to scroll the temperatures read by the probes. Each time the DOWN button is pressed, the display will show the name of the probe Pr1, Pr2 or Pr3 (only on the models with 3 inputs and with multifunction input configured as a probe) and after 1 s the temperature measured by the selected probe will be displayed.

To display the other probes, press DOWN again.

To return to the normal display, wait 3 s without pressing any buttons (exit by timeout).

Saving New Parameter Values

**<u>Important:</u> To save any changes to the parameter, you have to press and hold the set button(keypad button 2 above, 

). If you do not save it, your changes to the parameter will be lost.**

Controller Setting and Parameters

Rapid Parameter Set Selection (EZY Settings)

The easy controller features the EZY parameter which is used to quickly review a list of parameters, with corresponding values, for the control of the refrigeration system.

Medium Temp Models | EZY SETTING = 1

Intended for 38˚F application. Air defrost (off cycle defrost). Programmed to have 4 defrost cycles (every 6hours).

Parameter	Description	Min.	Max.	Factory Default
st	Set Point	0	50	38
r1	Minimum Set Point Value	-50	50	0
r2	Maximum Set Point Value	0	150	50
c2	Minimum Compressor Off Time	0	100	4
d0	Type of Defrost	0	4	2
dl	Interval Between Defrost	0	199	6
dt	End Defrost Temperature Set Point	-50	127	40
dP	Maximum Defrost Duration ALARM_ED	1	199	40
d4	Defrost on Power Up	0	1	0
dd	Dripping Time	0	15	0
f0	Enable Evaporator Fan Control	0	1	0
f2	Stop Evaporator During Defrost	0	1	0
f3	Evaporator Fan Status During Defrost	0	1	0
fd	Post-Dripping Time	0	15	0

Low Temp Models | EZY SETTING = 2

Intended for -10˚F - 0˚F application. Electric defrost. Programmed to have 4 defrost cycles (every 6 hours).

Parameter	Description	Min.	Max.	Factory Default
st	Set Point	-30	30	-10
r1	Minimum Set Point Value	-50	303	-30
r2	Maximum Set Point Value	-30	150	30
c2	Minimum Compressor Off Time	0	100	4

d0	Type of Defrost	0	4	0
dl	Interval Between Defrost	0	199	6
dt	End Defrost Temperature Set Point	-50	127	65
dP	Maximum Defrost Duration ALARM_ED	1	199	60
d4	Defrost on Power Up	0	1	1
dd	Dripping Time	0	15	2
f0	Enable Evaporator Fan Control	0	1	0
f2	Stop Evaporator During Defrost	0	1	0
f3	Evaporator Fan Status During Defrost	0	1	1
fd	Post-Dripping Time	0	15	2

Tables of Alarms and Signals

When something on the unit is malfunctioning, the controller will set of an alarm buzzer to notify that an alarm has been tripped. Pressing the set button will mute the alarm temporarily. However, muting the alarm will not resolve the issue until the cause of the alarm has been resolved. When the alarm is tripped, the light will be on. An alarm code will be alternating with the display temperature. All alarms have automatic reset, given that the cause of the alarm has been resolved, the alarm will reset on its own. However, alarm "CHt" will need to be manually reset. To reset the CHt alarm, simply turn off the controller by pressing the "^" button and holding for 3 seconds. Turning on the controller again will reset the CHt alarm.

Table 4. Alarm Codes

Alarm Code	Buzzer and Alarm Relay	LED	Description	Reset?	Parameters Involved with Alarm Cause
E0	active	on	probe 1 error = control	automatic	
E1	not active	on	probe 1 error = defrost	automatic	d0=0/1/4, F0=1
E2	not active	on	probe 1 error = condenser/product	automatic	A4=10
IA	active	on	external alarm	automatic	A4=1, +A7
dOr	active	on	open door alarm	automatic	A4=7/8, +A7
LO	active	on	low temperature alarm	automatic	AL, Ad

HI	active	on	high temperature alarm	automatic	AH, Ad
EE	not active	on	unit parameter error	not possible	
EF	not active	on	operating parameter error	manual	
Ed	not active	on	defrost running	on first defrost ended correctly	dP, dt, d4, A8
dF	not active	off	defrost running	automatic	d6=0
cht	not active	on	dirty condenser pre-alarm	automatic	A4=10
CHT	active	on	dirty condenser alarm	manual	A4=10
EtC	not active	on	clock alarm	by setting the time	if bands active

Detailed Description of Alarm

LED flashing

The activation of the corresponding function is delayed by a timer, awaiting an external signal or disabled by another procedure that is already in progress. e.g. if is a continuous cycle in progress and a defrost is called, the latter will remain pending until the end of the continuous cycle, and the corresponding LED (defrost) will flash.

