



Controlled cooling, *always*



CRC-2072

INSTRUCTION MANUAL

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SAFETY INFORMATION

IMPORTANT INFORMATION

Read these instructions carefully and visually inspect the equipment to familiarize yourself with the device before attempting to install it, put it into operation, overhaul or service it. The following warning messages may appear anywhere in this documentation or on the equipment to warn of potential dangers or to call attention to information that can clarify or simplify a procedure.



The addition of this symbol to a danger warning label indicates the existence of an electrical danger that could result in personal injury should the user fail to follow the instructions.



This is the safety warning symbol. It is used to warn the user of the potential dangers of personal injury. Observe all the safety warnings that follow this symbol to avoid the risk of serious injury or death.

DANGER indicates a dangerous situation that, unless avoided, **will result** in death or serious injury.

WARNING indicates a potentially dangerous situation which, if not avoided, **could result in** death or serious injury.

CAUTION indicates a potentially dangerous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE used in reference to procedures not associated with physical injuries.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.

No responsibility is assumed by PVR Controls for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

PERSONNEL QUALIFICATION

Only personnel with suitable training and an in-depth knowledge and understanding of the contents of this manual and any other documentation relevant to the product are authorized to work on and with this product. Qualified personnel must be capable of identifying any dangers which may arise from the parameterization or changing of parameter values, and from the use of mechanical, electric and electronic equipment in general.

Additionally, they must be familiar with the personal safety laws, provisions and regulations which must be observed during system.

PRODUCT RELATED INFORMATION



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.

- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Before powering the device back up, fit back and fix all the covers, hardware components and wiring.
- Check the earthing connections on all earthed devices.
- Use only the specified voltage when operating this equipment and any associated products.
- Comply with all standards regarding accident protection and local applicable safety directives.

Failure to follow these instructions will result in death or serious injury.



HAZARD OF OVERHEATING AND/OR FIRE

- Do not use with loads other than those indicated in the technical specification.
- Do not exceed the maximum permitted current; for higher loads, use a meter with sufficient power capacity.

Failure to follow these instructions will result in death or serious injury.

This equipment is designed to operate outside all hazardous locations and is not to be used in applications which generate (or could potentially generate) hazardous environments. Install this equipment only in areas and applications known to be free from dangerous atmospheres at all times.



POTENTIAL FOR EXPLOSION

- Install and use this equipment in non-hazardous locations only.
- Do not install or use this equipment in applications which could generate hazardous atmospheres, such as applications which use flammable refrigerants.

Failure to follow these instructions will result in death or serious injury.



UNINTENDED EQUIPMENT OPERATION

- The equipment signal cables (probes, digital inputs, communication, and the relative power supplies) must be laid separately from the power cables.
- Every end application of this device must be tested individually and completely in order to check its proper operation before putting it in service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

PERMITTED USE

The device must be installed and used in accordance with the instructions provided. In particular, parts carrying dangerous voltages must not be accessible under normal conditions.

It must be adequately protected from water and dust with regard to the application, and must only be accessible using tools or a keyed locking mechanism (with the exception of the front panel).

The device is suitable for use in household refrigeration appliances and/or similar equipment.

PROHIBITED USE

Any use other than that expressly permitted is prohibited.

The relay contacts provided are mechanical and subject to failure; any protection devices required by product standards, or suggested by good practice in view of obvious safety requirements, must be installed externally of the device.

LIABILITY AND RESIDUAL RISKS

The liability of PVR Controls is limited to the correct and professional use of the product according to the directives referred to herein and in the other supporting documents, and does not cover any damage (including but not limited to) the following causes:

- Unspecified installation/use and, in particular, in contravention of the safety requirements of the laws in force in the country of installation and/or specified in this document;
- Use on equipment which does not provide adequate protection against electrocution, water, and dust in the actual installation conditions;
- Use on devices which allow access to dangerous parts without the aid of a keyed or tooled locking mechanism;
- Tampering with and/or modification of the product;
- Installation/use on equipment that does not comply with the regulations in force in the country of installation.

DISPOSAL



The equipment (or product) must be subjected to separate waste collection in compliance with the local laws on waste disposal.

DATE OF PRODUCTION

The date of production is shown on the device label, indicating the week and year of production (DD-MM-YY).

1. INTRODUCTION

1.1. GENERAL DESCRIPTION

The CRC-2072 is 3 phase Cold Room Electrical Panel for up to 10HP static or ventilated with Off-Cycle, Electrical or Hot gas defrost control. The instrument controls positive or negative Cold Rooms and is capable of managing Two Evaporator and Two defrost.

CRC-2072 has 9 Relays and 9 Digital Inputs. Model CRC-2072 is available with Real Time clock for Defrost, Energy Saving, Data Logging & HACCP Event Logging. SD Card for Data Downloading.

The instrument can be connected to Wi-Fi for IoT & Web Server to view & modify parameters. It has 2 port to connect with Modbus via RS-485 plug-in.

2. TECHNICAL SPECIFICATIONS

2.1. TECHNICAL DATA

Front panel protection rating	: IP65
Classification	: Electronic automatic control device (not safety device) for stand-alone installation
Installation	: Wall mount
Panel use	: Internal use
Panel type	: Fixed panel
Maximum installation site altitude	: 2000 m
Weight	: < 2 kg
Over-voltage category	: II
Nominal pulse voltage	: 2500 Vac
Measuring Range	: -50.0 to 50.0 °C
Operating temperature	: 0°C to 60°C (non-condensing)
Storage temperature	: -20...85°C
Operating humidity	: 10...90% non-condensing
Storage humidity	: 10...90% non-condensing
Power supply	: 3 Phase 4 Wire 440 Vac ±10 % 50/60 Hz
Power consumption	: 11 VA max – check this
Controller	: CRC-2072
Digital outputs (relay)	: Refer to the label on the device
Fire resistance category	: D
Software class	: A

2.2. ELECTRICAL SPECIFICATIONS

Rated voltage (Un)	: 230/400~240/415
Operating voltage (Ue)	: 230/400~240/415
Rated insulation voltage (Ui)	: Chint make 500 V (IEC/EN 60898-1) : C&S make 6600 V (IEC/EN 60898-1)
Rated impulse withstand voltage (1.2/50) (Uimp)	: Chint 6000 V (IEC/EN 60898-1) : C&S 4000 V (IEC/EN 60898-1)
Rated panel current (InA)	: 40A (IEC/EN 60898-1)
Rated circuit current (InC)	: 40A (IEC/EN 60898-1)
Conditioned short circuit current (Icc)	: 10 kA
Rated frequency (fn)	: 50/60 Hz

2.3. FURTHER INFORMATION

2.3.1. INPUT CHARACTERISTICS

Temperature Range	: -50.0 to 50.0°C (NTC: Room, Aux, HACCP, Evap-1 & Evap-2)
Accuracy	: +/-1°C
Resolution	: 0.1°C/1°C
Current Inputs	: 0 to 20.0A (CT: Comp R-Phase, Y-Phase, B-Phase, Evap-1 & Evap-2)
Accuracy	: +/- 0.3A
Resolution	: 0.1A
Digital inputs (230V)	: 230Vac (HP, LP, SPPR, AUX1, AUX2, R-Phase, Y-Phase, B-phase)
Digital input (Pot. Free)	: Door Input

2.3.2. OUTPUT CHARACTERISTICS

OUT1 (Relay)	: Compressor, 5A/230VAC
OUT2 (Relay)	: Condenser Fan, 20(8)A/230VAC
OUT3 (Relay)	: Evaporator Fan1, 5A/230VAC
OUT4 (Relay)	: Evaporator Fan2, 5A/230VAC
OUT5 (Relay)	: Defrost1, 5A/230VAC
OUT6 (Relay)	: Defrost2, 5A/230VAC
OUT7 (Relay)	: LSV, 10A (1)/230VAC
OUT8 (Relay)	: Light, 5A/230VAC
OUT9 (Relay)	: Alarm, 5A/230VAC
OUT10 (Buzzer)	: Buzzer (Internal)

2.3.3. OTHER CHARACTERISTICS

RS-485	: 2Nos. (For BMS & Remote Display)
Wi-Fi	: For Web server & IoT
SD Card	: For Downloading logged Data & Fault Log from Flash memory
RTC	: Real Time Clock for Defrost, Energy saving, Data logging & Display in HH:MM

2.3.4. MECHANICAL CHARACTERISTICS

Casing	: ABS, PC
Dimensions (LXW)	: Front: 400 X 300 mm, Depth: 135 mm
Terminals	: Screw

NOTE: The technical specifications stated in this document regarding the measurement (range, accuracy, resolution, etc.) refer strictly to the instrument and not to any accessories provided, such as the probes.

3. MECHANICAL INSTALLATION

3.1. BEFORE STARTING

Before starting to install your system, read this chapter carefully. Caution must be exercised concerning compliance with all safety information, other electrical requirements or laws which may apply to your machine or process when using this equipment.



REGULATORY INCOMPATIBILITY

Make sure that all equipment used and the systems designed comply with all applicable local, regional and national laws.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

3.2. DISCONNECTION FROM THE POWER SUPPLY



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Before powering the device back up, fit back and fix all the covers, hardware components and wiring.
- Check the earthing connections on all earthed devices.
- Use only the specified voltage when operating this equipment and any associated products.
- Comply with all standards regarding accident protection and local applicable safety directives.

Failure to follow these instructions will result in death or serious injury.

3.3. OPERATING ENVIRONMENT

Flammable refrigerant gases

This equipment is designed to operate outside all hazardous locations and is not to be used in applications which generate (or could potentially generate) hazardous environments. Install this equipment only in areas and applications known to be free from dangerous atmospheres at all times.



POTENTIAL FOR EXPLOSION

- Install and use this equipment in non-hazardous locations only.
- Do not install or use this equipment in applications which could generate hazardous atmospheres, such as applications which use flammable refrigerants.

Failure to follow these instructions will result in death or serious injury.

For information regarding the use of control equipment in applications capable of generating hazardous materials, please contact the relevant national regulatory bodies or certifying authorities.



UNINTENDED EQUIPMENT OPERATION

Install and use the equipment in compliance with the conditions described in the Technical Specifications chapter.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

3.4. COMMENTS CONCERNING INSTALLATION



UNINTENDED EQUIPMENT OPERATION

- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Do not use this equipment in safety-critical machine functions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The devices are designed for wall mounting.

When handling the equipment, use caution to avoid damage caused by electrostatic discharge. In particular, the unshielded connectors and in certain cases the open circuit boards are vulnerable to electrostatic discharge.



UNINTENDED EQUIPMENT OPERATION DUE TO ELECTROSTATIC DISCHARGE

- Keep the equipment in the protective packaging until ready for installation.
- The equipment must only be installed in type-approved casing and/or in points that prevent unauthorized access and provide protection from electrostatic discharge.
- When handling sensitive equipment, use an antistatic bracelet or equivalent earthed protective device against electrostatic discharge.
- Before handling the equipment, always discharge the static electricity from the body by touching an earthed surface or type-approved antistatic mat.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Fig. 1: Pull up transparent cover protecting the MCB & LVM.



Fig. 2: Remove screw cover on the right hand side.



Fig. 3: Undo the 4 fixing screws at the front of the panel.



Fig. 4: Close the transparent protection cover and open the front of the panel, lift it and bring the two hinges out as far as they will go.



Fig. 5: Bend the hinges and rotate the front panel by 180° downwards to get access inside the panel.

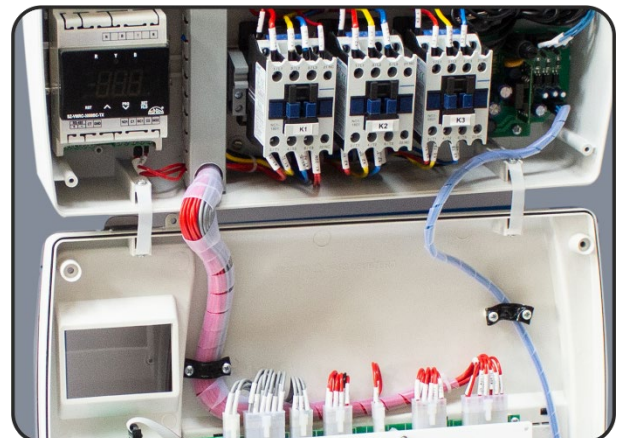


Fig. 6: Using the mounting template make four fixing holes on the wall.

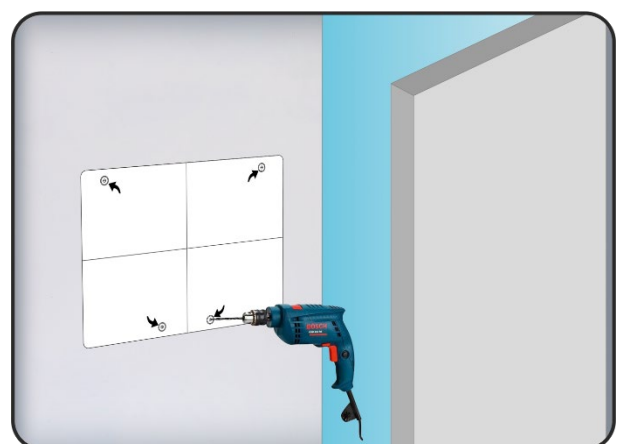


Fig. 7: Using holes made as per the template
Fix the bottom with the supplied screws or
of a length suitable for the thickness of the
wall to which the panel will be attached.

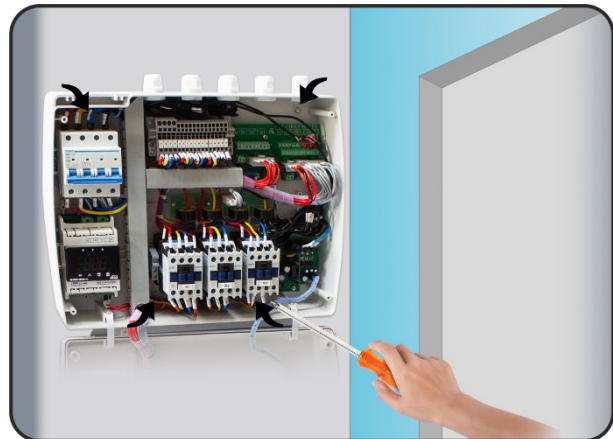
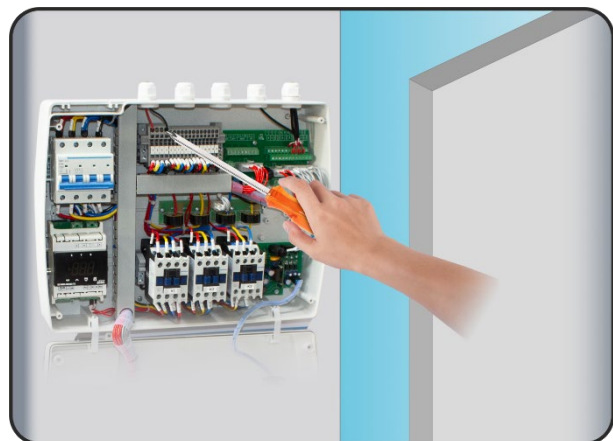


Fig. 8: Now make the electrical wirings as
Indicated.



4. ELECTRICAL CONNECTIONS

4.1. WIRING PRACTICES

The following information describes the guidelines for wiring and the associated best practices to follow when using the device.



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Before powering the device back up, fit back and fix all the covers, hardware components and wiring.
- Check the earthing connections on all earthed devices.
- Use only the specified voltage when operating this equipment and any associated products.
- Comply with all standards regarding accident protection and local applicable safety directives.

Failure to follow these instructions will result in death or serious injury.



HAZARD OF OVERHEATING AND/OR FIRE

- Do not use with loads other than those indicated in the technical specification.
- Do not exceed the maximum permitted current; for higher loads, use a meter with sufficient power capacity.

Failure to follow these instructions will result in death or serious injury.

This equipment is designed to operate outside all hazardous locations and is not to be used in applications which generate (or could potentially generate) hazardous environments. Install this equipment only in areas and applications known to be free from dangerous atmospheres at all times.



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- Do not install or use this equipment in applications which could generate hazardous atmospheres, such as applications which use flammable refrigerants.

Failure to follow these instructions will result in death or serious injury.

For information regarding the use of control equipment in applications capable of generating hazardous materials, please contact the relevant national regulatory bodies or certifying authorities.

4.1.1. WIRING GUIDELINES

The following regulations must be complied with for wiring:

- Make connections as short as possible and do not wind them around electrically connected parts.
- Check that the operating conditions and surroundings comply with the specification values.
- Use wires of the correct diameter and suited to the voltage and current requirements.
- Use copper conductors (obligatory).



UNINTENDED EQUIPMENT OPERATION

- The equipment signal cables (probes, digital inputs, communication, and the relative power supplies) must be laid separately from the power cables.
- Every end application of this device must be tested individually and completely in order to check its proper operation before putting it in service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

4.2. SERIAL CONNECTIONS

The controller can be connected to Wi-Fi for BMS / Modbus remote control systems by a direct RS-485 connection using the RS-485 optional plug-in module.

4.2.1. RS-485 CONNECTION

- Use a “**twisted pair**” shielded cable with two conductors with cross-section 0.5 mm² (AWG 20), plus sheath, (typical impedance 120 Ω) with PVC sheath.
- Follow the applicable regulations for laying and connecting the cables. Extra care must be taken in separating data transmission circuits from power lines.
- The length of the RS-485 network which can be connected directly to the controller is 1000 m. This length can be extended and the number of devices for each channel increased using appropriate repeater modules.
- Bus Loading: 1/8-unit load.
- RS-485 standards suggests that its nodes be networked in a daisy-chain.
- RS-485 standard recommends to attach the 120 Ω 1/4W resistors between the “+” and “-” terminals on the interface and the last controller in each branch of the network.
- The RS-485 physical level can be used for Modbus SL communication.
- Concurrent communication of different protocols on the same serial port is **NOT** permitted.
- Pay special attention when connecting serial lines. Incorrect wiring may cause the equipment to stop working.

