Turbo air Speeds Up the Pace of Innovation

REFRIGERATION SYSTEM
Turbo air

Part No. KUCTB202505
October 2025 edition

CAREL | MPXzero
Electronic controller for refrigeration applications

USER MANUAL

MPX manual

Sequence of Operation.

Operation of Refrigeration.

1. When power is connected to the unit cooler, power is supplied to the controller and the output signal on the display is activated.
   The display will show the current temperature and the fan will operate.
   If the display shows "def", the initial defrost is running, so refer to the controller setting method below to terminate the defrost.

2. When the switch is turned on, power is supplied to the solenoid valves, which will run the condensing unit.

3. When the box temperature reaches a setting, the compressor and condenser fan motors shut off while evaporator fan motor is working.

4. When the box temperature rises above the set point and minimum off-time has elapsed, the compressor contactor will be re-energized and re-operated.

Operation of Defrost.

1. Under normal electric defrost operation, the temperature/defrost control will de-energize the compressor contactor, evaporator fans and energize the defrost heaters. But under normal air defrost operation, the control will de-energize the compressor contactor and keep an evaporator fan motor working.

2. When the coil has defrosted completely and reached the preset coil sensor temperature, defrost heater cuts off and fan delay / drip sequences begin.

3. The control energizes the compressor and condenser fan motor and they restart.

4. When the coil temperature reaches 65°For fan delay time has elapsed, the evaporator fans will be energized and started.

Controller Setting.

Carel MPXzero Electronic Controller.

MPXzero is a range of electronic controllers for centralised food retail refrigeration applications The user terminal, with capacitive touch screen, features wireless connectivity with mobile devices. The range includes two versions, standard and advanced, which differ in terms of the number of inputs/outputs, the number of serial ports available (Fieldbus) and wireless connectivity. Near Field Connection (NFC) is always available, while Bluetooth (BLE) is optional on the Advanced version. The power supply is always 115-230 Vac.

The CAREL “APPLICA” app is available on Google Play for the Android operating system and on the Apple Store for iOS (Bluetooth only). This simplifies parameter configuration and unit commissioning in the field (also available in Desktop mode).

APPLICA app

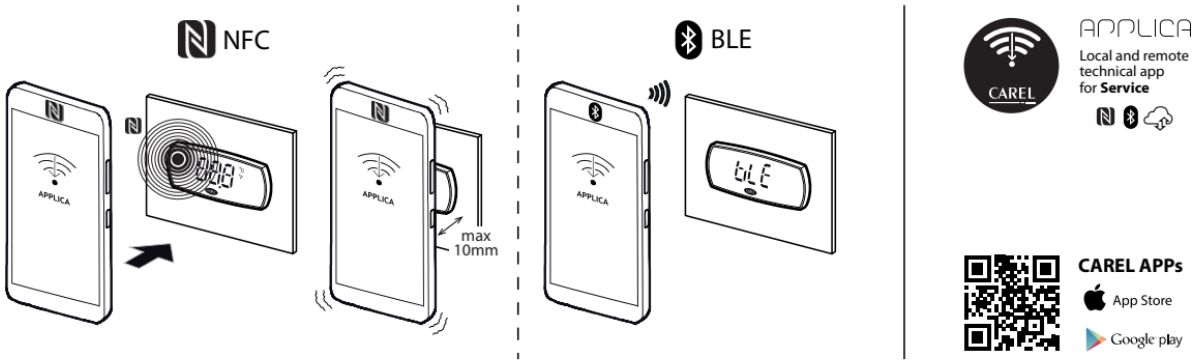
The “APPLICA” app can be used to configure the controller from a mobile device (smartphone, tablet), via NFC (Near Field Communication, Android devices only) or Bluetooth.

Procedure (modify parameters):

- download the CAREL “Applica” App, available on the Google Play Store and Apple Store;
- (on the mobile device) enable NFC and/or Bluetooth(*) communication and mobile data;
- open Applica;
- if using NFC communication, move the device to a distance of less than 10 mm from the user terminal, so as to recognise the model and firmware;
- select the access profile and enter the required password (**);
- set the parameters as needed;
- move the mobile device near to the user terminal again to upload the configuration parameters.

(*) some Android devices may require geolocation to be enabled in order to view the list of Bluetooth devices in the area.

(*) pre-assigned by the unit manufacturer to allow maintenance only by authorised service technicians. See the parameter table.