E0 steady or flashing

Control probe error:

- Probe not working : the probe signal is interrupted or short-circuited;
- Probe not compatible with the instrument;

The alarm signal E0 is steady if it is the only active alarm (the temperature value is not displayed), while it flashes if other alarms are active or the second probe is displayed.

E1 flashing

Evaporator probe or food conservation probe error:

- Probe not working, the probe signal is interrupted or short-circuited;
- Probe not compatible with the instrument;

E2 flashing

Condenser probe or food conservation probe error:

- Probe not working, the probe signal is interrupted or short-circuited;

- Probe not compatible with the instrument;

IA flashing

Immediate or delayed alarm from multifunction digital input:

- Check the multifunction input and parameters A4 and A7.

dOr flashing

Open door alarm:

- Check the multifunction input and parameters A4 and A7.

LO flashing

Low temperature alarm. The probe has measured a temperature lower than the set point by a value that exceeds parameter AL:

- check parameters AL, Ad and A0.

The alarm is automatically reset when the temperature returns within the set limits (see parameter AL).

HI flashing

High temperature alarm. The probe has measured a temperature higher than the set point by a value that exceeds parameter AH.

- Check parameters AH, Ad and A0.

The alarm is automatically reset when the temperature returns within the set limits (see parameter AH).

EE displayed during operation or on power-up

Unit parameter reading error. See Data errors.

EF displayed during operation or on power-up

Operating parameter reading error. See Data errors.

Ed flashing

The last defrost ended after exceeding the maximum duration rather than when reaching the end defrost set point.

• check parameters dt, dP and d4;

• check the effi ciency of the defrost.

The message disappears when the next defrost ends correctly.

dF flashing

Defrost running:

- This is not an alarm signal, but rather a message that the instrument is running a defrost. Only shown if d6= 0.

CHt flashing

Dirty condenser alarm:

- Check parameters A4, Ac, AE and Acd.

EtC flashing

Internal clock error.

Data error

In certain operating conditions, the instrument may detect errors in the data saved. These errors may compromise the correct operation of the instrument. If the microprocessor detects a data saving error, the display shows the message “EE”.

If the fault persists, the controller needs to be replaced. If, on the other hand, the message disappears, it can continue to be used. When “EE” error occurs frequently and/or remains for some time, the controller should be checked, as the original precision may not be guaranteed.

Controller Settings and Parameters

Parameter navigation

The operating parameters, modifiable using the keypad, are divided into two types: frequent (type F) and configuration (type C). Access to the latter is protected by password (default= 22) to prevent accidental or unauthorized modifications.

Accessing the type F parameters:

- Press the SET button for more than 3 s (if there are active alarms, mute the buzzer). The display shows the parameter code 'PS' (password);
- Use the UP and DOWN buttons to scroll the parameters. The LED corresponding to the category of parameters will be on (see Table 8);
- Press SET to display the value associated with the parameter
- Increase or decrease the value using the UP or DOWN button respectively;
- Press SET to temporarily save the new value and display the parameter again;
- Repeat the procedure for any other parameters that need to be modified;
- Press the SET button for more than 3 s to permanently save the parameters and exit the parameter setting procedure.

Accessing the type C parameters:

- Press the SET button for more than 3 s (if there are active alarms, mute the buzzer), the display shows the parameter code "PS" (password);
- Press the SET button to access the password setting;
- Use the UP and DOWN buttons to scroll the numbers until displaying "22" (password to access the parameters);
- Press the SET button to confirm the password;
- Use the UP and DOWN buttons to scroll the parameters. The LED corresponding to the category of parameters will be on (see Table 8);
- Press SET to display the value associated with the parameter;
- Increase or decrease the value using the UP or DOWN button respectively;
- Press SET to temporarily save the new value and display the parameter again;
- Repeat the procedure for any other parameters that need to be modified;
- Press the SET button for more than 3 s to permanently save the parameters and exit the parameter setting procedure.