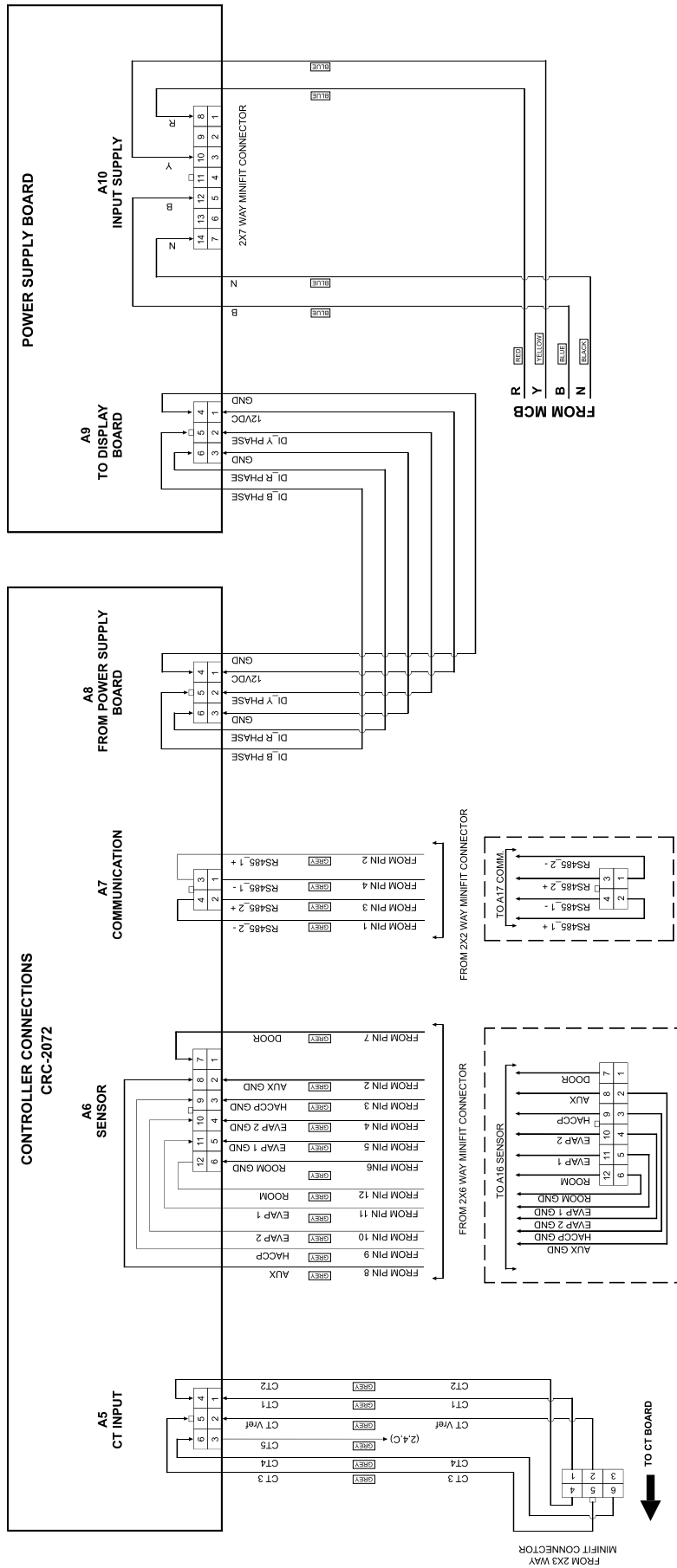
NOTICE

INOPERABLE DEVICE

Do not communicate simultaneously via Modbus protocols on the same serial port.

Failure to follow these instructions can result in equipment damage.

4.3. WIRING DIAGRAM



4.3.1. TERMINALS

CONNECTOR TERMINAL

1.	R0	MAIN INCOMING SUPPLY
2.	Y0	
3.	B0	
4.	N0	
5.	COMP R	COMP.
6.	COMP Y	
7.	COMP B	
8.	EVAP R	EVAP.
9.	EVAP Y	
10.	EVAP B	
11.	N	
12.	DEF R	DEFROST
13.	DEF Y	
14.	DEF B	
15.	N	
16.	CCH	CCH
17.	N	

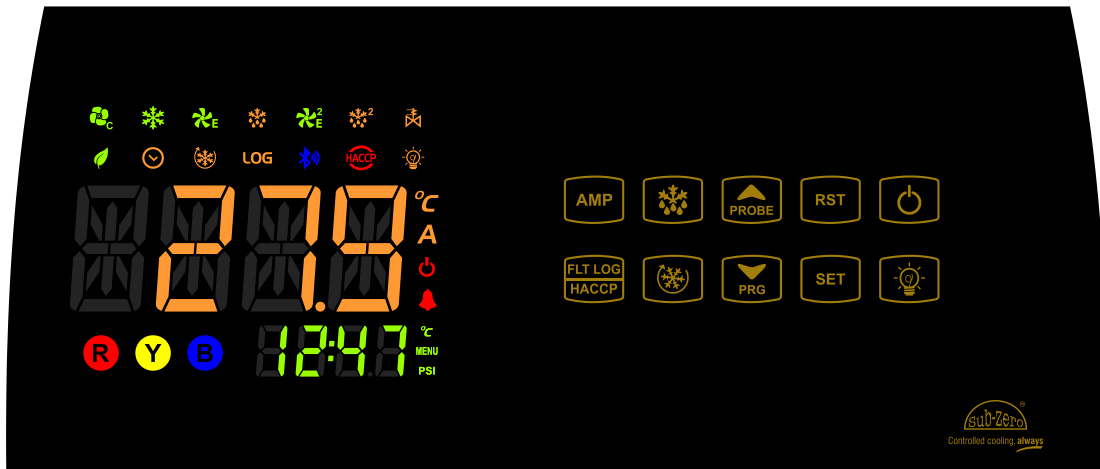
SCREW TERMINAL

18.	N	CONDENSER
19.	COND	
20.	N	LIGHT
21.	LIGHT	
22.	N	ALARM
23.	ALARM	
24.	ALARM NC	








25.	N	LSV
26.	LSV	
27.	HP	HP
28.	L	
29.	LP	LP
30.	L	
31.	AUX 2	AUX 2
32.	L	
33.	AUX 1	AUX 1
34.	L	
35.	-	-
36.	-	-
37.	DOOR	DOOR
38.	DOOR GND	
39.	AUX	AUX
40.	AUX GND	
41.	HACCP	HACCP
42.	HACCP GND	
43.	EVAP 1	EVAP 1
44.	EVAP 1 GND	
45.	ROOM	ROOM
46.	ROOM GND	
47.	RS485 2+	RS485-2
48.	RS485 2-	
49.	RS485 1+	RS485-1
50.	RS485 1-	












5. USER AND START-UP INTERFACE

5.1. KEYS & DISPLAY

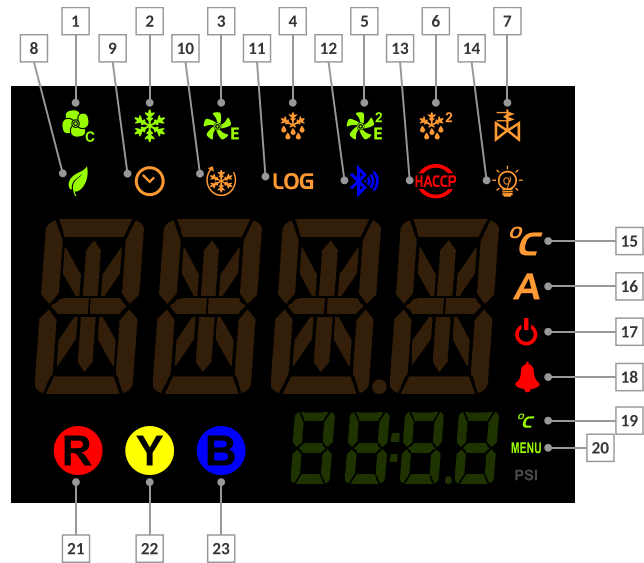


5.1.1. KEYS















No.	Key	Touch and hold in seconds	Description
1		2	To enter into Program Mode
		-	In Program/ HACCP/ RTC/ Set mode: Scroll parameters DOWNWARDS & DECREASES parameter value.
2		2	To Enter into Probe Display Mode (Room, Aux, Average, Evap1, Evap2 Temperature)
		-	In Program/HACCP/RTC/Set mode: Scroll parameters UPWARDS & INCREASES parameter value.
3		2	To Enter into Set Mode
		-	In Program/HACCP/RTC/Set mode: To select Parameter & To save parameter value.
4		1	To Mute Alarm and Buzzer.
		2	To Reset fault manually (For HP, LP, AUX1, AUX2, COMP OL/UL, Evap1 OL/UL, Evap2 OL/UL Manual Reset)
		-	In Password mode to move back 1 by1 digit
		-	To Exit from Program/ Set/ HACCP/ RTC or any other mode.
5		0.5	To switched ON/OFF the Light.
6		2	To switched ON/OFF the controller when PO is set to > DIS
7		2	To Start/Stop Defrost Manually when P7>0

No.	Key	Touch and hold in seconds	Description
8		2	To Start/Stop Quick Freeze Mode when QFD > 0.
9		2	To enter into Fault Log & HACCP Fault Log Display Mode.
10		2	To View Current of Compressor R-Phase, Y-Phase, B-Phase, Evaporator1 & Evaporator2.
11		2	To Enter into HACCP Parameter mode.
12		2	To Enter into RTC Parameter mode.
13		2	To Display Software Version, Clear P6, Condenser, Evap1 & Evap2 Delay.
14		2	To send command to Run ESP Module in Web Server mode.
15		2	To view Highest & Lowest Temperature logged value.
16		2	Touch & Hold to check Elapsed time of P8 Frequency in Min/Hours.
17		-	To view CPS Parameter setting.
18		10	Touch & Hold to reset Wi-Fi password in Wi-Fi manager mode.

5.1.2. ICONS



No.	Icon	Status	Description	Related Parameters
1		ON	Condenser is ON	CND1, CND2
		OFF	Condenser is OFF	
2		ON	Compressor is ON	P6, SP, P4, E1, E2
		OFF	Compressor is OFF	
3		ON	Evaporator is ON	L0, L1, L2, L4, L6
		OFF	Evaporator is OFF	
		Flashing	Evaporator in delay	
4		ON	Defrost is ON	P7, P8, E0ST, L7, L8, L9, RDEF, RDFT
		OFF	Defrost is OFF	
		Flashing	Drip/Post Drip ON	E3, E4
5		ON	Evaporator-2 is ON	LN, L0-2, L1-2, L2-2, L4, L6
		OFF	Evaporator-2 is OFF	
		Flashing	Evaporator-2 in delay	
6		ON	Defrost-2 is ON	P7-2, P8, E0ST, L7-2, L8-2, L9-2, RDEF, RDFT
		OFF	Defrost-2 is OFF	
		Flashing	Drip/Post Drip ON	E3, E4
7		ON	LSV is ON	SVS, PDN
		OFF	LSV is OFF	
		Flashing	LSV in delay	
8		ON	Energy saving is ON	ERG, EDIF, ERST, ERSP
		OFF	Energy saving is OFF	

9		ON	Compressor is ON & in time delay for switching OFF or in time delay for Pump down	OT, PDN
		Flashing	Compressor is in Delay	P6
10		ON	Quick Freeze Mode ON	QFS
		OFF	Quick Freeze Mode OFF	
11	LOG	ON	Data Logging Activate	LOG, LOGT
		OFF	Data Logging Deactivate	
		Flash	Data is logged	LOGT
		Flashing	Data logging Error	DNLD, DNLA
12		ON	IoT Active	IOT
		OFF	IoT/Web Server Not Active	
		Flashing	Web Server Mode ON.	-
13		ON	HACCP program Mode	-
		Flash	HACCP Data Logged.	HCE, HINT
		ON	HACCP Fault Present	HCP2, HCP3, HTD
		Flashing	HACCP Data logging Error	HDNL, HDNA
14		ON	Light ON	LD, LSD
		OFF	Light OFF	
15		ON	Value indicates Temperature on 14-seg Display	-
16		ON	Value indicates Current	-
17		ON	Controller is ON	PO
		OFF	Controller is OFF	
18		ON	Fault is present	AL, BUZ
		OFF	Fault not present	
		Blinking	Fault Mute/Acknowledge	
19		ON	Value indicates Temperature on 7-seg Display	-
20	MENU	ON	Level-1 Programming Mode	-
		Blinking	Level-2 Programming, Set Mode, RTC Mode, HACCP Mode	-
21		ON	R-Phase present	RCF0
		OFF	R-Phase absent	
22		ON	Y-Phase present	YCF0
		OFF	Y-Phase absent	
23		ON	B-Phase present	BCF0
		OFF	B-Phase absent	

5.2. PRELIMINARY CONFIGURATIONS

After making the electrical connections, simply power up the device to start operation.

At first start-up, SubZero recommends that you:

1. Make sure the instrument is powered.
2. Make sure the display is working: when the controller is powered up, Display will flash for 6seconds & will show software version and model no.
3. Make sure there are no active alarms.
4. Configure the main parameters listed in the Level-1 & Level-2 Program mode menu to suit your requirements, as described below

5.2.1. OPERATION IN DEFAULT CONFIGURATION

The instrument is configured for negative cold. For positive cold, disable the Evaporator1 probe (set parameter L0 DIS) and EVAP1 Relay (Set L3=ON) to prevent continuous ventilation.

Compressor

The compressor is active if the cold room temperature measured control probe (**CPS** Parameter) exceeds the value of **SP + P4**. The compressor stops if the cold room temperature detected by control probe falls below the SP value. Set the **OT/P6** parameter to set time delay between compressor relay ON/OFF respectively for compressor's Protection.

Defrost

Defrost is by means of electric heaters (parameter **E2** = ELE) and the time counter is always active with the instrument switched on parameter **P8**>0.

Manual defrost

Manual defrost is activated by pressing and holding the DEF key.

If conditions are not right for defrosting, (e.g., the Evaporator probe temperature is higher than the defrosting end temperature) or parameter **P7**=0, the display will scroll the message, no action at defrost to indicate that the operation will not be performed.

Default defrost settings

P8 = 6 hours. interval between 2 defrost cycles

L7 = 4.0 °C. defrosting stop temperature. set by Evap2 Probe.

The Defrost cycle may terminate due to a timeout based on the parameter **P7** (default 30 min).

The EVAP1 Relay is activated when required, according to the delay and parameter settings.

Default fan settings

E3 = 1 min. Dripping time

L6 = OFF. Fans status during defrosting.

Light

The light is activated by pressing and holding the LIGHT key.

Light Relay is activated when the door is opened (LSD=ENAB). The light also switches on with the instrument in stand-by.

Alarm output

Alarm Output will be activated in the case of alarms, according to delays and parameter settings.

Evap2 & Def2 output

To activate EVAP2 & DEF2 set parameter LN=BOTH, Evaporator2 & Defrost2 related parameter can be view & modify.

Default settings for EVAP2 & DEF2

LN = ONE. No. of Evaporator











L0-2 = DIS. Evap2 Probe Enable/Disable.

L1-2 = 2.0 Evap2 Stop Temperature.

P7-2 = 30. Defrost2 Duration

L7-2 = 4.0 Defrost stop Temperature.

5.3. PROBE TEMPERATURE DISPLAY MODE

Display	Description
	On the main screen, Touch  key for 2 seconds to Enter into Probe Display Mode (Room, Aux, Average, Evap1, Evap2 Temperature) Use  /  key to scroll through all probe value Upwards /Downwards respectively.
	Scrolling message will appear ROOM PROBE & 27.5°C (This is applicable only If Parameter RMPB >DIS.) Touch  key for Auxiliary probe temperature.
	Scrolling message will appear AUX PROBE & 27.6°C (This is applicable only If Parameter AXPB >DIS.) Touch  key for Average temperature.
	Scrolling message will appear AVERAGE TEMP & 27.6°C (This is applicable only If Parameter CPS = AVG.) Touch  key for EVAP1 probe temperature.



Scrolling message will appear
 EVAP-1 PROBE & 27.4°C
 (This is applicable only If Parameter L0 = ENAB.)
 Touch key for EVAP2 probe temperature.



Scrolling message will appear
 EVAP-2 PROBE & 27.5°C
 (This is applicable only If Parameter L0-2 = ENAB.)
 Touch key for HACCP probe temperature.



Scrolling message will appear
 HACCP PROBE & 27.5°C
 (This is applicable only If Parameter HCE = ENAB.)
 Touch key for End Probe mode.



Scrolling message will appear
 END PROBE MODE & EP
 Touch to exit from Probe Display mode.

5.3.1. SET MODE PROGRAMMING

By way of example, we will change the Setpoint value from -18.0 degrees centigrade to -20.0 degrees centigrade.

Display	Description
	<p>NOTE: On the main screen, touch and hold key for 2 seconds to enter into Set mode. To Increase or Decrease parameter value touch the for min and max value touch the / key respectively. To set/save the changed value touch key. Display will show “-----” when parameter value is saved in the memory. Touch key for next option in the Set mode.</p>





Touch and hold key for 2 seconds to enter into set mode.
 Display will show .
 Touch or & Key to enter correct password.



After entering correct password, display will show **SP & CONTROL PROBE SET POINT**

Touch set key to view/change the SP parameter value.




To increase/decrease the SP Parameter value touch  /  key respectively.

To set/save the changed value touch Set key.

Display will show "-----" when parameter value is saved in the memory.




For next menu, touch  key, **QFS** will show on display and Scrolling message will appear.


QUICK-FREEZE SET POINT

Change the Parameter value as explained for Set point.











For next menu, touch  key, **EP** will show on display and Scrolling message will appear.


EXIT SET MODE

Touch  key to exit from Set mode


5.3.2. CURRENT DISPLAY MODE

Display	Description
	<p>On the main screen, Touch  key for 2 seconds to enter into Current Display mode. To view current value of R,Y,B, Evap1 & Evap2.</p> <p>Use  /  key to scroll through all Current Values as mentioned in below.</p>
	<p>Scrolling message will appear COMPR-PHASE CURRENT & 5.0 A</p> <p>Touch  key to view Y Phase current.</p>
	<p>Scrolling message will appear 5.1 A & COMP Y-PHASE CURRENT</p> <p>Touch  key to view B Phase current next.</p>




Scrolling message will appear
5.0 A & COMP 3-PHASE CURRENT
 Touch  key to view Evap-1 current next.



Scrolling message will appear
5.0 A & EVAP-1 CURRENT
 Touch  key to view Evap-2 current next.