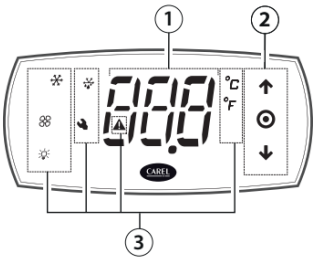


Electrical Connections

WARNINGS:

- the electrical connections must only be completed by a qualified electrician;
- a power supply other than the type specified may seriously damage the system;
- separate as much as possible the probes and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance. Never lay power cables(including the electrical cables) and probe signal cables in the same conduits. Do not install the probe cables in the immediate vicinity of power devices (contactors, circuit breakers or similar);
- reduce the path of the probe and sensor cables as much as possible, and avoid spiral paths that enclose power devices. The probes must be connected using shielded cables (minimum cross-section of each wire: 0.5 mm^2);
- avoid direct contact with internal electronic components;
- connection errors (and connections other than those indicated in this manual) may involve danger to the safety of the users and cause faults on the instruments and the components connected;
- fit the unit with all the electromechanical safety devices required to guarantee correct operation and the complete safety of the user.

User termianl



Key:

1	Main field
2	Keypad
3	Operating Mode

Notice:

• The user terminal can only be used to set the frequent parameters and display the value of the probes connected to MPXzero. The Service- and Manufacturer-level parameters are set using the "Applica" app or the configuration software, depending on the access profile. See the parameter table and the paragraph "Parameter categories visible on the user terminal";

• Parameter /t1 is used to choose the variable to be shown on the display during normal operation:

Keypad

Button	Description	Function
↑ ↓	UP / DOWN	• Increase/decrease the value • Scroll direct access functions • LED on: scroll menu, parameters, direct access functions • LED flashing: set parameter values
◎	PRG	Pressed briefly: • Save value and return to the parameter code • Mute buzzer Pressed and held (hold until "---" is shown): • Enter direct access function menu (from main screen) and activate/deactivate functions Pressed and held (hold after "---" is shown): • Enter programming mode or return to previous level without saving • LED on: main screen/programming mode

Display

The icons provide information on device operation and/or the activation of certain functions, as shown in the table.			
Icon	Function	On	Flashing
❄	Solenoid / Compressor	Solenoid / Compressor active	Compressor timers active
✿	Evaporator fan	Evaporator fan on	-
💡	Lights	Light on	-
❄	Defrost	Defrost active	Awaiting defrost
🔧	Service	Maintenance request	-
⚠	Alarm	Alarm acknowledged	Alarm active
°C	Unit of measure degrees Celsius	Unit of measure ℃	-
°F	Unit of measure degrees Fahrenheit	Unit of measure ℉	-

Programming mode

The user terminal only provides access to the Basic configuration parameters, such as direct functions and active alarms without password protection, or, with password protection, unit set-up (*). Press PRG, the display will show "Loc" (display locked), on the main screen, hold PRG for 3s until the display is unlocked "---", enter the password 33 to access programming mode; see the menu description for details of the items available.

Notice: (*) for any optimisations, use the APPLICA app.

Set point setting (desired temperature value)

Set directly from the controller.

1. Wait for the standard display to be shown;

2. Press PRG, the display will show “Loc” (display locked)

3. Press and hold PRG and until “PSd” is shown

4. When PSd is shown, press PRG and use the UP arrow to enter the password: 33

5. Press PRG: the first category of parameters is displayed: VIS (=Display)

6. Press DOWN: the second category of parameters is displayed: CtL (=Control)

7. Press DOWN until reaching parameter St (=set point) and PRG to display the value

8. Press UP/DOWN to modify the value

9. Press PRG to save the setting and return to the parameter code

10. Press PRG for 3 sec or alternatively, in the parameter level select ESC and press PRG to return to the parameter categories

11. Press DOWN to move to the next category dEF (=Defrost) and follow steps 5 to 9 to set the other parameters

12. After having completed the settings, to exit either: a) from the categories press ESC and then PRG; or b) press PRG for 3 s

***Notice**: if no button is pressed, after around 1 minute the terminal will automatically return to the standard display.*

Set up using the applica (Mobile)

1. Download and install the CAREL "Applica" app from the Google Play Store and Apple Store.
2. During installation, select "Unit of measure" in step 2 "APPEARANCE".
3. Power on CAREL CONTROLLER and open “Applica”

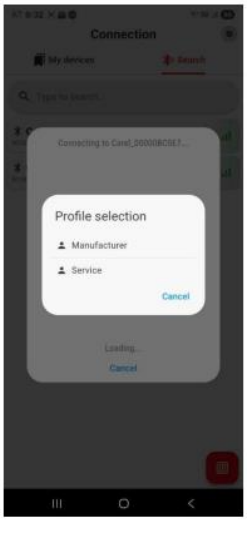
CAREL APPs

App Store

Google play

4. Press “Carel_***”.

5. Press “Service” or “Manufacturer.



6. Enter password.
Manufacturer : 44
Service : 22

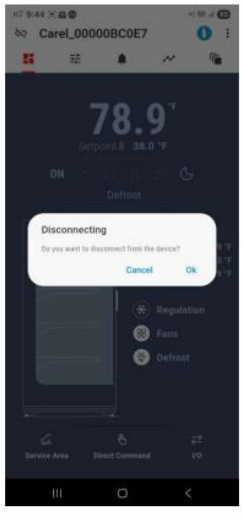
7. Press “Direct Command" in the center of the bottom of the screen.