WARNING:

If no button is pressed for 60's, all the changes made to the parameters, temporarily saved in the RAM, will be cancelled and the previous settings restored.
The dAY, hr, Min parameters are not restored, as these are saved instantly when entered.
If power is disconnected from the instrument before saving the settings (pressing the SET button for 3 s), all the changes made to the parameters and temporarily saved will be lost.

Table 5. Category of parameters.

Category	Initial	Icon
Probe parameters	/	-
Control parameters	r	-
Compressor parameters	c	
Defrost parameters	d	

Category	Initial	Icon
Alarm parameters	A	
Fan parameters	F	
AUX output configuration parameters	H1	AUX
RTC parameters	-	

Reset to Default Parameters

WARNING:

- *Running this procedure overwrites any custom parameter settings.*
- To reset the default parameters:
- Disconnect power from the instrument;
- Reconnect power while holding the SET and DOWN buttons;
- The display will show the message “CF”;
- After a few seconds the instrument starts operating with the default configuration. Any different parameter settings will need to be updated.

List of Controller Parameters

Codes	Description	Type	Min	Max	UOM	Defaults	
						Low temp.	Med temp.
PS	password	F	00	+199	-	22	22

/	**PROBE PARAMETERS**						
/2	probe measurement stability	C	1	15	-	4	4
/4	select probe displayed	F	1	3		1	1
/5	select ℃/°F (0=℃, 1=°F)	C	0	1	flag	1	1
/6	disable decimal point	C	0	1	flag	0	0
/7	enable probe 2 alarm (model M only)	C	0	1	0	0	0
/C1	probe 1 calibration	F	-50	+50	°F	0	0
/C2	probe 2 calibration	F	-50	+50	°F	0	0
/C3	probe 3 calibration	F	-50	+50	°F	0	0
r	**CONTROL PARAMETERS**						
St	control temperature set point	S	r1	r2	°F	4	4
r1	minimum set point value	C	-50	r2	°F	-58	-58
r2	maximum set point value	C	r1	150	°F	302	302
r3	select operating mode (0=direct+defrost , 1=direct , 2=reverse)	C	0	2	flag	0	1
r4	automatic night-time set point variation	C	-50	+50	°F	3	3
rd	control differential	F	0	19	°F	2	2
c	**COMPRESSOR PARAMETERS**						
c0	compressor and fan start delay on power-up	C	0	100	min	2	2
c1	minimum time between consecutive compressor starts	C	0	100	min	2	2
c2	minimum compressor off time	C	0	100	min	2	2
c3	minimum compressor on time	C	0	100	min	2	2
c4	compressor on time with duty setting	C	0	100	min	0	0
cc	continuous cycle duration	C	0	15	hours	4	4
c6	temperature alarm bypass after continuous cycle	C	0	15	hours	2	2

d	**DEFROST PARAMETERS**						
d0	type of defrost (0 = heater by probe, 1 = hot gas by probe, 2 = heater by time, 3 = hot gas by time, 4 = heater by time with temp. control)	C	0	4	flag	2	
dI	interval between defrosts	F	0	199	hours	4	
dt	end defrost temperature set point	F	-50	+130	°F		
dP	maximum defrost duration	F	1	199	min	20	
d4	defrost when the instrument is switched on (0=no, 1=yes)	C	0	1	flag	0	0
d5	defrost delay on power-up or when enabled by digital input	C	0	199	min	0	0
d6	disable temperature display during defrost (0=no, 1=yes)	C	0	1	flag	0	0
dd	dripping time	F	0	15	min	4	0
d8	alarm bypass time after defrost	F	0	15	hours	1	0
d9	defrost priority over compressor protectors (0=no, 1=yes)	C	0	1	flag	0	0
d/	display defrost probe temperature	F			°F		
dC	time base (for defrost only : 0 = hr/min , 1 = min/s)	C	0	1	flag	0	
A	**ALARM PARAMETERS**						
A0	alarm and fan temperature diff erential	C	-20	+20	°F	0	0
AL	low temperature alarm threshold/deviation (AL= 0 : alarm disabled)	F	-50	+250	°F	0	0
AH	high temperature alarm threshold/deviation (AH= 0 : alarm disabled)	F	-50	+250	°F	0	0
Ad	low and high temperature alarm delay	C	0	199	min	0	0