Scrolling message will appear
5.0 A & EVAP-2 CURRENT
 (This is applicable only If Parameter LN=BOTH)
 Touch  key to select End menu option.





Scrolling message will appear
0.0 A & END CURRENT MODE
 Touch  key to exit from Current Display mode.



5.3.3. TEMPERATURE HIGHEST & LOWEST LOG MODE FOR CONTROL PROBE



Touch  &  key simultaneously for 2seconds to enter into Temperature log mode.



To Reset the Temperature log touch set key for 2seconds display will scroll message "TEMP LOG RESET".


Display	Description
	Display will show Lowest Temperature log value toggled with "CPLL" as below for 4sec.
	Display will show Highest Temperature log value toggled with "CPHL" as below for 4sec.

5.3.4. DATA LOG ERROR MODE

Touch  &  key for 4sec. to enter into Datalogging Error mode.

Touch  /  key to scroll through status upwards or downwards respectively as shown below.

To exit from this mode touch  key or  key when display shows **EP**.

Display	Descriptions	Status Toggle with Display Messages	Action If Error (ERR)
	General Data Log		To clear Data log Set Parameter DNLD to CLR
	General Alarm Log		To clear Alarm log Set Parameter DNLA to CLR
	Haccp Data Log		To clear HACCP Data log Set Parameter HDNL to CLR
	Haccp Alarm Log		To clear HACCP Alarm log Set Parameter HDNA to CLR
	Exit Data Log Error Mode		To exit touch set key.

6. PARAMETERS

6.1. HOW TO VIEW/MODIFY THE LEVEL-1 PARAMETERS

The 'User Level' parameters are the most useful ones. This document describes them in the Parameter Table section.

1. Touch & Hold **PRG** key for 2seconds to enter into Program mode level-1. Display will show "0000".
2. Touch **UP/DOWN** key to Increment/Decrement digit value then touch set key to change the value of next digit. Touch **RST** key to select previous digit to change the digit value.
3. Set correct password then touch set key to enter into Level-1 Program mode.
4. Display will show "P6" Parameter followed by level-1 all active parameters.
5. MENU ICON will be ON in the Level-1 Program mode.
6. Touch **UP/DOWN** key to scroll through parameters Upwards/Downwards respectively.
7. Touch Set key to select the parameter then touch **UP/DOWN** key to increase/decrease parameter value.
8. Touch **SET** key to Store/Save the changed parameter value in memory, Display will show "----" to confirm.

6.2. HOW TO VIEW/MODIFY THE LEVEL-2 PARAMETERS

1. Follow the procedure to enter into Level-1 Program mode.
2. Touch **DOWN** key till the Display shows LVL2 then touch **SET** key.
3. Set correct password then touch set key to enter into Level-2 program mode.
4. Display will show "SP" parameter followed by level-1 & level-2 all active parameters.
5. MENU LED will start blinking in Level-2 program mode.
6. Touch **UP/DOWN** key to scroll through parameters Upwards/Downwards respectively.
7. Touch Set key to select the parameter then touch **UP/DOWN** key to increase/decrease parameter value.
8. Touch **SET** key to Store/Save the changed Parameter into the memory, Display will show "----" to confirm.

The procedure progresses in a similar manner to that described for the User parameters (steps 4-7).

6.3. PARAMETER TABLE

SR. No.	PARA.	FUNCTIONS	MIN	MAX	FAC. SET
1	SP (Level 2)	CONTROL PROBE SET POINT Function : To Set the cut-out point of the controller. Example : When Control Probe Temperature reaches or goes below this parameter setting then compressor & Condenser will cut-off.	RS = 1.0		
			QFS+1.0	HS-1.0	-20.0 °C
			RS = 1		
			QFS+1	HS-1	-20 °C
2	QFS (Level 2)	QUICK-FREEZE SET POINT Function : To set the Quick Freeze set point. Example : If controller is in quick freeze mode, then compressor will cut in/ cut out as per this set point till the quick freeze duration is over.	RS = 1.0		
			LS+1.0	SP-1.0	-25.0 °C
			RS = 1		
			LS+1	SP-1	-25 °C
3	HS (Level 2)	MAX SET POINT FOR COMP Function : To set the Maximum set point limit. Once set at a particular value, this will not allow the set point to go above and equal to this value. Example : Setting this parameter at 25.0°C will not allow the set point to go above 24.0°C (HS-1).	RS = 1.0		
			(SP+1.0)	50.0 °C	50.0 °C
			RS = 1		
			(SP+1)	50 °C	50 °C
4	LS (Level 2)	MIN SET POINT FOR COMP Function : To set the Minimum set point limit. Once set at a particular value, this will not allow the quick Freeze set point to go below & equal to this value. Example : Setting this parameter at -10.0°C will not allow the Quick freeze set point to go below -9.0°C (LS+1.0).	RS = 1.0		
			-50.0°C	(QFS-1.0)	-50.0 °C
			RS = 1		
			-50 °C	(QFS-1)	-50 °C
5	P4 (Level 2)	DIFFERENTIAL-CONTROL PROBE Function : To set the differential for compressor relay ON condition. Example : If the set point is set at -20.0°C and differential is set at 2.0°C, then when the system reaches -20.0°C or below, the compressor will goes OFF. Since the differential is 2.0°C, the compressor relay will come ON (restart) at - 18.0°C (-20.0°C +2.0°C).	1 min	20 min	2 min

6	P6 (Level 1)	COMP RESTART DLY IN MIN Function : To set time delay between compressor relay restart. This parameter is used to protect the compressor from restarting in a short period of time. Example : If this parameter is set at 3 minutes, the compressor relay goes OFF at the set point, it will not restart for a minimum of 3 minutes, even if the differential is achieved earlier. This parameter is good to protect the life of the compressor.	0 min	20 min	3 min
7	OT (Level 2)	COMP MIN ON TIME IN MIN Function : Minimum ON Time for Compressor relay. This parameter is used to protect the compressor so that there is enough time for oil to return back to the compressor. This delay starts once the compressor relay is ON. Example : If this parameter is set at 1 minute and if the temperature is achieved before 1 minute, then the compressor relay will remain ON for minimum 1 minute, though set point is achieved.	0 min	20 min	0 min
8	E1 (Level 2)	COMP STATUS AT PROBE FAIL Function : Minimum ON Time for Compressor relay. Compressor relay status in case of Probe Failure. Example : When set to OFF (0) = Compressor Relay status is OFF. ON (1) = Compressor Relay status is ON. CYC (2) = Compressor Relay performs a duty cycle for CN for minutes OFF and CY for minutes ON.	OFF	CYC	CYC
9	CN (Level 2)	OFF TIME-E1 CYCLIC IN MIN Function : Compressor relay OFF Time during probe fault. (This will be considered only when E1 is selected CYC). Example : If this parameter is set to 4 minutes, then compressor relay will be OFF for 4 minutes while performing the duty cycle.	1 min	99 min	4 min

10	CY (Level 2)	ON TIME-E1 CYCLIC IN MIN Function : Compressor relay OFF Time during probe fault. (This will be considered only when E1 is selected CYC) Example: If this parameter is set to 10 minutes, then compressor relay will be ON for 10 minutes while performing the duty cycle.	1	99	10
11	QF1 (Level 2)	QUICK FREEZE DURATION Function : To set Quick freeze duration. This is the maximum amount of time allowed for Quick Freeze. If set to "0", there will be no Quick Freeze. Example : If QFS is set to -25.0 °C, and quick freeze duration is set to 1, then when it is in quick freeze mode, then the Comp. will work on -25.0 °C set point for 1 Hour.	0	12	2
12	CND1 (Level 2)	COND RESTART DLY IN SEC Function : To set Condenser On Delay Timing before compressor ON. When SVS is enabled & PDN is set to ETMP or EDEF then CND1 parameter's minimum limit can set to 10sec. Example : If CND1 is set to 15sec then capital Condenser will come on before 15sec. of compressor ON.	0 (PDN=DIS)	30	15
			10 (PDN>DIS)		
13	CND2 (Level 2)	COND STATUS AT HOT GAS DEF Function : Condensor status at Hotgas Defrost. (This will be considered only when E2 set to HOT (Hotgas Defrost). At Hotgas Defrost when set to, OFF : Condenser will be OFF during defrost ON : Condenser will be ON during defrost Note : CND2 para will be factory set when E2 parameter Set to ELE.	OFF	ON	OFF
14	SVS (Level 1)	LSV ENB-DIS Function : To Liquid Solenoid Valve Enable/Disable. When set to, DIS (0) : Disable LSV output ENAB (1) : Enable LSV output as per PDN Parameter setting.	DIS	ENAB	DIS

15	PIN (Level 1)	PUMP DOWN STATUS Function : To set Pump Down Enable/Disable. This will be considered only when SVS set to ENAB. When set to, DIS : Pump Down Disabled and SV relay will active only with Compressor except Hotgas defrost. ETMP : Pump Down Enabled at Set point when compressor tripped on Set Point. EDEF : Pump Down Enabled at Set point when heater defrost condition occurs. Example : ETMP: If this parameter is set to ETMP then when temperature reaches at set point or below then LSV will trip then after 50Sec Compressor & Condenser will goes OFF which is pump down. EDEF: If this parameter is set to EDEF then LSV will be ON/OFF at set point with the Compressor. When Defrost condition occurs then LSV will trip if Compressor is run for OT Time or 3min (if OT=0), then compressor will trip after sense of LSV OFF.	DIS	EDEF	DIS
16	RS (Level 2)	RESOLUTION Function : To set controller's Temperature resolution. When set to, 0.1 (0) : Resolution set to 0.1°C 1 (1) : Resolution set to 1°C Note: Temperature and Temperature related parameters will also change accordingly.	0.1	1	-

17	AXPB (Level 2)	AUX PROBE ENB-DIS Function : Auxiliary Probe Enable/Disable When set to, DIS (0) : AUX Probe Disabled IND (1) : AUX Probe Temp. Indication only in probe mode. INDA (2) : AUX Probe Temp. Indication in probe mode with PP Alarm. CTRL (3) : AUX Probe Temp for Control Action Note: When this Parameter setting is other than CTRL then CPS parameter will set to ROOM only.	DIS	CTRL	DIS
18	CPS (Level 2)	CONTROL PROBE SELECTION Function : To Select Probe for Control action, This Parameter is When set to, ROOM (0) : Control action with Room Probe AUXP (1) : Control action with AUX Probe AVG (2) : Control action with Average of Room Probe & AUX Probe RMAX (3) : Room Probe primary & AUX Probe secondary for Control action. AXRM (4) : AUX Probe primary & Room Probe secondary for Control action.	ROOM	AXRM	ROOM
19	RMPB (Level 2)	ROOM PROBE ENB-DIS Function : To Enable/Disable Room Probe This is applicable only when control probe selection CPS parameter is set to AUXP. When set to, DIS (0) : Probe Disabled IND (1) : Room Probe Temp. Indication only in probe mode. INDA (2) : Room Probe Temp. Indication with PP Alarm. Note : If CPS parameter Room then this probe will be default for control action with the setting RMPB=INDA	DIS	INDA	INDA

20	ERG (Level 2)	ENERGY SAVING ENB-DIS Function : To Enable/Disable Energy Saving When set to, DIS (0) : Disabled Energy Saving. ENB (1) : Enabled Energy Saving.	DIS	ENAB	DIS
21	EDIF (Level 2)	ENERGY SAVING DIFFERENTIAL Function : To Set Energy Saving Differential. Example : When this parameter is set to 4.0 Deg C, set point is -20.0 C, ERST is set to 20 & ERSP is set 22 then energy saving mode will start at 8pm and end at 10pm during this time period compressor will be ON at -16.0 C (Set point + EDIF) and will trip at set point -20.0.	RS = 1.0		
			1.0 °C	20.0 °C	1.0 °C
			RS = 1		
			1 °C	20 °C	1 °C
22	ERST (Level 2)	ENERGY SAVING START TIME Function : To set Energy saving Start Time in 24Hrs Clock settings. Example : As explain in EDIF Parameter.	0	ERSP-1	20 hr
23	ERSP (Level 2)	ENERGY SAVING STOP TIME Function : To set Energy saving Stop Time in 24Hrs Clock settings. Example : As explain in EDIF Parameter.	ERST+1	23	22
24	LN (Level 2)	SET NUMBER OF EVAPORATOR Function : To set Number of Evaporator & Defrost unit. When set to, ONE (0) : Active Evap-1 & Defrost-1 only. BOTH (1) : Active Both Evap1 & 2 and Defrost-1 & Defrost-2 Example : ONE : When this parameter is set to ONE then Evap-2 & Defrost-2 related features & all parameters will be inactivated and invisible. Only Evap-1 & Defrost-1 related features, Parameter will be activated and visible. BOTH : When this parameter is set to Both then Evap-1, Defrost1 and Evap-2, Defrost-2 related features & all parameters will be activated and visible.	ONE	BOTH	ONE

		Note : When this parameter setting is changed to ONE then Evaporator-2 & Defrost-2 related all parameter settings will be factory set. For (LO-2, L1-2, P7-2, D2DY, L7-2, L8-2, L9-2)			
25	L0 (Level 2)	EVAP-1 PROBE ENB-DIS Function : To Set Evap. Coil Probe Enable/Disable When set to, DIS (0) : Disabled Evap-1 coil Probe. ENB (1) : Enabled Evap-1 coil Probe. Note : If this Parameter is set to DIS then Evap1 coil probe related feature will be inactive. L1, L7, L8 & L9 parameters will be invisible.	DIS	ENAB	ENAB
26	L1 (Level 1)	EVAP-1 STOP TEMP Function : To set Evap-1 Fan Stop Temperature. Evaporator-1 Fan will be switched off when Coil Temperature is greater than or equal to Evaporator-1 Fan Stop Temperature. Example : If this parameter is set to 2.0°C, then Evaporator Fan will cut OFF at 2.0°C. Note : This parameter is applicable only if L0 is enabled.	RS = 1.0		
			-50.0 °C	50.0 °C	2.0 °C
			RS = 1		
			-50 °C	50 °C	2 °C
27	L2 (Level 1)	EVAP RESTART DLY IN MIN Function : To set time delay between Evap. fan restart time for Evap1 & Evap2. Example : If this parameter sets at 1 minutes, the Evaporator Fan will cut-off at the Temperature set by L1 parameter but the fan will not come ON for a minimum of 1 minutes even if L4 is achieved earlier.	0	20	1
28	L3 (Level 2)	EVAP STATUS AT COMP OFF Function : Evap. Fan operation when Compressor is OFF When Set to, OFF (0) : Evaporator Fan is OFF when Compressor is OFF, and it will be ON depending on Coil Temperature and its set point . ON (1) : Evaporator Fan will be ON /OFF independent of Compressor Status according to Coil probe temperature.	OFF	ON	ON

29	L4 (Level 1)	EVAP DIFFERENTIAL Function : Evap. Fan Differential (Hysteresis) for Evap-1 & Evap-2. Example : If L1parameter is set to 2.0°C, and if Evaporator Fan differential parameter is set to 2.0°C, then Evap. Fan will cut off at 2.0 °C (L1) and restart only at 0.0 °C (L1 – L4). Note : This Parameter will be invisible if parameter L0 & L0-2 both set to DIS.	RS = 1.0		
			1.0 °C	20.0 °C	2.0 °C
			RS = 1		
			1 °C	20 °C	2 °C
30	L6 (Level 2)	EVAP STATUS AT DEF Function : Evap. Fan status during Defrost for Evap-1 & Evap-2. When set to, OFF : Evaporator Fan OFF during defrost. ON : Evaporator Fan ON during defrost.	OFF	ON	OFF
31	L0--2 (Level 2)	EVAP-2 PROBE ENB-DIS Function : To Set Evap-2 Coil Probe Enable/Disable. This Parameter is applicable only if LN is set to BOTH When set to, DIS (0) : Disabled Evap-2 coil Probe. ENB (1) : Enabled Evap-2 coil Probe. Note : If this Parameter is set to DIS then Evap-2 coil probe related feature will be inactive. L1-2, L7-2, L8-2 & L9-2 parameters will be invisible.	DIS	ENAB	DIS
32	L1--2 (Level 1)	EVAP-2 STOP TEMP Function : To set Evap-2 Fan Stop Temperature. Evaporator-2 Fan will be switched off when Coil Temperature is greater than or equal to Evaporator-2 Fan Stop Temperature. Example : If this parameter is set to 2.0°C, then Evaporator Fan will cut OFF at 2.0°C. Note : This parameter is applicable only if L0-2 is Set to ENAB & LN set to BOTH.	RS = 1.0		
			-50.0 °C	50.0 °C	2.0 °C
			RS = 1		
			-50 °C	50 °C	2 °C

33	<p>P7 (Level 1)</p>	<p>DEF-1 DURATION IN MIN</p> <p>Function : Defrost Duration & Manual Defrost. This is maximum amount of time allowed for Defrost1. If set to 0, there will be no Defrost Cycle. For Defrost-1 & Defrost-2.</p> <p>Example : If P7 is set to 30 Mins, E6 is set to RET and P8 is set to 1 Hr then after every 1 Hr defrosting will take place for 30 mins. It will consider L7 & L8 Parameter to stop the defrost if L0-2 Parameter is enabled & EOST set to both.</p> <p>Note : When P7 parameter set to 0, Defrost-1 & Defrost-2 related parameters will not display.</p>	0 min	99 min	30 min
34	<p>P8 (Level 1)</p>	<p>DEF FREQUENCY IN HRS</p> <p>Function : To set Defrost Frequency. This Parameter is applicable only if P7>0. This is the amount of time between two Defrost Cycles.</p> <p>Example : Same as P7 parameter. If this Parameter is set to 0 then all type (Time, Temp & RTC based) of Auto defrost start will not be activated. Only Manual Defrost will be activated.</p>	0 hr	31 hr	6 hr
35	<p>P9 (Level 1)</p>	<p>PWR ON DEF DLY IN MIN</p> <p>Function : To set Power ON Defrost Delay. This Parameter is applicable only if P7>0.</p> <p>Example : If P9 parameter is 30 minutes then at power after 30 minutes defrosting will take place once.</p> <p>Note : When P7 is set to 0, P9 parameter will not be applicable or considered visible.</p>	0 min	99 min	30 min




36	EOST (Level 2)	DEFROST START LOGIC Function : To Set Defrost Start Mode. This Parameter is applicable only if P7>0. When set to, TIME (0) : Defrost start with Frequency. BOTH (2) : Defrost start with temperature or frequency, whichever takes first to start defrost. Example : TIME : Same as P7. BOTH : Same as L8. Note : If L0 & L0-2 both set to DIS then this parameter will be set to TIME.	TIME	BOTH	TIME
37	E2 (Level 1)	DEFROST TYPE Function : To set type of Defrost This Parameter is applicable only if P7>0. When set to, ELE (0) : Electric Defrost HOT (1) : Hot Gas Defrost Note : If L0 & L0-2 both set to DIS then this parameter will be set to ELE. This parameter will set to ELE when L0 & L0-2 parameter set to DIS.	ELE	HOT	ELE
38	RDF (Level 1)	REAL TIME DEFENB-DIS Function : To set Real-Time Clock Defrost Enable/Disable. This Parameter is applicable only if P7>0. When set to, DIS (0) : Real time Defrost Disabled. ENAB (1) : Real time Defrost Enabled.	DIS	ENAB	DIS
39	RDF T (Level 1)	REAL TIME DEF START TIME Function : To set Real time Defrost Start Time. This Parameter is applicable only if RDF is set to ENAB. Example : If this parameter is set to 20, it means when RTC shows 20:00 at the controller then controller will start auto defrosting at 8pm every day for P7 time period. Defrosting will take place if condition is suitable.	0 hr	23 hr	23 hr

40	L7 (Level 2)	DEF-1 STOP TEMP Function : To set Defrost-1 Stop Temperature (Evap1 Coil probe). Defrost-1 will Stop when Evap-1 Coil Temperature is greater than or equal to this parameter setting. To start Defrost Process of Defrost-1, Evap-1 Coil Temperature should be less than or equal to L7-1.0°C. Example : If Def-1 Stop Temperature set to 8.0°C, then when Evap-1 Coil Temperature reaches to or goes above 8.0°C, the Defrost process will Stop. To start Defrost Cycle based on P8 parameter or Manual, Coil Temperature should be less than or equal to 7.0°C. Note : This Parameter is applicable only if P7>0 & L0 is set to ENAB.	RS = 1.0		
			L8+1.0 (EOST =Both)	50.0 °C	4.0 °C
			-50.0 (EOST = Time)		
			RS = 1		
			L8+1 (EOST =Both)	50 °C	4 °C
			-50 (EOST = Time)		
41	L8 (Level 2)	DEF-1 START TEMP Function : To set Defrost-1 Start Temperature (Evap1 Coil probe). Defrost process will start when Evap1 Coil Temperature is less than or equal to Start Temperature. This parameter is applicable only if P7>0, L0 is ENAB & EOST is set to BOTH. When Defrost stop condition occurs due to P7 duration over or Defrost stop manually then it will check Evap1 Coil Temperature should be greater than or equal to L8+1.0. Example : If start Temperature set to -10.0°C & L9 set to 5, then when Coil Temperature reaches to or goes below -10.0°C, for 5Minutes then the Defrost process will start. If Defrost stop condition occurs that time Temperature should be greater than or equal to -9.0°C.	RS = 1.0		
			-50.0 °C	L7-1.0	-30.0 °C
			RS = 1		
			-50 °C	L7-1	-30 °C
42	L9 (Level 2)	DEF-1 START TEMP DLY IN MIN Function : To set Defrost Start Temperature Delay for Defrost-1. Example : Same as explain for L8 Parameter.	0 min	60 min	5 min

43	P7--2 (Level 1)	DEF--2 DURATION IN MIN Function : Defrost-2 Duration & Manual Defrost. This is maximum amount of time allowed for Defrosting Defrost-2. If set to 0, there will be no Defrost Cycle. Example : If P7-2 is set to 30 Mins, E6 is set to RET and P8 is set to 1 Hr then after every 1 Hr defrosting will take place for 30 mins. It will consider L7-2 & L8-2 Parameter to stop the defrost if L0-2 Parameter is enabled & EOST set to both. Note : When P7-2 parameter set to 0, Defrost-2 related parameters will not display. (D2DY, L7-2, L8-2, L9-2).	0 min	99 min	30 min
44	D2DY (Level 2)	DELAY BETWEEN DEFROSTS Function : To set Delay Between Both Defrost-1 & Defrost-2 Example : If this parameter is set to 5 sec, then when Defrost-1 & Defrost-2 occurs another defrost unit will start after 5 sec of 1 st defrost which can be Defrost-1 or Defrost-2.	0 sec	10 sec	5 sec
45	L7--2 (Level 2)	DEF--2 STOP TEMP Function : To set Defrost 2 Stop Temperature (Evap2 Coil probe). This Parameter is applicable only if P7-2>0 & L0-2 is set to ENAB. Defrost-2 will Stop when Evap-2 Coil Temperature is greater than or equal to this parameter setting. To start Defrost Process of Defrost-2, Evap-2 Coil Temperature should be less than or equal to L7-1. Example : If Def-2 Stop Temperature set to 8.0°C, then when Evap-2 Coil Temperature reaches to or goes above 8.0°C, the Defrost process will Stop. To start Defrost Cycle based on P8 parameter or Manual, Evap2 Coil Temperature should be less than or equal to 7.0°C.	RS = 1.0		
			(L8-2) +1.0 (EOST =Both)	50.0 °C	4.0 °C
			RS = 1		
			(L8-2)+1 (EOST =Both) -50 (EOST = Time)	50 °C	4 °C

46	L8-2 (Level 2)	DEF-2 START TEMP Function : To set Defrost-2 Start Temperature (Evap2 Coil probe). Defrost process will start when Evap2 Coil Temperature is less than or equal to Start Temperature. This parameter is applicable only if Parameter P7-2>0, L0-2 is ENAB & E0ST is set to BOTH. When Defrost stop condition occurs due to P7-2 duration over or Defrost stop manually then it will check Coil Temperature should be greater than or equal to (L8-2) +1.0. Example : If start Temperature set to -10.0°C & L9-2 set to 5, then when Coil Temperature goes below or reaches to -10.0°C, for 5Minutes then the Defrost2 process will start. If Defrost stop condition occurs that time Temperature should be greater than or equal to -9.0°C.	RS = 1.0		
			-50.0 °C	(L7-2) - 1.0 °C	-30.0 °C
			RS = 1		
			-50 °C	(L7-2) - 1 °C	-30 °C
47	L9-2 (Level 2)	DEF-2 START TEMP DLY IN MIN Function : Defrost-2 Start Temperature Delay. Example : Same as explain for L8-2 Parameter.	0 min	60 min	5 min
48	E3 (Level 1)	DRIP TIME IN MIN Function : To set Drip Time for defrost water to drain out. This is the time for which the Evap Fan, Cond. Fan, Compressor, Heater will stay OFF so that the Defrost Water can drip & drain out.	0 min	99 min	1 min
49	E4 (Level 1)	POST DRIP TIME IN MIN Function : To set Post Drip Time. Example : This is the time where Compressor goes ON after drip time. Note : In Electric Defrost Compressor, Condenser & LSV will ON only if Room Temperature > SP + diff. but it will not check this in Hot Gas Defrost.	0 min	99 min	1 min

50	ES (Level 2)	DEF DUR AT EVAP PRB FAIL IN MIN Function : To set Defrost duration during Evap Probe Fail. Example : If this is set to 5 min, then Manual Defrost for 5 min will take place during Evap Coil probe fail.	1 min	15 min	5 min
51	EE (Level 1)	COMPUTATION DEF FREQ Function : Computation Method for Defrost Frequency When set to, RET (0) : Defrost Frequency time calculation will start once the Controller is ON. CRH (1) : Defrost Frequency time calculation will be done only When Compressor is ON. Example : RET (0) : If this parameter is set to 6Hrs, then defrost will happened at every 6Hrs. CRH (1) : If this parameter is set to 6Hrs, then after every 6Hrs of Compressor ON Defrost will happen.	RET	CRH	RET
52	DO0 (Level 1)	DOOR INPUT SENSING LOGIC Function : To Enable/Disable Door Open Digital Input When set to, DIS (0) : Door Open Digital Input is Disabled OPEN (1) : Door Open Digital Input is activated when contact is Open. CLO (2) : Door Open Digital Input is activated when contact is Closed. Note : If this parameter is set to DIS then DO1, DO2, DO3 Parameters will not be visible.	DIS	CLO	DIS
53	DO1 (Level 1)	DOOR OPEN SENSING DLY IN SEC Function : To set Door Open Fault Sensing Delay Example : If this parameter is set to 5 seconds and if Digital input (Fault) is present for 5 seconds then fault will be detected. Note : This Parameter is visible only when parameter DO0 is > DIS.	0 sec	600 sec	15 sec

54	 (Level 2)	COMP/EVAP STATUS AT DOOR OPEN Function : To set Compressor / Fan Status at Door Open fault. When set to, NoA (0) : No Action will be perform only fault message will be displayed. NoAA(1) : No Action will be performed only Alarm/Buzzer will be activated with Fault message. C-OF (1) : Compressor/Condenser will be OFF. F-OF (2) : Evap Fans will be OFF. FCOF (3) : Evap Fans and Compressor/Condenser will be OFF.	DIS	FCOF	NOAA
55	 (Level 2)	TEMP HOLD DLY AT DOOR OPEN IN SEC Function : To set Delay time for Temperature updating at Door Open Example : This Parameter is set to 60sec, Room Temperature is -18.0°C & Door open condition occurs then Room Temperature value -18.0°C will be held for the 60sec, if Room Temperature is increasing. After over the Temperature hold duration display temperature will be increased by 0.1°C at every sec until it reaches current control temperatures. Note : This is not applicable for decreasing of temperature.	0 sec	180 sec	0 sec
56	 (Level 1)	LIGHT ON DURATION Function : To set Light ON Duration This parameter is used to set the time delay to automatically switch OFF the light. If LD is set to 0 then this function will be disabled. Example : If this parameter is set to 7 mins then, when light is switched ON, after 7 mins it will be switch OFF automatically.	0 min	30 min	7 min

57	LSI (Level 1)	LIGHT ON AT DOOR OPEN Function : To set Enable/Disable Light ON status at door open When set to, DIS (0) : Light will be ON/OFF functioning manually and as per LD parameter. ENAB (1) : Whenever door gets open, Light will be ON & OFF at Door close.	DIS	ENAB	ENAB
58	LOG (Level 2)	DATA LOG ENB-DIS Function : To Flash Data Logging Enable/Disable. When set to, DIS (0) = Data logging will be Disabled. INT (1) = Data logging will be interval based. INEV (2) = Data logging will be interval/Event based. EVNT (3) = Data logging will be Event based. Example : INT (1) : Data will be logged after an interval set at LOGT parameter. INEV (2) : Data will be logged after an interval set at LOGT parameter also when ON/OFF event happened of Door, compressor, Defrost-1 & Defrost-2. EVNT (2) : Data will be logged only if any event will happened of Door, Compressor, Defrost-1 & Defrost-2.	DIS	EVNT	DIS
59	LOGT (Level 2)	LOG INTERVAL IN MIN Function : To set Logging Interval. Example : If this parameter is set to 15min then Data will be logged after every 15min from power on or when LOG parameter is set to INT or INEV.	1 min	60 min	15 min
60	DNLD (Level 2)	DOWNLOAD DATA LOG TO SD CARD Function : To download Data Log to SD Card from Flash Memory. When set to, CLR (-2) : Delete/Reset logged Data NO (0) : No action YES (1) : Download to SD card Note : To set CLR touch down key for 10sec.	CLR	YES	NO

61	DNLA (Level 2)	DOWNLOAD ALARM LOG TO SD CARD Function : To download Alarm log to SD Card from Flash Memory. When set to, CLR (-2) : Delete/Reset logged Data NO (0) : No action YES (1) : Download to SD card Note : To set CLR touch down key for 10sec.	CLR	YES	NO
62	P2 (Level 1)	HIGH TEMP ALARM Function : To Set Maximum Allowable High Temperature Limit Example : This parameter is set to 40.0°C and P2D Parameter is set to 2.0°C. When the Temperature reaches or goes above 40.0°C, Display will show Ht (High Temperature) indicating that the Temperature has reached or gone above the value set in this parameter. When temperature goes below or equal to 38.0°C then fault will be cleared. P2D parameter will be considered for clearing the HT fault.	RS = 1.0		
			P3+1.0	50.0 °C	50.0 °C
			RS = 1		
			P3+1	50 °C	50 °C
63	P2D (Level 1)	DIFFERENTIAL FOR HT RESET Function : Differential to Reset High Temperature Fault Example : As explained for P2 parameter.	RS = 1.0		
			1.0 °C	10.0 °C	1.0 °C
			RS = 1		
			1 °C	10 °C	1 °C
64	P3 (Level 1)	LOW TEMP ALARM Function : To Set Minimum Allowable Low Temperature Limit Example : If this parameter is set to -40.0°C and P3D Parameter is set to 2.0°C. When the Temperature reaches or goes below -40.0°C, Display will show Lt (Low Temperature) indicating that the Temperature has reached or gone below the value set in this parameter. When temperature goes above or equal to -38.0°C then fault will be cleared. P3D parameter will be considered for clearing the LT fault.	RS = 1.0		
			-50.0 °C	P2-1.0	-50.0 °C
			RS = 1		
			-50 °C	P2-1	-50 °C

65	P3D (Level 1)	DIFFERENTIAL FOR LT RESET Function : Differential to Reset Low Temperature Fault Example : As explained for P3 parameter.	RS = 1.0		
			1.0 °C	10.0 °C	1.0 °C
			RS = 1		
			1 °C	10 °C	1 °C
66	AJT (Level 2)	HT/LT ALM DLY AT PWR ON IN MIN Function : This parameter is used to set the time delay at Power ON for Alarm Indication. Example : If this parameter is set to 20 minutes, once the controller is powered ON, no fault indication will be activated for 20 minutes. Alarm delay is used only for High Temperature and Low Temperature, but not for Control probe fail.	0 min	100 min	30 min
67	HPF0 (Level 2)	HP FLT SENSING LOGIC Function : To Set Enable/Disable High Pressure Fault. When set to, DIS (0) : HP Fault Digital Input is Disabled OPEN (1) : HP Fault Digital Input is activated when contact is Open (0V). CLO (2) : HP Fault Digital Input is activated when contact is Closed (230V).	DIS	CLO	OPEN
68	HPF1 (Level 2)	HP FLT SENSING DLY IN SEC Function : To set HP Fault Digital Input Sensing Delay. Example : If this parameter is set to 5sec and HP Fault digital input fault is present for 5sec then fault will be set & Display will show "HP". Note : This parameter is visible only when parameter HPF0 > DIS	0 sec	180 sec	5 sec

69	HPF3 (Level 2)	HP FLT AUTO/MANUAL Function : To Set the fault Reset mode for HP Fault. When set to, AUT (0) : Auto reset MAN (1) : Manual reset after HPF4 retrials in 1 hour Example : MAN : If this parameter set to "MAN" mode & HPF4 is set to 5 then, if compressor gets tripped on HP fault will be cleared after 5 retrials only after pressing reset key for 2 seconds. AUT : If this parameter is set to "AUT " mode then HP fault will be cleared automatically when it is healthy. Note : This parameter is applicable only when HPF0 > DIS.	AUT	MAN	AUT
70	HPF4 (Level 2)	HP MANUAL FLT-NO OF RETRIAL Function : To set No. of retrials of HP Fault when selected as Manual Reset Example : As mentioned in HPF3. Note : This parameter is visible only when HPF3 is set to MAN.	1	10	5
71	LPF0 (Level 2)	LP FLT SENSING LOGIC Function : To Set Enable/Disable Low Pressure Fault. When set to, DIS (0) : LP Fault Digital Input is Disabled OPEN (1) : LP Fault Digital Input is activated when contact is Open (0V). CLO (2) : LP Fault Digital Input is activated when contact is Closed (230V).	DIS	CLO	OPEN





72	LPF5 (Level 2)	LP FAULT SURGE DLY IN SEC Function : To set LP Fault Digital Input Sensing Surge Delay. Example : If this parameter is set to 3sec and LPFN is set to 5sec then when LP fault digital input fault is present for 3sec then this fault will ignore for 3sec of compressor ON. LP fault will set after 5sec of LP Digital input fault is present. Whichever delay setting is more after that LP fault will set. Note : This parameter is visible only when parameter LPF0 > DIS	0 sec	180 sec	5 sec
73	LPFN (Level 2)	LP FLT SENSING DLY IN SEC Function : To set LP Fault Digital Input Sensing Normal Delay. Example : If this parameter is set to 5sec and LP Fault digital input fault is present for 5sec then fault will be set & Display will show "LP". Note : This parameter is visible only when parameter LPF0 > DIS	0 sec	180 sec	5 sec
74	LPF3 (Level 2)	LP FLT AUTO/MANUAL Function : To Set the fault Reset mode for LP Fault. When set to, AUT (0) : Auto reset MAN (1) : Manual reset after LPF4 retrials in 1 hour Example : MAN : If this parameter set to " MAN" mode & LPF4 is set to 5 then, LP fault will be cleared after 5 retrials only after pressing reset key for 2 seconds. AUT : If this parameter is set to "AUT " mode then LP fault will be cleared automatically when it is healthy. Note : This parameter is applicable only when LPF0 > DIS.	AUT	MAN	AUT

75	LPF4 (Level 2)	<p>LP MANUAL FLT-NO OF RETRIAL</p> <p>Function : To set No. of retrials of LP Fault when selected as Manual Reset</p> <p>Example : As mentioned in LPF3.</p> <p>Note : This parameter is visible only when LPF3 is set to MAN.</p>	1	10	5
76	A1F0 (Level 2)	<p>AUX1 FLT SENSING LOGIC</p> <p>Function : To set Enable/Disable AUX1 Digital Input Fault When set to, DIS (0) : AUX1 Fault Digital Input is Disabled OPEN (1) : AUX1 Fault Digital Input is activated when contact is Open (0V). CLO (2) : AUX1 Fault Digital Input is activated when contact is Closed (230V).</p>	DIS	CLO	DIS
77	A1F1 (Level 2)	<p>AUX1 FLT SENSING DLY IN SEC</p> <p>Function : To set AUX1 Digital Input Fault Sensing Delay</p> <p>Example : If this parameter is set to 5sec and AUX1 Fault digital input fault is present for 5sec then fault will be set & Display will show "AUX1".</p> <p>Note : This parameter is visible only when parameter A1F0 > DIS</p>	0 sec	180 sec	5 sec
78	A1F2 (Level 2)	<p>COMP/EVAP STATUS AT AUX1 FLT</p> <p>Function : To set Output Status at AUX1 Fault</p> <p>Example : When set to, NOA (0) : No Action NOAA (1) : No Action with Alarm C-OF (2) : Compressor will be OFF F-OF (3) : Fan will be OFF FCOF (4) : Fan and Compressor will be OFF</p> <p>Note : This Parameter is visible only when A1F0 > DIS</p>	DIS	FCOF	NOAA