A4	digital input configuration 0 : input not active 1 : exter. alarm, instant (A7=0) or delayed (A7>0) 2 : enable defrost (open=disabled) 3 : start defrost on closing 4 : curtain switch or night-time operation (open=normal set point) 5 : remote ON/OFF (open=OFF) 6 : AUX output control [H1=3] (open=AUX de-energised) 7 : AUX output [H1=3]+FAN OFF control (closed)(open=AUX energised) 8 : AUX output [H1=3]+FAN OFF control (closed) + COMP. OFF control (closed) (open=AUX energised) 9 : select direct/reverse operation r3=0 → open=direct + defrost, closed=reverse r3=1/2 → open=direct, closed=reverse 10 : condenser probe 11 : product probe	C	0	11	-	5	5
A7	external alarm detection delay	C	0	199	Min	0	0
A8	enable alarm ”Ed” : end defrost by timeout (1 = enabled)	C	0	1	-	0	0
Ac	high condenser temperature alarm	C	-50	+250	°F	70	70
AE	high condenser temperature alarm differential	C	0.1	20.0	°F	5	5
Acd	high condenser temperature alarm delay	C	0	250	min	0	0
F	**FAN PARAMETERS**						
F0	fan management (0 = fans on, 1 = controlled based on parameter F1)	C	0	1	-	0	0

F1	evaporator fan control set point	F	-50	+130	℃/°F	5	5
F2	fans OFF when compressor OFF (0=ON , 1=OFF)	C	0	1	-	1	1
F3	evaporator fan status during defrost (0: FAN ON, 1: FAN OFF)	C	0	1	-	1	1
Fd	post-dripping time	F	0	+15	min	1	1
H	**OTHER SETTING**						
H0	serial address	C	0	199	-	1	1
H1	AUX output confi guration 0 : no function associated with the output 1 : alarm output usually energized 2 : alarm output usually de-energized 3 : auxiliary output driven by digital input [A4=6/7/8] digital input OPEN = AUX de-energised digital input CLOSED = AUX energised	C	0	1	flag	1	1
H2	enable keypad (0=disabled, 1=enabled, 2=enabled except for ON/OFF)	C	0	2	flag	1	1
H4	disable buzzer (0=enabled, 1=disabled)	C	0	1	-		
H5	key ID code from supervisor	F	-99	+99	-		
EZY	select Easy Set according to the model	C	0	4	-	1	2

General System Troubleshooting Guide

Compressor will not run/start

- Main switch open. Check power to unit
  - Close switch or apply power
- Blown Fuse
  - Before replacing the fuse, diagnose the system for overloading. check for any shortages or grounds in the electrical circuit
- Check for any loose wires
  - Check all wire connections and secure/tighten connections if any are found loose.
- Check contactor or contactor coil
  - Replace the contatctor
- Check safety switches
  - Replace if switch is defective
- Thermal overload switch
  - Overload switches will automatically reset. Diagnose for problems after the switch automatically resets.
- Check for motor electrical issues
  - Check for locked rotors, grounds, shortages or burn outs.
- System does not require cooling
  - Wait until system to call for cooling

Compressor is noisy

- Wrong/reversed Phasing (Only 3 Phase)
  - Fix Phasing
- Crankcase flooded with refrigerant
  - Check the TXV
- Defective or worn compressor.
  - Replace the compressor

High Discharge/ Liquid Pressure

- Check the condenser fan motor
  - Test the electrical circuit. Replace motor if defective
- Condenser coil possibly dirty
  - Clean the condenser coil
- System is overcharged (refrigerant)
  - Reclaim and recharge proper amount of refrigerant
- Non condensables
  - Filter out non condensables.