79	A1F3 (Level 2)	AUX1 FLT AUTO/MANUAL Function : To Set the fault Reset Mode For AUX1 Fault When set to, AUT (0) : Auto reset MAN (1) : Manual reset after AUX1 retrials in 1 hour Example : ANU : If this parameter is set to "AUT " mode then AUX1 fault will be cleared automatically when it is healthy. MAN : If this parameter is set to MAN & A1F4 parameter is set to 5, then in 1 Hour if the Auxiliary1 Fault occurs 5 times & compressor or Evap. trip then it will go to Manual Reset mode. AUX1 fault will be reset only if reset key pressed for 2seconds & AUX1 input is healthy. Note : This parameter is applicable only when A1F0 > DIS.	AUT	MAN	AUT
80	A1F4 (Level 2)	AUX1 MANUAL FLT-NO OF RETRIAL Function : To set No. of retrials of AUX1 Fault when selected as Manual Reset Example : As mentioned in A1F3 Parameter. Note : This parameter is applicable only when A1F3 set to MAN	1	10	5
81	A2F0 (Level 2)	AUX2 FLT SENSING LOGIC Function : To set Enable/Disable AUX2 Digital Input Fault When set to, DIS (0) : AUX2 Fault Digital Input is Disabled OPEN (1) : AUX2 Fault Digital Input is activated when contact is Open (0V). CLO (2) : AUX2 Fault Digital Input is activated when contact is Closed (230V).	DIS	CLO	DIS

82	A2F1 (Level 2)	<p>AUX2 FLT SENSING DLY IN SEC</p> <p>Function : To set AUX2 Digital Input fault Sensing Delay</p> <p>Example : If this parameter is set to 5sec and AUX2 Fault digital input fault is present for 5sec then fault will be set & Display will show "AUX2".</p> <p>Note : This parameter is visible only when parameter A2F0 > DIS</p>	0 sec	180 sec	5 sec
83	A2F2 (Level 2)	<p>COMP/EVAP STATUS AT AUX2 FLT</p> <p>Function : To set Output Status at AUX2 Fault</p> <p>Example : When set to, DIS (0) : No Action NOAA (1) : No Action with Alarm COFF (2) : Compressor will be OFF FOFF (3) : Fan will be OFF FCOF (4) : Fan and Compressor will be OFF</p> <p>Note : This Parameter is visible only when A2F0 >DIS</p>	DIS	FCOF	NOAA
84	A2F3 (Level 2)	<p>AUX2 FLT AUTO/MANUAL</p> <p>Function : To Set the fault Reset Mode For AUX2 Fault When set to, AUT (0) : Auto reset MAN (1) : Manual reset after AUX2 retrials in 1 hour</p> <p>Example : AUT : If this parameter is set to "AUT " mode then AUX1 fault will be cleared automatically when it is healthy. MAN : If this parameter is set to MAN & A1F4 parameter is set to 5, then in 1 Hour if the Auxiliary1 Fault occurs 5 times & compressor or Evap trip then it will go to Manual Reset mode. AUX1 fault will be reset only if reset key pressed for 2seconds & AUX1 input is healthy.</p> <p>Note : This parameter is applicable only when A2F0 > DIS.</p>	AUT	MAN	AUT

85	A2F4 (Level 2)	AUX2 MANUAL FLT-NO OF RETRIAL Function : To set No. of retrials of AUX2 Fault when selected as Manual Reset Example : As mentioned in A2F3 Parameter. Note : This parameter is applicable only when A2F3 set to MAN	1	10	5
86	SCF0 (Level 2)	SPPR FLT SENSING LOGIC Function : To Set Enable/Disable SPPR Fault input When set to, DIS (0) : SPPR Fault Input is Disabled OPEN (1) : SPPR Fault Input is activated when contact is Open (0V). CLOS (2) : SPPR Fault Input is activated when contact is Closed (230V).	DIS	CLO	OPEN
87	RCF0 (Level 2)	R-PH SENSING ENB-DIS Function : To Set Enable/Disable R-Phase Fault sensing When set to, DIS (0) : R-Phase Fault sensing is Disabled ENAB (1) : R-Phase Fault sensing is Enabled	DIS	ENAB	ENAB
88	YCF0 (Level 2)	Y-PH SENSING ENB-DIS Function : To Set Enable/Disable Y-Phase Fault sensing When set to, DIS (0) : Y-Phase Fault sensing is Disabled ENAB (1) : Y-Phase Fault sensing is Enabled	DIS	ENAB	ENAB
89	BCF0 (Level 2)	B-PH SENSING ENB-DIS Function : To Set Enable/Disable B-Phase Fault sensing When set to, DIS (0) : B-Phase Fault sensing is Disabled ENAB (1) : B-Phase Fault sensing is Enabled	DIS	ENAB	ENAB

90	 (Level 1)	UNDERLOAD LIMIT FOR COMP Function : To set Under Load Limit for Compressor Current of R-Y-B Phase Example : If this parameter is set to 1.0 & C-UD is set to 5sec then if compressor current of R-Y-B Phase are less than or equal to 1.0A for 5sec then Compressor will trip on C-UL fault. If after 3 retrials within 1 Hour current drawn is still less than or equal to 1.0A the compressor will trip on C-UL fault & will go in manual reset mode. Note : If this parameter is set to 0.0A (DIS) then underload fault sensing will be disabled.	0.0 A (DIS)	C-OS - 1.0 A	1.0 A
91	 (Level 1)	OVERLOAD LIMIT FOR COMP Function : To set Over Load Limit for Compressor Current of R-Y-B Phase Example : If this parameter is set to 10.0 & C-OD is set to 5sec then if compressor current of R-Y-B Phase are greater than or equal to 10.0A for 5sec then Compressor will trip on OL fault. If after 3 retrials within 1 Hour current drawn is still greater than or equal to 10.0A the compressor will trip on OL fault & will go in manual reset mode. Note : If this parameter is set to 20.0 (DIS) than underload fault sensing will be disabled.	C-US + 1.0 A	20.0 A (DIS)	15.0 A
92	 (Level 1)	C-UL CURR SENSING DLY IN SEC Function : To set Current Sensing Time Delay for Compressor underload fault. Example : As mentioned in C-US Parameter. Note : This parameter is visible only if C-US>0.0 (DIS)	0 sec	180 sec	5 sec
93	 (Level 1)	C-OL CURR SENSING DLY IN SEC Function : To set Current Sensing Time Delay for Compressor overload fault. Example : As mentioned in C-OS Parameter. Note : This parameter is visible only if C-OS<20.0 (DIS)	0 sec	180 sec	5 sec

94	E 1US (Level 1)	<p>UNDERLOAD LIMIT FOR EVAP-1</p> <p>Function : To set Under Load Limit for EVAP-1 Current</p> <p>Example : This parameter is set to 1.0 & E1UD is set to 5sec then if Evap-1 current is less than or equal to 1.0A for 5sec then Evap-1 will trip on E1UL fault. If after 3 retrials within 1 Hour current drawn is still less than 1.0A the Evap-1 will trip on E1UL fault & will go in manual reset mode.</p> <p>Note : If this parameter is set to 0.0A (DIS) then underload fault sensing will be disabled.</p>	0.0 A (DIS)	E1OS - 1.0 A	1.0 A
95	E 1OS (Level 1)	<p>OVERLOAD LIMIT FOR EVAP-1</p> <p>Function : To set Over Load Limit for Evap-1 Current</p> <p>Example : This parameter is set to 8.0 & E1OD is set to 5sec then if Evap-1 current is greater than or equal to 8.0A for 5sec then Evap-1 will trip on E1OL fault. If after 3 retrials within 1 Hour current drawn is still greater than or equal to 8.0A the Evap-1 will trip on E1OL fault & will go in manual reset mode.</p> <p>Note : If this parameter is set to 20.0A then overload current sensing will be disabled.</p>	E1US + 1.0 A	20.0 A (DIS)	15.0 A
96	E 1UD (Level 1)	<p>E 1UL CURR SENSING DLY IN SEC</p> <p>Function : To set Current Sensing Time Delay for Evap-1 underload fault.</p> <p>Example : As mentioned in E1US Parameter.</p> <p>Note : This parameter is visible only if E1US >0.0 (DIS).</p>	0 sec	180 sec	5 sec
97	E 1OD (Level 1)	<p>E 1OL CURR SENSING DLY IN SEC</p> <p>Function : To set Current Sensing Time Delay for Evap-1 overload fault.</p> <p>Example : As mentioned in E1OS Parameter.</p> <p>Note : This parameter is visible only if E1OS < 20.0 (DIS)</p>	0 sec	180 sec	5 sec

98	E2US (Level 1)	<p>UNDERLOAD LIMIT FOR EVAP-2</p> <p>Function : To set Under Load Limit for EVAP-2 Current</p> <p>Example : This parameter is set to 1.0 & E2UD is set to 5sec then if Evap-2 current is less than or equal to 1.0A for 5sec then Evap-1 will trip on E2UL fault. If after 3 retrials within 1 Hour current drawn is still less than 1.0A the Evap-1 will trip on E2UL fault & will go in manual reset mode.</p> <p>Note : If this parameter is set to 0.0A (DIS) then underload fault sensing will be disabled.</p>	0.0 A (DIS)	E2OS - 1.0 A	1.0 A
99	E2OS (Level 1)	<p>OVERLOAD LIMIT FOR EVAP-2</p> <p>Function : To set Over Load Limit for Evap-2 Current</p> <p>Example : This parameter is set to 8.0 & E2OD is set to 5sec then if Evap-2 current is greater than or equal to 8.0A for 5sec then Evap-2 will trip on E2OL fault. If after 3 retrials within 1 Hour current drawn is still greater than or equal to 8.0A the Evap-2 will trip on E2OL fault & will go in manual reset mode.</p> <p>Note : If this parameter is set to 20.0A then overload current sensing will be disabled.</p>	E2US + 1.0 A	20.0 A (DIS)	15.0 A
100	E2UD (Level 1)	<p>E2UL CURR SENSING DLY IN SEC</p> <p>Function : To set Current Sensing Time Delay for Evap-2 underload fault.</p> <p>Example : As mentioned in E2US Parameter.</p> <p>Note : This parameter is visible only if E2US >0.0 (DIS).</p>	0 sec	180 sec	5 sec
101	E2OD (Level 1)	<p>E2OL CURR SENSING DLY IN SEC</p> <p>Function : To set Current Sensing Time Delay for Evap-2 overload fault.</p> <p>Example : As mentioned in E2OS Parameter.</p> <p>Note : This parameter is visible only if E2OS <20.0 (DIS).</p>	0 sec	180 sec	5 sec

102	BUZ (Level 2)	BUZZER ENB-DIS Function : To set Enable/Disable Buzzer. When set to, DIS (0) : Buzzer disabled KEY (1) : Buzzer Activate at key only. FLT (2) : Buzzer Activate at Fault only. ALL (3) : Buzzer Activate at Key & Fault. This parameter is set to ALL and if Buzzer is ON at any fault then Buzzer will not activate at key touch.	DIS	ALL	FLT
103	AL (Level 2)	ALARM OUTPUT ENB-DIS Function : To set Enable/Disable Alarm Relay When set to, DIS (0) : Alarm Disabled in fault condition. ENAB (1) : Alarm Enabled in fault condition	DIS	ENAB	ENAB
104	ADD (Level 2)	ALARM/BUZZER DELAY AT DO Function : Function : To set Time delay to activate Buzzer/Alarm Relay at Door Open Example : If this parameter is set to 60 Sec & Door is open then Alarm/Buzzer will be ON after 60sec, if AL or BUZ parameters are enabled.	0 sec	600 sec	60 sec
105	RMP5 (Level 2)	ROOM PROBE OFFSET Function : To Set offset for Room Probe. In time it may be possible that the Room probe Display temperature may be offset by a degree or so. To compensate for this error, user may need to add or minus the degrees required to achieve the correct temperature. Example : The Room probe temperature on the display is 28.0°C, whereas the actual temperature is 30.0°C. User will have to set the RMP5 parameter to 2.0°C, which means that once setting of this parameter, the Room probe temperature will be 30.0°C (28.0°C+ 2.0°C).	RS = 1.0		
			-10.0 °C	10.0 °C	0.0 °C
			RS = 1		
			-10 °C	10 °C	0 °C







106	AXP5 (Level 2)	AUX PROBE OFFSET Function : To Set offset for Aux Probe. In time it may be possible that the Aux probe Display temperature may be offset by a degree or so. To compensate for this error, user may need to add or minus the degrees required to achieve the correct temperature. Example : The Aux probe temperature on the display is 28.0°C, whereas the actual temperature is 30.0°C. User will have to set the AXP5 parameter to 2.0°C, which means that once setting of this parameter, the Aux probe temperature will be 30.0°C (28.0°C+ 2.0°C). Note : This parameter is visible only if AXPB >DIS.	RS = 1.0		
			-10.0 °C	10.0 °C	0.0 °C
			RS = 1		
			-10 °C	10 °C	0 °C
107	E1L5 (Level 2)	EVAP-1 PROBE OFFSET Function : To Set offset for Evap-1 Probe. In time it may be possible that the Evap-1 probe Display temperature may be offset by a degree or so. To compensate for this error, user may need to add or minus the degrees required to achieve the correct temperature. Example : The Evap-1 probe temperature on the display is 28.0°C, whereas the actual temperature is 30.0°C. User will have to set the E1L5 parameter to 2.0°C, which means that once setting of this parameter, the Evap-1 probe temperature will be 30.0°C (28.0°C+ 2.0°C). Note : This parameter is visible only if L0 >DIS.	RS = 1.0		
			-10.0 °C	10.0 °C	0.0 °C
			RS = 1		
			-10 °C	10 °C	0 °C
108	E2L5 (Level 2)	EVAP-2 PROBE OFFSET Function : To set offset for Evap-2 Probe. In time it may be possible that the Evap-2 probe Display temperature may be offset by a degree or so. To compensate for this error, user may need to add or minus the degrees required to achieve the correct temperature. Example : The Evap-2 probe temperature on the display is 28.0°C, whereas the actual temperature is 30.0°C. User will have to set the E1L5 parameter to 2.0°C, which means that once	RS = 1.0		
			-10.0 °C	10.0 °C	0.0 °C
			RS = 1		
			-10 °C	10 °C	0 °C

		<p>setting of this parameter, the Evap-1 probe temperature will be 30.0°C (28.0°C+ 2.0°C).</p> <p>Note : This parameter is visible only if LO-2 is ENB.</p>			
109	R--C5 (Level 2)	<p>R-PH CURRENT OFFSET</p> <p>Function : To set offset for Comp. R-Phase Current. In time it may be possible that the Comp. R-Phase Display current may be offset by a A or so. To compensate for this error, user may need to add or minus the Ampere required to achieve the correct current.</p> <p>Example : The Comp. R-Phase current on the display is 5.0A, whereas the actual current is 5.2A. User will have to set the R-C5 parameter to 0.2A, which means that once setting of this parameter, the Comp R-Phase current will be 5.2A.</p>	-2.0 A	2.0 A	0.0 A
110	Y--C5 (Level 2)	<p>Y-PH CURRENT OFFSET</p> <p>Function : To Set offset for Comp. Y-Phase Current. In time it may be possible that the Comp. Y-Phase Display current may be offset by a A or so. To compensate for this error, user may need to add or minus the Ampere required to achieve the correct current.</p> <p>Example : The Comp. Y-Phase current on the display is 5.0A, whereas the actual current is 5.2A. User will have to set the Y-C5 parameter to 0.2A, which means that once setting of this parameter, the Comp Y-Phase current will be 5.2A.</p>	-2.0 A	2.0 A	0.0 A
111	B--C5 (Level 2)	<p>B-PH CURRENT OFFSET</p> <p>Function : To Set offset for Comp. B-Phase Current. In time it may be possible that the Comp. B-Phase Display current may be offset by a A or so. To compensate for this error, user may need to add or minus the Ampere required to achieve the correct current.</p> <p>Example : The Comp. B-Phase current on the display is 5.0A, whereas the actual current is 5.2A. User will have to set the B-C5 parameter to 0.2A, which means that once setting of this parameter, the Comp B-Phase current will be 5.2A.</p>	-2.0 A	2.0 A	0.0 A

112	E1C5 (Level 2)	EVAP-1 CURRENT OFFSET Function : To Set offset for Evap-1 Current. In time it may be possible that the Evap-1 Display current may be offset by a A or so. To compensate for this error, user may need to add or minus the Ampere required to achieve the correct current. Example : The Evap-1 current on the display is 5.0A, whereas the actual current is 5.2A. User will have to set the E1C5 parameter to 0.2A, which means that once setting of this parameter, the Evap-1 current will be 5.2A.	-2.0 A	2.0 A	0.0 A
113	E2C5 (Level 2)	EVAP-2 CURRENT OFFSET Function : To Set offset for Evap-2 Current. In time it may be possible that the Evap-2 Display current may be offset by a A or so. To compensate for this error, user may need to add or minus the Ampere required to achieve the correct current. Example : The Evap-2 current on the display is 5.0A, whereas the actual current is 5.2A. User will have to set the E2C5 parameter to 0.2A, which means that once setting of this parameter, the Evap-2 current will be 5.2A. Note : This parameter is visible only if LN is set to BOTH.	-2.0 A	2.0 A	0.0 A
114	ID1 (Level 1)	RS-485 DEVICE ID Function : To Set Device ID for BMS connectivity (RS485-1). Note : When this parameter is set to DIS, MODBUS Communication will be disabled. This parameter will not change on factory set.	DIS (0)	240	-