Low Discharge/ Liquid Pressure

- System is low on refrigerant
  - Check for leaks in the system before adding refrigerant charge. Repair any leaks found
- Low Suction pressure
  - Check below for solutions to low suction pressure

High Suction Pressure

- Undersized equipment or excessive load
  - Add equipment or reduce load
- Expansion valve is overfeeding
  - Check location of remote bulb and regulate superheat

Compressor Thermal Overload Tripped

- System Operating Outside Designed Conditions
  - Add equipment to recover design conditions
- System Overcharged
  - Reclaim some refrigerant to adjust to proper amount
- Condenser coil dirty
  - Clean coils

Room Temperature is too high

- Evaporator fan motor not running
  - Check electrical circuit. Replace fan motor if defective
- Evaporator coil dirty or iced up
  - Clean coils or defrost manually
- System low on refrigerant charge
  - Check for leaks in the system before adding refrigerant charge. Repair any leaks found
- Thermostat set too high
  - Adjust thermostat

Evaporator coil will not clear after defrost cycle

- Defective defrost controller
  - Replace defrost controller
- Not enough defrost cycles or short defrost duration
  - Adjust defrost duration or adjust controller for additional defrost cycles
- Defrost sensor defective or loose
  - Secure sensor if loose or replace if defective (open windings)

Frost forms on the ceilings around the vent and one the grille

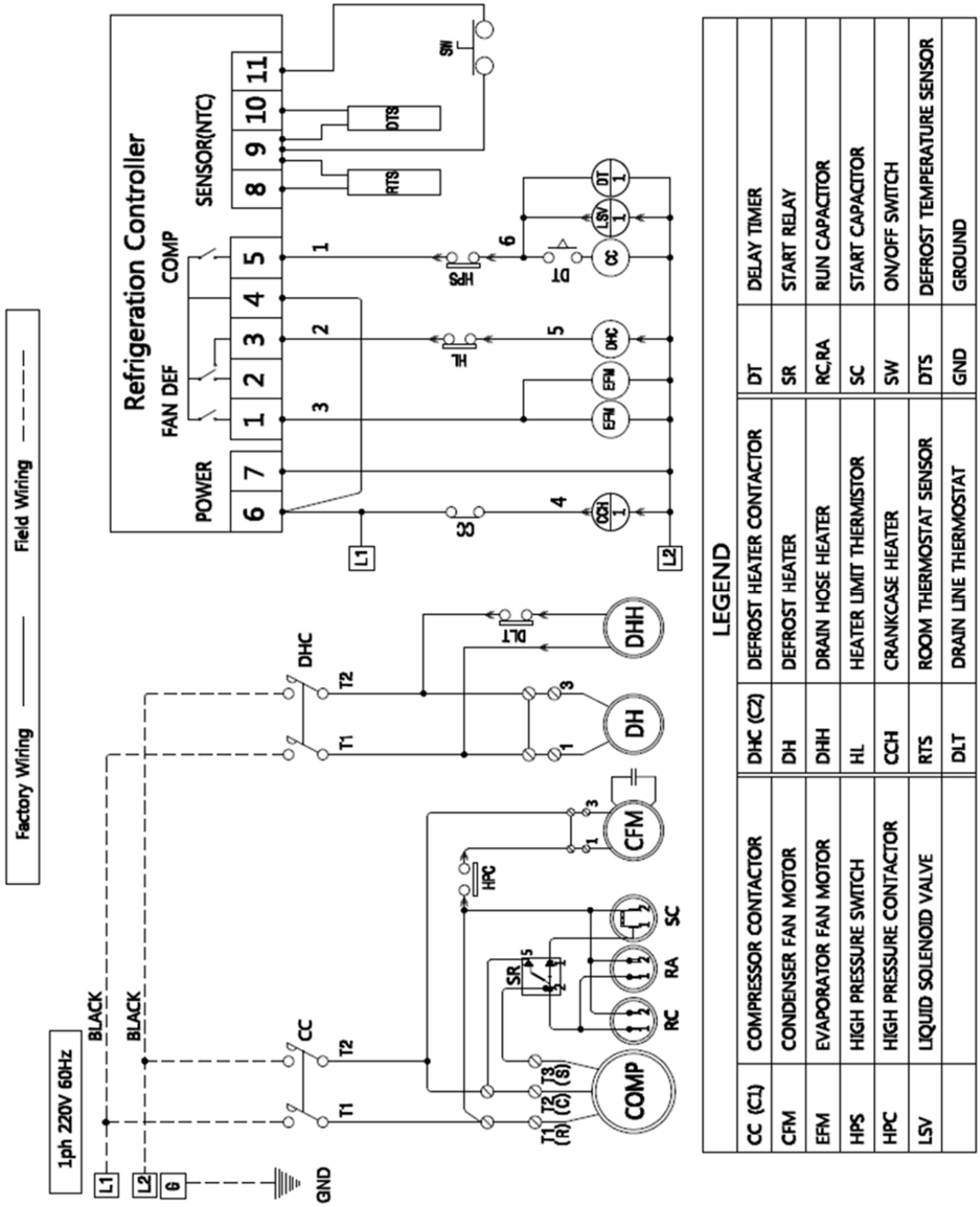
- Too many defrost cycles or defrost duration is too long
  - Adjust defrost duration or adjust controller for additional defrost cycles
- Fan delay fails to delay fans after defrost cycle
  - Adjust fan delay setting in the controller or replace coil sensor if defective.
- Defrost sensor defective or loose
  - Secure coil sensor if loose or replace if defective (open windings)