115	BUD1 (Level 1)	DEVICE BAUDRATE Function : To Set Device Baud rate for BMS connectivity (RS485-1). When set to, 9.6 (1) - 9600bps 19.2 (2) - 19200bps 38.4 (3) - 38400bps 57.6 (4) - 57600bps Note : This parameter is applicable only when ID1 parameter is >Dis. This parameter will not change on factory set.	9.6	57.6	-
116	PRTY (Level 1)	DEVICE PARITY Function : To Set Device Parity for BMS connectivity (RS485-1). When set to, NONE (0) - Parity None EVEN (1) - Parity Even ODD (2) - Parity Odd Note : This parameter is applicable only when ID1 parameter is >Dis. This parameter will not change on factory set.	NONE	ODD	-
117	ID2 (Level 1)	SMS/REMOTE DISPLAY ID Function : To Set Device ID for SMS/Remote Display connectivity (RS485-2). Note : When this parameter is set to DIS, SMS/Remote Display Communication will be disabled. This parameter will not change on factory set.	DIS (0)	240	-

118	BUD2 (Level 2)	SMS/REMOTE DISPLAY BAUDRATE Function : To Set Device Baud rate for SMS/Remote Display connectivity (RS485-2). When set to, 9.6 (1) - 9600bps 19.2 (2) - 19200bps 38.4 (3) - 38400bps 57.6 (4) - 57600bps Note : This parameter is applicable only when ID2 parameter is >Dis. This parameter will not change on factory set.	9.6	57.6	-
119	IOT (Level 2)	IOTENABLE/DISABLE Function : To Set Enable/Disable IoT Communication. When set to, DIS (0) : IoT Function will be Disabled. ENAB (1): IoT Function will be Enabled.	DIS	ENAB	DIS
120	DDF (Level 2)	DISPLAY AT DEFROST Function : To Set Display status while Defrosting. When set to, CPS (0): Display will show control Temperature DEFR (1): Display will scroll message “Defrost ON”. Note : This parameter is applicable only if P7>0.	CPS	DF	CPS
121	ND1 (Level 2)	DEFAULT DISPLAY I Function : To Set Default setting of 14-seg Large Display. When set to, CPS (0) : Display Control Probe Temperature. EP1 (1) : Display Evap1 probe Temperature. EP2 (2) : Display Evap2 probe Temperature. SP (3) : Display Set point. Note : This parameter can not set same as ND2 parameter.	CPS	SP	CPS

122	 (Level 2)	 Function : To Set Default setting of 7-seg small Display. When set to, TIME (0) : Display Real Time Clock HH:MM EP1 (1) : Display Evap2 probe Temperature. EP2 (2) : Display Evap1 probe Temperature. SP (3) : Display Set point. CPS (4) : Display Control Probe Temperature. Note : This parameter can not set same as ND2 parameter.	TIME	CPS	TIME
123	 (Level 1)	 Function : To Set Power ON/OFF Function Enable/Disable. When set to, DIS (0) : Power ON/OFF is Disabled. N-SV (1) : Power ON/OFF is Enabled & ON/OFF status will not be stored. SAVE (2) : Power ON/OFF is Enabled & ON/OFF status will be stored. Example : If user presses Power key for 2seconds, controller will go into standby mode. Display will show as per PDIS Settings. Again, if user presses power key for 2seconds, controller will start normal functioning. N-SV : If Mains Power goes off then stand by status will not be stored when power comes back. SAVE : If Mains Power goes off then stand by status will be stored when Power come back	DIS	SAVE	DIS
124	 (Level 2)	 Function : To set Display status at Power OFF. When set to, ICON (0) : Display will be OFF at Standby mode, OFF (1) : Display will show "OFF" at Standby mode. TEMP (2) : Display will show Temperature at Standby mode. Note : This parameter is applicable only when PO Parameter is >DIS.	ICON	TEMP	ICON

125	CRH (Level 1)	COMP RUN HOURS Function : To view Compressor Total Run Hours. Note : If compressor Run Hours reaches 9999 then Run hours will not increment. Display value will flashes 9999 to indicate that Run Hours need to clear.	0	9999	-
126	CCRH (Level 2)	CLEAR COMP RUN HOURS Function : To Clear Compressor Run Hours. When set to, NO (0) : Don't clear compressor run hours. YES (1) : Clear Compressor Run Hours	NO	YES	NO
127	LVL2 (Level 1 only)	SELECT FOR LEVEL-2 PROGRAM MODE Function : To Enter into Level-2 Example : In Level-1, Select this parameter to set correct password for to enter into level-2 by touching set key. Enter correct password of Level-2 and touch set key. If password is correct "SP" parameter will display. Note : This parameter will display only in Level-1 Program mode.	-	-	-
128	PA1 (Level 2)	LEVEL-1 PASSWORD Function : To Set Password for Program mode Level-1 Entry. This parameter is used to set Password for Program mode Level-1. To enter into Program mode Level-1 user has to set this password.	0	9999	0
129	PA2 (Level 2)	LEVEL-2 PASSWORD Function : To Set Password for Program mode Level-2 Entry. This parameter is used to set Password for Program mode Level-2. To enter into Program mode Level-2 user has to set this password. User cannot enter into program mode level-2, if correct password not entered at LVL2 parameter in program mode level-1.	0	9999	30

130	<p>LP (Level 1)</p>	<p>LOCK PARAMETERS</p> <p>Function : To Lock the parameters for Program mode, set mode, HACCP Mode & RTC mode.</p> <p>This parameter is used to Lock the parameters so that tampering is not possible by by-standers.</p> <p>When set to,</p> <p>UNL (0) : Parameters Unlocked.</p> <p>LOCK (1) : Parameters Locked.</p> <p>When locked, all parameters can only be viewed, can not modify.</p> <p>Note : If this parameter is set to LOC and if user tries to change any parameter value, display will show " LOCK".</p>	UNL	LOC	UNL
131	<p>FS (Level 2)</p>	<p>FACTORY SET</p> <p>Function : To Restore default settings of the controller.</p> <p>When set to YES, all parameters are programmed to factory set values. Useful to debug setting related Problems.</p> <p>When set to,</p> <p>NO (0) : Factory settings Disabled.</p> <p>Yes (1) : Factory settings to Default value.</p>	NO	YES	NO
132	<p>EP (Level 1)</p>	<p>EXIT PROGRAM MODE</p>			

7. OTHER MODE PARAMETERS

7.1. RTC MODE PARAMETERS

1	YEAR	YEAR Function : To set Year for Real Time Clock settings.	20	99	-
2	MON	MONTH Function : To set Month for Real Time Clock settings.	JAN	DEC	-
3	DATE	DATE Function : To set Date for Real Time Clock settings. Date can be set as per Leap year settings done. Note : Maximum value will be 28, 30 or 31 as per calendar settings.	1	31	-
4	DAY	DAY Function : To set Day for Real Time Clock settings.	MON	SUN	-
5	HOUR	HOUR Function : To set Hours for Real Time Clock settings. Hours can be set in 24Hr format from 0 to 23.	0 hr	23 hr	-
6	MIN	MINUTE Function : To set Minutes for Real Time Clock settings.	0 min	59 min	-
7	SEC	SECOND Function : To set Seconds for Real Time Clock settings.	0 sec	59 sec	-
8	EP	EXIT RTC MODE Function : To exit from RTC mode. Touch set key to exit from RTC mode.			

7.2. HACCP MODE PARAMETERS

1	HCE	<p>HACCP ENABLE DISABLE</p> <p>Function : To Enable/Disable HACCP function.</p> <p>When this parameter is set to ENAB, HACCP related fault and data logging will be enabled.</p> <p>When set to,</p> <p>DIS (0) : HACCP function is Disabled.</p> <p>ENAB (1) : HACCP function is Enabled.</p>	DIS	ENAB	DIS
2	REFT	<p>HACCP REFERENCE TEMPERATURE</p> <p>Function : To select Reference probe for HACCP function.</p> <p>When set to ,</p> <p>HACC (0) : HACCP probe is selected for Haccp function.</p> <p>CPS (1) : Control Probe is selected for Haccp function.</p>	HACC	CPS	CPS
3	HCP2	<p>HIGH TEMP LIMIT FOR HACCP</p> <p>Function : To set High Temperature alarm for HACCP</p> <p>Example : If this parameter is set to 20.0°C & HTD is set to 1Min.</p> <p>When temperature is reaches or goes above 20.0 for 1min or more then HT Fault will be Set for HACCP. This fault will be cleared when temperature reaches or goes below 19.0. Internal differential of 1.0°C will be considered for clearing the HT fault.</p>	RS = 1.0		
			HCP3+ 1.0	50.0 °C	50.0 °C
			RS = 1		
			HCP3+ 1	50 °C	50 °C
4	HCP3	<p>LOW TEMP LIMIT FOR HACCP</p> <p>Function : To set Low Temperature alarm for HACCP</p> <p>Example : If this parameter is set to -10.0°C & HTD is set to 1Min. When temperature is reaches or goes above -10.0 for 1min or more then LT Fault will be Set for HACCP. This fault will be cleared when temperature reaches or goes above -9.0. Internal differential of 1.0°C will be considered for clearing the LT fault.</p>	RS = 1.0		
			-50.0 °C	HCP2- 1.0	-50.0 °C
			RS = 1		
			-50 °C	HCP2-1	-50 °C

5	HCP5	HACCP PROBE OFFSET Function : To Set offset for HACCP Probe. In time it may be possible that the HACCP probe Display temperature may be offset by a degree or so. To compensate for this error, user may need to add or minus the degrees required to achieve the correct temperature. Example : The Haccp probe temperature on the display is 28.0°C, whereas the actual temperature is 30.0°C. User will have to set the this HCP5 parameter to 2.0°C, which means that once setting of this parameter, the HACCP probe temperature will be 30.0°C (28.0°C+ 2.0°C).	RS = 1.0		
			-10.0 °C	10.0 °C	0.0 °C
			RS = 1		
			-10.0 °C	10.0 °C	0.0 °C
6	HINT	HACCP LOG INTERVAL IN MIN Function : To Set HACCP data logging interval. When this parameter is set to 15Mins. HACCP probe temperature data will be logged after every 15Mins.	1 min	250 min	15 min
7	HTD	FAULT SENSING DELAY IN MIN Function : To Set Delay for HACCP HT/LT fault sensing delay. Example : As explained in HCP2 and HCP3 Parameter.	1 min	250 min	1 min
8	HINL	HACCP LOG DOWNLOAD Function : To download HACCP Data Log to SD Card from Flash memory. When set to, CLR (-2) : Delete/Reset HACCP Data log NO (0) : No action. YES (1) : Download to SD card Note : To set CLR touch down key for 10sec.	CLR	YES	NO

OTHER MODE PARAMMETERS

9	HINA	<p style="text-align: center;">HACCP ALARM DOWNLOAD</p> <p>Function : To download HACCP Alarm Log to SD Card from Flash memory. When set to,</p> <p>CLR (-2) : Delete/Reset HACCP Alarm log</p> <p>NO (0) : No action.</p> <p>YES (1) : Download to SD card</p> <p>Note : To set CLR touch down key for 10sec.</p>	CLR	YES	NO
10	EP	<p style="text-align: center;">EXIT HACCP MODE</p> <p>Function : To Exit from HACCP Mode Touch set key to exit from HACCP mode.</p>			

8. FAULT LOG MODE

8.1. FAULT LOG SELECTION MODE


Touch & Hold LOG/HACCP Key for 2sec to enter into Fault log select mode.


Display will show FLOG. Touch UP/DOWN key to scroll through options as shown below,



FAULT LOG MODE

Function : To enter into Fault Log Mode.

Touch  key to view Fault Logs.


Touch  key for next menu.



HACCP FAULT LOG MODE

Function : To enter into HACCP Fault Log Mode.


Touch  key to view HACCP Fault Log.

Touch  key for next menu.



END LOG SELECT MODE

Function : To enter into HACCP Fault Log Mode.

Touch  key to exit from Log Select Mode.

8.2. GENERAL FAULT LOG MODE

If no faults present then Display will scroll msg **NO FAULT LOGS**
7-SEG DISPLAY WILL SHOW **NOFL**

If faults present then Display will show last fault number with fault code **9-CU** and scroll fault description. **COMP UNDERLOAD FAULT**

7 segment display will toggle fault code and fault no. at rate of 500msec.

FL 9 – Fault no. 9

C-WL – Compressor Current under load fault.

Touch UP/Down key to scroll through all faults upwards/downwards.

Touch RST key to go back screen.

Touch set key to check fault start time. Details will scroll on the display as below.

FROM START DD/MM/YY XXH XXM XXS

Touch up key to check fault end time. Details will scroll on the display as below.

END DD/MM/YY XXH XXM XXS

1. 7 segment display will toggle between fault code & fault no.
2. Touch **UP/DOWN** key to select start time or stop time.
3. Touch RST key to go to previous menu.

Scrolling messages for different faults as below,

SR. NO.	DISPLAY FAULT ABBR.	DISPLAY SCROLLING FAULT NAME 14-SEG	DISPLAY MESSAGE ON 7-SEG LOWER DISPLAY FOR 500MS	SD Card Messages for CR2072AL.CSV File
1	NO	FAULT RECORDS	noFL	
2	RP	R-PHASE FAULT	r-PH	R-Phase
3	YP	Y-PHASE FAULT	y-PH	Y-Phase
4	BP	B-PHASE FAULT	b-PH	B-Phase
5	SP	SPPR FAULT	SPPr	SPPR
6	EU	EVAP1 UNDER LOAD FAULT	E1UL	Evap1 UL
7	EU	EVAP1 UL MANUAL FAULT	E1ULr	Evap1 UL Mn-Reset
8	EO	EVAP1 OVER LOAD FAULT	E1OL	Evap1 OL
9	EO	EVAP1 OL MANUAL FAULT	E1OLr	Evap1 OL Mn-Reset
10	EU	EVAP2 UNDER LOAD FAULT	E2UL	Evap2 UL
11	EU	EVAP2 UL MANUAL FAULT	E2ULr	Evap2 UL Mn-Reset
12	EO	EVAP2 OVER LOAD FAULT	E2OL	Evap2 OL
13	EO	EVAP2 OL MANUAL FAULT	E2OLr	Evap2 OL Mn-Reset
14	CU	COMP UNDER LOAD FAULT	C-UL	Comp UL

15	CU	COMP UL MANUAL FAULT		Comp UL Mn-Reset
16	CO	COMP OVER LOAD FAULT		Comp OL
17	CO	COMP OL MANUAL FAULT		Comp OL Mn-Reset
18	LP	LOW PRESSURE FAULT		Low Pressure
19	LP	LOW PRESSURE MANUAL FAULT		LP Mn-Reset
20	HP	HIGH PRESSURE FAULT		High Pressure
21	HP	HIGH PRESSURE MANUAL FAULT		HP Mn-Reset
22	A1	AUXILARY 1 FAULT		Auxiliary1 Fault
23	A1M	AUX 1 MANUAL FAULT		Auxiliary1 Fault Mn-Reset
24	A2	AUXILARY2 FAULT		Auxiliary2 Fault
25	A2M	AUX2 MANUAL FAULT		Auxiliary2 Fault Mn-Reset
26	CL	CONTROL PROBE LOW FAIL FAULT		Control Pb Fail-L
27	CH	CONTROL PROBE HIGH FAIL FAULT		Control Pb Fail-H
28	RL	ROOM PROBE LOW FAIL FAULT		Room Pb Fail-L
29	RH	ROOM PROBE HIGH FAIL FAULT		Room Pb Fail-H

30	HT	HIGH TEMP FAULT	He	High Temperature
31	LT	LOW TEMP FAULT	Le	Low Temperature
32	AL	AUX PROBE LOW FAIL FAULT	AP-L	Aux Pb Fail-L
33	AH	AUX PROBE HIGH FAIL FAULT	AP-H	Aux Pb Fail-H
34	EL	EVAP 1 PROBE LOW FAIL FAULT	E 1PL	Evap-1 Pb Fail-L
35	EH	EVAP 1 PROBE HIGH FAIL FAULT	E 1PH	Evap-1 Pb Fail-H
36	EL	EVAP2 PROBE LOW FAIL FAULT	E2PL	Evap-2 Pb Fail-L
37	EH	EVAP2 PROBE HIGH FAIL FAULT	E2PH	Evap-2 Pb Fail-H
38	DO	DOOR OPEN	do	Door Open

8.3. HACCP FAULT LOG MODE

If no faults present then Display will scroll msg NO FAULT LOGS
7-SEG DISPLAY WILL SHOW NOFL

If faults present then Display will show last fault number with fault code 9-HT
and scroll fault description HACCP HIGH TEMPERATURE

7 Segment display will toggle fault code and fault no. at rate of 500msec.

FL9 – Fault no. 9

HCHT – HACCP High Temperature.

Touch UP/Down key to scroll through all faults upwards/downwards.

Touch RST key to go on back screen.

Touch set key to check fault start time. Details will scroll on the display as below.

200°C:START DD/MM/YY XXH XXM XXS

Touch up key to check fault end time. Details will scroll on the display as below.

END DD/MM/YY XXH XXM XXS

1. 7 segment display will toggle between fault code & fault no.
2. Touch **UP/DOWN** key to select start time or stop time.
3. Touch RST key to go to previous menu.