Evaporator Drain Pan is Accumulating Ice

- Defective drain heater
  - Replace defrost controller
- Drain pipe is clogged
  - Adjust defrost duration or adjust controller for additional defrost cycles
- Defective defrost controller
  - Secure sensor if loose or replace if defective (open windings)
- Unit is not leveled properly
  - Refer to installation guide for proper leveling. Adjust level according to guide

Wiring Diagrams

IQUBE Side Mount unit IQS020XRB, IQS030XRB



Warranty Statement

Infinity Refrigeration warrants to its purchasers that IQUBE, except service parts, will comply to the manufacturer's specification and will be free of defects in materials and workmanship. Should any defects occur, Infinity Refrigeration will correct the defects subject to the following terms.

Labor: For a period of **ONE YEAR (12 months)** from date of installation or **18 months** from the date of factory shipment, Infinity Refrigeration will cover by the limited labor warranty (stated in labor warranty statement).

Parts: For a period of **TWO YEARS (24 months)** from the date of installation or **30 months** from date of factory shipment, Infinity Refrigeration will supply new or at its option, rebuild replacement parts.

Compressor: For a period of **TWO YEARS (24 months)** from date of installation or **30 months** from date of factory shipment, Infinity refrigeration will supply a new compressor one time. The warranty period for the compressor can be **extended for 3 years** (can be purchased separately). Under the 3 year extended compressor warranty, Infinity Refrigeration will supply a new compressor one time.

THE WARRANTY DOES NOT COVER THE FOLLOWING:

- Freight/ shipping damage.
- Un-packaging/ removal of protective shipping material.
- Damage during installation/handling process.
- Operation exceeding manufacturer's limitations as specified in the owner's manual.
- Any owner other than the original purchaser/owner.
- Services required as a result of insufficient or incorrect AC supply voltage. (Voltage should be within 10% +/- of specified voltage on the name plate.
- Malfunction due to tampering with the manufacturer's controller settings.
- Modifications to factory wiring and incorporation of additional parts without written approval.
- Units purchased from non authorized dealers or not directly from Infinity Refrigeration
- Service performed by a non-authorized/qualified service technician.
- Indirect, consequential and special damages, except as required by Federal or State laws.
- Failure, loss, damage or personal injury due to; accident, neglect or abuse by the end user.
- Any maintenance required as stated in the installation/service manual.
- Damage from Act of God (IE: floods, storms and other natural disasters).

THE WARRANTY AND REMEDY STATED ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME LAWS DO NOT ALLOW EXCLUSION OF IMPLIED WARRANTY, THEREFORE THIS WARRANTY SHALL BE DEEMED MODIFIED TO BE CONSISTENT WITH SUCH LAWS.

Some states do not allow limitation on how long an implied warranty lasts; therefore these limitations or exclusions may not apply to you. This limited warranty gives you specific legal rights. You may also have other rights that may vary from state to state. This warranty applies to the United States, Canada.