HACCP FAULT LOG MODE DISPLAY MESSAGES

SR. NO.	DISPLAY FAULT ABBR.	DISPLAY SCROLLING FAULT NAME 14-SEG	DISPLAY MESSAGE ON 7-SEG LOWER DISPLAY FOR 500MS	SD Card Messages for CR2072HA.CSV File
1	NO	FAULT LOG	noFL	
2	PL	HACCP PROBE FAIL LOW	HFLo	Probe Fail Low
3	PH	HACCP PROBE FAIL HIGH	HFH,	Probe Fail High
4	HT	HACCP HIGH TEMPERATURE	HCHt	High Temperature
5	LT	HACCP LOW TEMPERATURE	HCLt	Low Temperature
6	HF	HACCP HT AT POWER RESET	HCHF	Power Fail HT

9. DISPLAY MESSAGES

9.1. DISPLAY FAULT MESSAGES ON THE MAIN SCREEN

SR. NO.	MESSAGE DESCRIPTION	SCROLLING MESSAGES WHILE DEFROST & DDF PARAMETER SET = DEFR	MESSAGE FLASHING	FAULT CODE
1	Defrost ON	DEFROST ON	--	
2	Compressor ON for Pump-Down	--	[C-P]	
3	R-Phase Fault	R-PH FAULT	RP-F	1
4	Y-Phase Fault	Y-PH FAULT	YP-F	2
5	B-Phase Fault	B-PH FAULT	BP-F	3
6	SPPR Fault Present	SPPR FAULT	SPPR	4
7	Evaporator1 Underload Fault	EVAP-1 UNDER LOAD	E IUL	5
8	Evaporator1 Underload Fault Man Reset	EVAP 1 UNDERLOAD MANUAL	E IUM	6
9	Evaporator1 Overload Fault	EVAP-1 OVER LOAD	E IOL	7
10	Evaporator1 Overload Fault Man Reset	EVAP 1 OVERLOAD MANUAL	E IOM	8
11	Evaporator2 Underload Fault	EVAP-2 UNDER LOAD	E2UL	9
12	Evaporator2 Underload Fault Man Reset	EVAP2 UNDERLOAD MANUAL	E2UM	10
13	Evaporator2 Overload Fault	EVAP-2 OVERLOAD	E2OL	11
14	Evaporator2 Overload Fault Man Reset	EVAP2 OVERLOAD MANUAL	E2OM	12
15	Compressor Underload Fault	COMP UNDERLOAD	[C-UL]	13
16	Compressor Underload Fault Man Reset	COMP UNDERLOAD MANUAL	[CULM]	14

17	Compressor Overload Fault	COMP OVERLOAD	C-OL	15
18	Compressor Overload Fault Man Reset	COMP OVERLOAD MANUAL	COLM	16
19	Compressor Low Pressure	LP FAULT	LP	17
20	Compressor Low Pressure Man Reset	LP FAULT MANUAL	LP-M	18
21	Compressor High Pressure	HP FAULT	HP	19
22	Compressor High Pressure Man Reset	HP FAULT MANUAL	HP-M	20
23	Auxiliary1 Fault Present	AUXILIARY 1 FAULT	AUX 1	21
24	Auxiliary1 Fault Man Reset	AUX 1 FAULT MANUAL	AX 1M	22
25	Auxiliary2 Fault Present	AUXILIARY2 FAULT	AUX2	23
26	Auxiliary2 Fault Man Reset	AUX2 FAULT MANUAL	AX2M	24
27	Control Probe Fail Lower side / Open	CONTROL PROBE FAIL LOW	CP-L	25
28	Control Probe Fail Higher side	CONTROL PROBE FAIL-HIGH	CP-H	26
29	Room Probe Fail Lower side / Open	ROOM PROBE FAIL LOW	RP-L	27
30	Room Probe Fail Higher side	ROOM PROBE FAIL HIGH	RP-H	28
31	Control Probe High Temperature	--	HT	29
32	Control Probe Low Temperature	--	LT	30
33	Auxiliary Probe Fail Lower side/Open	AUX PROBE FAIL LOW	AP-L	31

34	Auxiliary Probe Fail Higher side	AUX PROBE FAIL HIGH	AP-H	32
35	Evaporator1 coil Probe Fail Lower side / Open	EVAP 1 PROBE FAIL LOW	E IPL	33
36	Evaporator1 coil Probe Fail Higher side	EVAP 1 PROBE FAIL HIGH	E IPH	34
37	Evaporator2 coil Probe Fail Lower side / Open	EVAP2 PROBE FAIL LOW	E2PL	35
38	Evaporator2 coil Probe Fail Higher side	EVAP2 PROBE FAIL HIGH	E2PH	36
39	Door Open	DOOR OPEN	DO	37
40	IOT WI-FI Connectivity error	IOT WI-FI ERROR	WIER	-
41	IoT Error for Device ID or Internet	IOT INTERNET ERROR	IOTF	

9.2. GENERAL DISPLAY MESSAGES ON MAIN SCREEN

Sr. No.	Display messages	Descriptions	Related Parameter
1	OFF	Controller's Power OFF by key & is in stand by mode.	PO & PDIS
2	[--P]	Pump Down started	PDN
3	FAULT MUTE	Buzzer or Alarm Mute	RST Key for 1 second
4	MANUAL FAULT RESET	Fault Reset Manually	RST key for 2 seconds
5	V00	Display s/w version.	SET & RST key

6	NO ACTION AT DEFROST	No condition to start/Stop Defrost Manually	Defrost key
7	NO ACTION	Unable to start/stop given command	Quick Freeze key
8	NO ACTION AT POWER	No action at Power key	Power key, PO Parameter
9	TEMP LOG RESET	Temperature Highest & Lowest Log reset	RST key in Temperature Log mode.

9.3. WI-FI DISPLAY MESSAGES ON MAIN SCREEN

Sr. No.	Display messages	Descriptions	Related Parameter
1	WIER	Wi-FiIoT Enabled and No internet or no Wi-Fi Connection.	IoT, Wi-Fi and Internet
2	WI-FI CONFIG	Wi-Fi module entered in Wi-Fi Manager mode.	DOWN & RST key
3	WI-FI PASSWORD CONFIG	Wi-Fi Password Reset command send to Wi-Fi module.	AMP & RST key
4	CONFIG FILE DOWNLOADED	Para config file downloaded from Wi-Fi successfully.	Wi-Fi Manager

9.4. GENERAL MESSAGES IN PROGRAM/SET/RTC/HACCP MODE :

Sr. No.	Display messages	Descriptions	Related Parameter
1	-	Parameter saved in memory	
2	WAIT	Parameter downloading to SD card	DNLD, DNLA, HDNL, HDNA set to YES

3	SUCCESS	Data downloaded to SD card successfully.	DNLD, DNLA, HDNL, HDNA set to YES
4	LOCK	Unable to change Parameter's value	LP Parameter
5	DATA LOG RESET	General Logged Data clear/reset.	DNLD set to CLR
6	ALARM LOG RESET	General Fault Logged clear/reset.	DNLA set to CLR
7	HACCP DATA LOG RESET	HACCP Logged Data clear/reset.	HDNL set to CLR
8	HACCP FAULT LOG RESET	HACCP Fault Logged clear/reset.	HDNA set to CLR

9.5. DISPLAY SERVICE MESSAGES :

Sr. No.	Display messages	Descriptions	Related Parameter
1	CERR	Controller's Flash/EEPROM Memory variables data out of range or I2C error.	To debug the settings, Set FS Paameter to YES & Restart the controller.
2	SERVICE RESET	Abrupt function while downloading the data from Flash to SD Card or unknown error.	DNLD, DNLA, HDNL, HDNA

1. If RTC failed error then RTC related functions of Data logging, Real Time defrost, Energy saving will not be executed. If time is not updated for 2 mins. then instead of time, display will show RTCF.
2. If EEPROM Memory error present then EEPROM related Functions, Data logging, Run Hours saving, Highest/Lowest Temperature logging will not be worked.

10. DATA LOGGING AND DOWNLOADING

10.1. DATA DOWNLOADING & SD CARD FUNCTION :

Different types of Data will be logged in the Flash memory. Data is logged in Two different types - General Data & HACCP Data. General Data will be logged as per LOG parameter setting. General Fault will be logged without parameter settings. For HACCP Data & Fault will be logged if HCE parameter is enabled.

General Data logging will be Max. 36000 Data logs of 1Year with minimum 15min time Interval. General Fault Logging will be Max. 16000 Fault Logs.

HACCP Data logging will be Max. 36000 Data logs of 1Year with minimum 15min time Interval. HACCP Fault Logging will be Max. 16000 Fault Logs.

Logging Data will be overwritten from 1st record whenever no. of records reaches Max. Limits.

To View logged Data user has to Download the Data from Flash to SD Card which will be in .csv format.

Before downloading put the SD card properly in the SD Card Holder. Lift up side the Panel Door to insert the SD Card holder in the given Slot as shown in below image. Insert the SD card holder properly in the SD card slot & Push. Make sure SD Card Holder is locked before downloading the Data.

Caution :

Ensure your system does not require any input/output status from controller while downloading. While downloading the logged data from flash to SD Card controller will remain in pause mode and data will be downloaded in the background. Display will show "WAIT". DO NOT INTERRUPT WHILE DOWNLOADING THE DATA. To Download Max. Limits of Records it will take Maximum 3 Minutes.

10.1.1. DOWNLOADING DIFFERENT LOGS FILES :

Existing file with the same name will be deleted and will create new file.

1) To Download General Data set DNLD Parameter to YES. CR2072DL.CSV file will be created as shown in below image.

MODEL NO.:		CRC-2072														
DATA LOG																
--DATE--	--TIME--	--DAY--	--RES--	--CPS--	--CONTROL--	--ROOM--	--AUX--	--EVAP1--	--EVAP2--	--DOOR--	--COMP--	#NAME?	--DEFROST2--	--COMP. RYB--	--EVAP1--	--EVAP2--
			Deg C		Deg C	Deg C	Deg C	Deg C	Deg C	STATUS	STATUS	STATUS	STATUS	CURRENT(A)	CURRENT(A)	CURRENT(A)
03/16/2023	14:26:02	Thursday	0.1	ROOM	12.1	12.1	5.4	-27.8	-24.4	CLOSE	OFF	OFF	OFF	0	0	0
03/16/2023	14:26:13	Thursday	0.1	ROOM	12.1	12.1	5.4	-27.9	-24.4	CLOSE	ON	OFF	OFF	0	0	0
03/16/2023	14:27:02	Thursday	0.1	ROOM	12.1	12.1	5.4	-27.8	-24.5	CLOSE	ON	OFF	OFF	0	0	0
03/16/2023	14:28:02	Thursday	0.1	ROOM	12.1	12.1	5.4	-27.9	-24.5	CLOSE	ON	OFF	OFF	9.6	9.6	9.7
03/16/2023	14:28:04	Thursday	0.1	ROOM	12.1	12.1	5.4	-27.9	-24.5	CLOSE	OFF	OFF	OFF	0	9.6	0

GENERAL DATA LOGGED FILE DETAILS COLUMN WISE:

- A. **DATE** : Logged Date is in MM/DD/YYYY format as per your system settings.
- B. **TIME** : Logged time is in 24 Hrs format HH:MM:SS.
- C. **DAY** : Logged Day from Monday to Sunday.
- D. **RESOLUTION** : Resolution settings 0.1 or 1 °C of Temperature when data is logged.
- E. **CPS** : CPS Parameter settings for Control probe selection.
 - i. **ROOM** : Room Probe selected.
 - ii. **AUX** : Auxiliary Probe selected.
 - iii. **AVG** : Average of Room & Auxiliary Probe.
 - iv. **RMAX** : Room Probe Primary & Auxiliary Probe secondary.
 - v. **AXRM** : Auxiliary Probe Primary & Room Probe secondary.
- F. **CONTROL** : Control probe Temperature which is set for CPS parameter.
- G. **ROOM** : Room Probe Temperature.
- H. **AUX** : Auxiliary Probe Temperature.
- I. **EVAP1** : Evap1 Probe Temperature.
- J. **EVAP2** : Evap2 Probe Temperature.

For all Temperature related logged data as below,

 - i. **Disabled** : Probe Disabled.
 - ii. **PP-H** : Probe Failed Higher side.
 - iii. **PP-L** : Probe Failed Lower side or Open.
- K. **DOOR** : Door status
 - i. **OPEN** : Door is Open
 - ii. **CLOSE** : Door is Closed.
- L. **COMP** : Compressor Status
 - i. **OFF** : Compressor is OFF
 - ii. **ON** : Compressor is ON
- M. **DEFROST1** : Defrost1 Status
 - i. **OFF** : Defrost1 is OFF
 - ii. **ON** : Defrost1 is ON
- N. **DEFROST2** : Defrost2 Status
 - i. **OFF** : Defrost2 is OFF
 - ii. **ON** : Defrost2 is ON

- O. **RYB Current** : Average current of R-Phase, Y-Phase & B-Phase of compressor.
Compressor current will show only when Compressor is ON. If one of the Phase current is not present then it will show 0.0 A only.
- P. **EVAP1 Current** : Evaporator1 current.
Current will show only when Evaporator1 is ON.
- Q. **EVAP2 Current** : Evaporator2 current.
Current will show only when Evaporator2 is ON.

2) To Download General Fault Log, set DNLA Parameter to YES. CR2072AL.CSV file will be created as shown in below image.

	MODEL NO.:	CRC-2072				
		ALARM LOG				
--ALARM--	--START DATE--	--START TIME--	--START DAY--	--STOP DATE--	--STOP TIME--	--STOP DAY--
Evap2 OL	03/16/2023	14:28:04	Thursday	03/16/2023	14:28:05	Thursday
Evap2 OL	03/16/2023	14:28:10	Thursday	03/16/2023	14:28:11	Thursday
Evap2 OL	03/16/2023	14:28:16	Thursday	03/16/2023	14:37:02	Thursday
Evap2 OL Mn-Reset	03/16/2023	14:28:16	Thursday	03/16/2023	14:37:02	Thursday

GENERAL FAULT LOG FILE DETAILS COLUMN WISE :

- A. **ALARM** : Alarm Descriptions as given below chart. (Refer page number -74 to 76)
- B. **START DATE** : Logged Date when Fault occurred, in MM/DD/YYYY format as per your system settings.
- C. **START TIME** : Logged Time when Fault occurred, in 24 Hrs format HH:MM:SS.
- D. **START DAY** : Logged Day when Fault occurred from Monday to Sunday.
- E. **STOP DATE** : Logged Date when Fault is cleared, in MM/DD/YYYY format.
- F. **STOP TIME** : Logged Stop Time when Fault is cleared, in 24 Hrs format HH:MM:SS.
- G. **STOP DAY** : Logged Day when Fault is cleared, from Monday to Sunday.

If Stop Date, Time & Day shows “---” It means fault is present or no data available due to Power off/Stand By the controller with fault present.

3) To Download HACCP Data set HDNL Parameter to YES. CR2072HD.CSV file will be created as shown in below image.

MODEL NO.		CRC-2072			
		HACCP DATA LOG			
--DATE--	--TIME--	--DAY--	--RES.--	--REF PROBE--	--HACCP--
			Deg C		Deg C
03/16/2023	14:27:01	Thursday	0.1	HACCP	5.4
03/16/2023	14:28:01	Thursday	0.1	HACCP	5.4
03/16/2023	14:29:01	Thursday	0.1	HACCP	5.4
03/16/2023	14:30:01	Thursday	0.1	HACCP	5.4

HACCP DATA LOGGED FILE DETAILS COLUMN WISE:

- A. **DATE** : Logged Date is in MM/DD/YYYY format as per your system settings.
- B. **TIME** : Logged time is in 24 Hrs format HH:MM:SS.
- C. **DAY** : Logged Day from Monday to Sunday.
- D. **RES.** : Resolution RS parameter settings 0.1 or 1 °C of Temperature when data is logged.
- E. **REF PROBE** : REFT Parameter settings for HACCP Probe selection.
 - i. **CPS** : Control Probe selected.
 - ii. **HACCP** : HACCP Probe selected.
- F. **HACCP** : HACCP probe Temperature which is set for REFT parameter.
 For Temperature related logged data as below,
 - i. **PP-H** : Probe Failed Higher side.
 - ii. **PP-L** : Probe Failed Lower side or Open.

4) To Download HACCP Fault Log, set HDNA Parameter to YES. CR2072HA.CSV file will be created as shown in below image.

MODEL NO.:		CRC-2072							
		HACCP ALARM LOG							
--START DATE--	--START TIME--	--START DAY--	--RES.--	--REF PROBE--	--HACCP--	--EVENT--	--STOP DATE--	--STOP TIME--	--STOP DAY--
			Deg C		Deg C				
03/16/2023	14:50:53	Thursday	0.1	HACCP	Fail	Probe Fail High	03/16/2023	14:51:26	Thursday
03/16/2023	14:52:49	Thursday	0.1	HACCP	33.2	High Temperature	03/16/2023	14:58:11	Thursday
03/16/2023	14:59:35	Thursday	0.1	HACCP	33.2	High Temperature	---	---	---

HACCP FAULT LOG FILE DETAILS COLUMN WISE :

- A. **START DATE** : Logged Date when Fault occurred, in MM/DD/YYYY format as per your system settings.

- B. **START TIME** : Logged Time when Fault occurred, in 24 Hrs format HH:MM:SS.
- C. **START DAY** : Logged Day when Fault occurred from Monday to Sunday :
- D. **RES.** : Resolution RS parameter settings 0.1 or 1 Deg C of Temperature when data is logged.
- E. **REF PROBE** : REFT Parameter settings for HACCP Probe selection.
 - I. **CPS** : Control Probe selected.
 - II. **HACCP** : HACCP Probe selected.
- F. **HACCP** : HACCP probe Temperature which is set for REFT parameter. For Temperature related logged data as below,
 - I. **Fail** : Probe is failed higher or lower side.
 - II. **33.2** : Temperature value.
- G. **EVENT** : HACCP Fault Description as given below.
- H. **STOP DATE** : Logged Date when Fault is cleared, in YYYY/MM/DD format.
- I. **STOP TIME** : Logged Stop Time when Fault is cleared, in 24 Hrs format HH:MM:SS.
- J. **STOP DAY** : Logged Day when Fault is cleared, from Monday to Sunday:

If Stop Date, Time & Day shows “---” It means fault is present or no data available due to Power off/Stand By the controller with fault present.

HACCP Fault Description :

- I. **Power Fail HT** : HT Fault due to Power Fails.
- II. **High Temperature** : High Temperature HACCP Fault
- III. **Low Temperature** : Low Temperature HACCP Fault

DISPLAY MESSAGES FOR DATA DOWNLODING TO SD CARD :

Sr. No.	Display messages	Descriptions	Related Parameter
1	WAIT	DATA DOWNLOADING TO SD Card from Flash memory.	DNLD, DNLA, HDNL, HDNA set to YES
2	SUCCESS	Data Downloaded to SD Card Successfully.	DNLD, DNLA, HDNL, HDNA set to YES
3	FILE ERROR	File unable to create or open.	File related error
4	NO SD CARD	SD Card not detected while Data Downloading to SD Card	DNLD, DNLA, HDNL, HDNA set to YES
5	NO RECORDS	No Data available to Download to SD Card.	LOG, HLOG & Faults

11. LVM (Line Voltage Monitor) Three Phase SZ-VMRC-3000AA-P

11.1. INTRODUCTION :

SZ-VMRC-3000AA-P is three phase Line Voltage Monitor (LVM) used to protect device from Single Phasing, voltage unbalance, phase reversal and under/over voltage. It shows real time voltages between phase and neutral. There is an Output of alarm relay is given to the controller as SPPR input.

Features are easily understood by examples in the instruction below.

11.2. TECHNICAL DATA

Main Functions	: Voltage Monitoring. Phase Sequence Monitoring. Phase Loss and Phase Unbalance detection. Uv and Ov Detection. Settable Uv and Ov Parameter.
Dimensions	: Front : 70mm X 45mm Depth : 72.3 mm
Input	: R, Y, B Phases and Neutral Input.
Output	: Alarm Relay : 5A Resistive.
Application	: Under voltage and Over voltage detection.
General Specification :	Input Voltage Range from 173 VAC to 458 VAC.
Mounting	: Din rail mounting.
Connections	: Screw terminals : < 2.5sqmm one wire/terminal only.

11.3. DESCRIPTION OF PARAMETERS AND FUNCTIONS

Parameter	Description	Min.	Max.	Fac.
	Display will show 'rEF' and scroll the description of the parameter. To go to other parameters, use up / down keys.			
rEF	Function : To set Reference voltage. Use UP/DOWN keys to set desired value. Min and Max value will change according to display type for settings. Example: L-L, Min= 381 Max= 415.	381V	415V	400V

ov	<p>Function : To set Overvoltage Limits.</p> <p>Use UP/DOWN keys to set desired value.</p> <p>If the a/c voltages goes above this limit will trip respective a/c on Over voltage ("Ov") fault.</p> <p>Example: Over voltage is calculated depending on Reference voltage + Ov value. i.e, Ov Set Point = Ref + Ov , When controller trip on Ov Fault it will recover when input voltage fall below (Ref + Ovd).</p>	5V	75V	42V
uv	<p>Function : To set Undervoltage Limits.</p> <p>Use UP/DOWN keys to set desired value.</p> <p>If the a/c voltages goes below this limit will trip respective a/c on undervoltage("Uv") fault.</p> <p>Example : Under voltage is calculated depending on Reference voltage - Uv value. i.e Uv Set Point = Ref - Uv , When controller trip on Uv Fault it will recover when input voltage above (Ref – (Uvd)).</p>	5V	75V	42V
ovd	<p>Function: To set differential for Over voltage Limit.</p> <p>This is the differential value to recover from Ov Fault.</p> <p>Example: When controller trip on Ov Fault it will recover when Input Voltage falls below (Ref + Ovd).</p>	5V	75V	25V
uvd	<p>Function: To set differential for Undervoltage Limit.</p> <p>This is the differential value to recover from Uv Fault.</p> <p>Example: When controller trip on Uv Fault it will recover when Input Voltage goes above (Ref - Uvd).</p>	5V	75V	20V
unb	<p>Function : To set Un Balance value.</p> <p>Use UP/DOWN keys to set desired value.</p> <p>Unbalance fault raised when voltage difference between any of two phases goes above Unb value and recovers when the difference is less than (UNB/2).</p>	10V	120V	60V
ttt	<p>Function : To set time delay.</p> <p>Use UP/DOWN keys to set desired value.</p> <p>Time delay provided to avoid false triggering, when any fault last more than TTD value then only fault is raised and this fault is applicable to Under voltage, Over voltage and Unbalance fault. (i.e., In case of Phase Loss or Phase sequence fault alarm will come immediately).</p>	0Sec	60Sec	10Sec

t_{br}	<p>Function : T6o set fault recover delay. Use UP/DOWN keys to set desired value. Time delay provided to add delay in fault recover time, to avoid sudden fault triggering and reset.</p>	0Sec	240Sec	10Sec
$C_{rY}/$ $C_{-r}/$ CAL	<p>Function : To set calibration of voltage r-Y or r phase. CrY/C-r - Used to calibrate Three Phase CAL - Used to calibrate Single Phase. Use UP/DOWN keys to set desired value. This parameter provided to calibrate voltage reading. When dsP is L-L CrY value get set. When dsP is L-n C-r value get set.</p>	-15V	15V	0V
C_{Yb}/C_{-Y}	<p>Function : To set calibration of voltage Y-b or Y phase. When dsP is L-n C-Y value get set. Use UP/DOWN keys to set desired value. This parameter provided to calibrate voltage reading. When dsP is L-L CYb value get set.</p>	-15V	15V	0V
C_{rb}/C_{-b}	<p>Function : To set calibration of voltage r-b or b phase. Use UP/DOWN keys to set desired value. This parameter provided to calibrate voltage reading. When dsP is L-L Crb value get set. When dsP is L-n C-b value get set.</p>	-15V	15V	0V
dsP	<p>Function : To set view display mode. Use UP/DOWN keys to set desired value. There are two type of display output, Line to Line Voltage (L-L) and Line to Neutral (L-n), Depending on this parameter REF parameter also changes.</p>	L-L	L-n	L-L
FS	<p>Function : To restore the default settings of the controller. Use UP/DOWN keys to set desired value. When set to 1, all parameters are programmed to factory values.</p>	NO	YES	NO
End	<p>Function : To end programming. Once the set key is pressed, the controller goes into the normal mode and displays the voltage readings.</p>			

12. WEB SERVER



12.1. INTRODUCTION

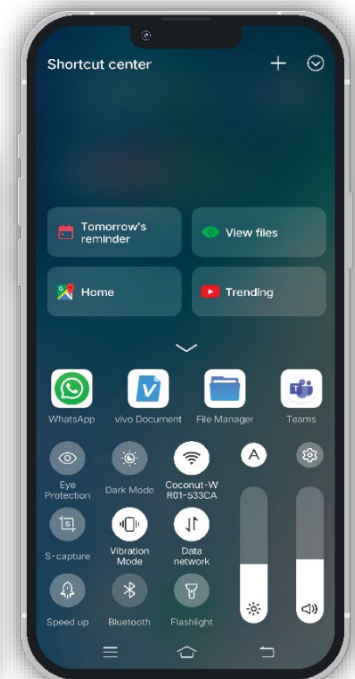
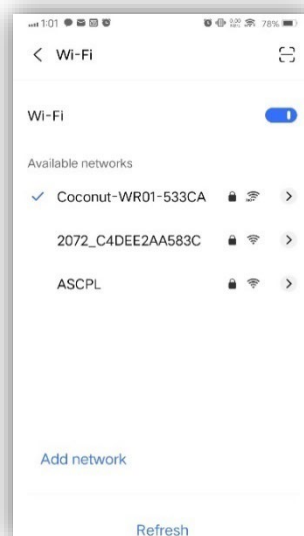
CRC-2072 has its internal Wi-Fi manager with the help of which user can do easy Parameter settings using mobile handset or laptop.

It offers the following functionality:

1. It displays all parameters of connected CRC2072 in specified groups. Gives an easy access to user, who can then scroll and edit them as required.
2. User can download the set parameters in 2 different formats:
 - a- “.csv” – This will be human readable file format user can download parameters in this format for the records.
 - b. “.cfg” is configuration file operator can do same settings to other controllers by downloading this file to it.
3. Wi-Fi Settings will automatically detect all available networks from which user can select Wi-Fi network for cloud connectivity - Subzeroiot.

12.2. CONNECTING TO WEB SERVER

1. Select  +  key on the CRC-2072 controller, Text “Wi-Fi Config” will scroll on the controller display this enables Wi-Fi server in the controller. Now user can connect and access it with mobile phone or laptop.
2. Go to the Wi-Fi settings in your mobile or laptop.
3. Refresh available network list.
4. It will display 2072xxxxxxxxxxxx network name in the network list.
5. Connect to the same network. (Note : Please switch off Mobile data to have fast access)



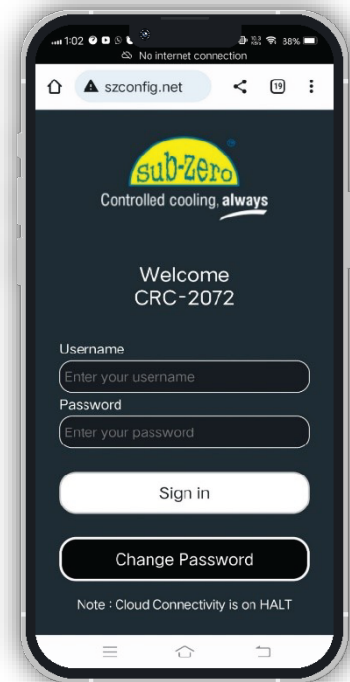
6. Now open any browser for example “Google Chrome”.
Enter URL <http://szconfig.net>
7. Login page of SZConfig (Web Server) will appear.
8. Enter Valid username and password .

Username : admin(factory set)

Password : 777777(factory set)

User can modify password by pressing “Change Password”.
Once user changes password, factory password will reset to new set password.

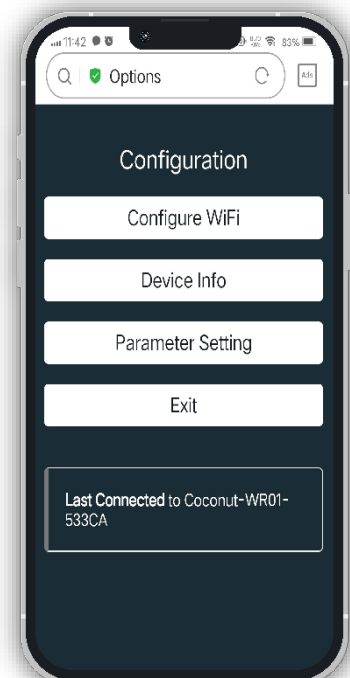
Note : In case user forgets password, use change password mode to reset the password.



After entering login credentials click “Sign In”. List of Configuration Tabs will be shown.

1. **Configure Wi-Fi** – This is to set Wi-Fi network for cloud connectivity.
2. **Device Info** – Displays device id and connected Wi-Fi module for cloud connectivity.
3. **Parameter Setting** – Click on this tab to view and edit connected CRC-2072 parameters.

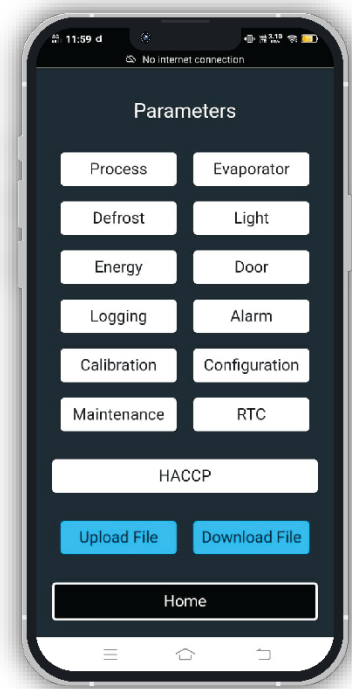
Note : If Wi-Fi network is already selected it will show configured Wi-Fi setting at the bottom as “Last Connected to xxxxxxxxxx”.



12.3. PARAMETER SETTINGS

Select “Parameter Settings”, different parameter categories of CRC-2072 will display in different tabs.

For example, Tab “PROCESS” will list all parameters related to Process Category. Click on the desired category to check required parameters.



12.4. EDITING OF PARAMETERS

After selecting particular Category, parameters listed in that category are displayed as below.

Each Parameter will be displayed along with following details

1. Parameter Name
2. It's set value in the controller
3. Its Minimum & Maximum Set Limit
4. The Other Dependent Parameter Settings.

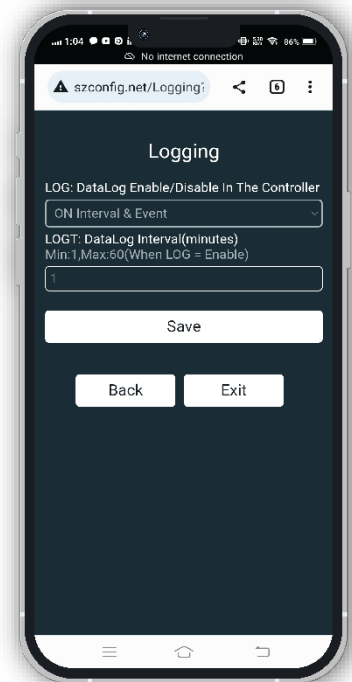


User can enter new value in the respective text boxes or select from the dropdown list.

After setting all parameters click on the SAVE button.

It will send changed value to the controller. Wait for “SAVED” message.

Press “BACK” to go to the category page or **Exit** button to exit Webserver mode.



12.5. DOWNLOAD & UPLOADING OF THE PARAMETERS SETTINGS

Web Server mode also have function to download and upload all parameter settings for user's Future use.

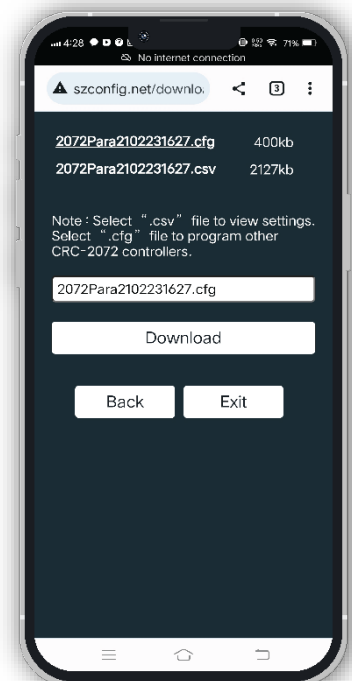
On the parameter category page Two Buttons are provided “Upload File” and “Download File”.

Downloading File :

Utility creates two types of files for user access.

1. “.csv” File –
2. “.cfg” File –

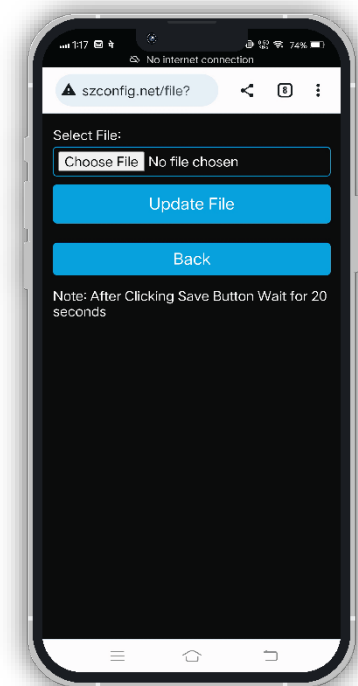
Once downloaded both files will be saved to user's phone /laptop memory. File name will append with date time so that user can select required file.



Uploading File :

User can upload this saved file to another CRC-2072 using web server mode.

This will configure connected controller with same saved configuration.

**12.6. Wi-Fi CONFIGURATION**

In the Home window click on “Wi-Fi Configuration” to select Wi-Fi network.

Window will display all available Wi-Fi networks. Select desired network and Enter connectivity password.

If both credentials matches then controller will get connected to cloud and start sending data to subzeroiot at set interval.

Note :

- **Please be sure that IoT Parameter is enabled from the controller.**
- **If Wi-Fi network is already connected the no need to set it again. Controller will automatically fetch saved configuration to connect.**
- **Changed Wi-Fi network will only set in the controller after exiting Web Server. It may take upto 5-10 mins to connect to wifi network.**

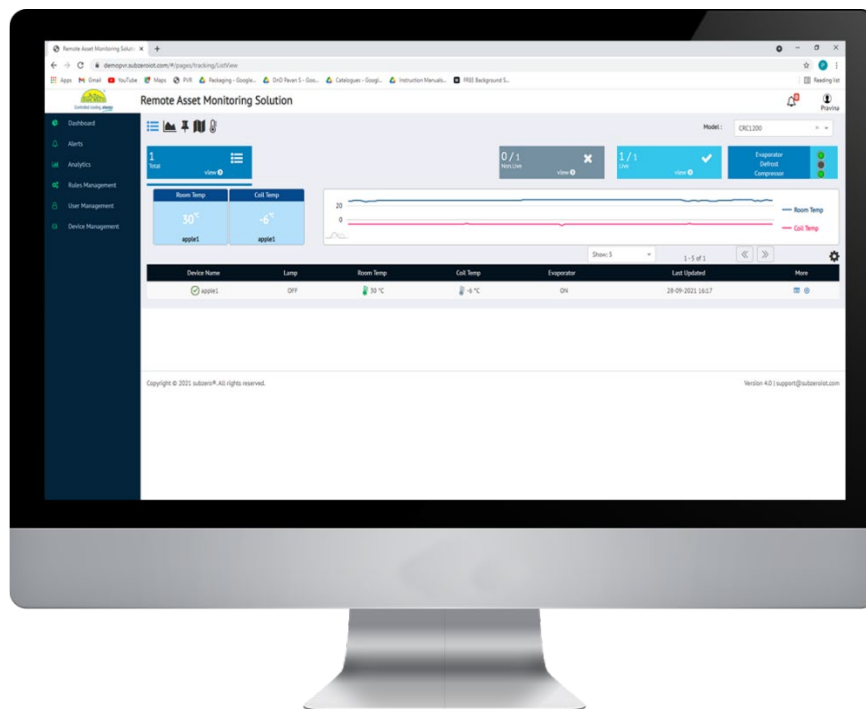
Once connected wifi icon on the controller display will come on.

User can now check status of the controller on the cloud. Also data will start logging at the interval of 5 min on the cloud.

open subzeroiot web portal in browser on laptop/ pc and Enter url as : <https://subzeroiot.com>

Enter userId and password and login.

Download Subzeroiot APP from Playstore to view on the mobile .



12.7. CHANGING WEB SERVER LOGIN PASSWORD

1. Press **PRG** + **RST** key and connect mobile /laptop wifi to CRC2072 wifi network "2072_xxxxx".
2. Press **RST** + **AMP** key for 10 seconds from the controller keypad .
3. Display will scroll message as "Wifi Change Password".
4. Now open any browser for example "Google Chrome". Enter URL <http://szconfig.net>
5. Login page of SZConfig (Web Server) will appear with "Change Password" option.
6. Press change password button "Change Password Screen " will appear .
7. Enter new password to set. And Press SAVE button. Now user will use this changed password.
8. Enter Login To go back to Log in page and proceed with the settings.

Note : Once Enter into Web server mode user can exit from it by pressing "Exit" button or After 5 min timeout.

When in Webserver mode cloud connectivity will be on halt.