8. Press the number above “Setpoint”.

9. Enter the setpoint and press "OK".

10. Press the “ ” in the upper left corner.

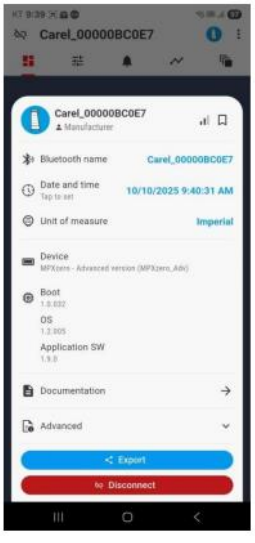
11. Press “OK" to exit setup.



12. If you proceed with manual defrost, press “Next” in step 8.

13. Enter “ ”. To end the setup, proceed in the same way as in step 10~11.

14. If you want to change the unit of measurement, press “ ” in the upper right corner.



15. Select "Unit of measure" by pressing it on the left screen.

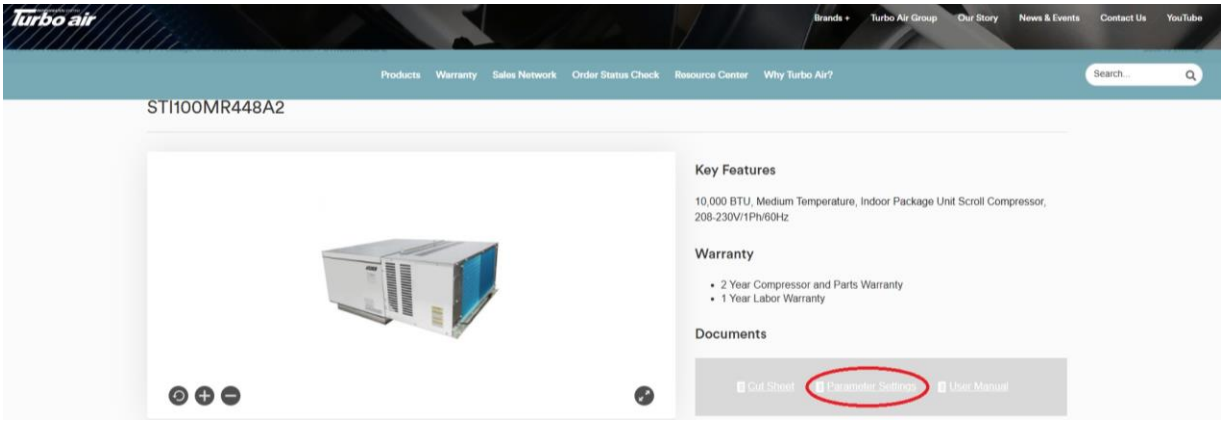
Imperial : Fahrenheit
International : Celsius

How to load PARAMETER

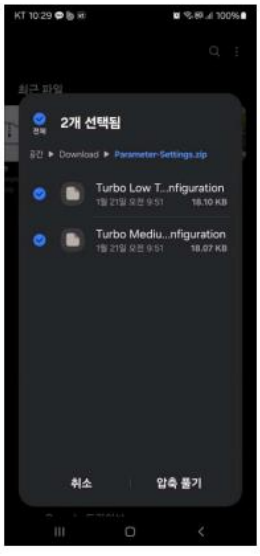
1. Scan the QR code on the right to access the turbo air website.

PARAMETER

2. After accessing the website, click “Parameter Settings” in the image below to download.

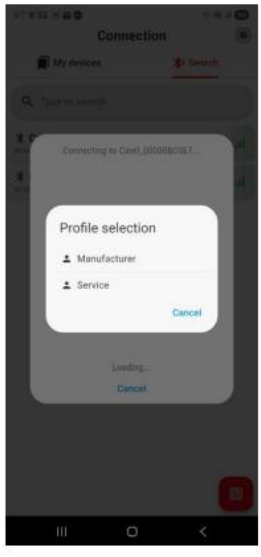


3. Unzip the downloaded file.

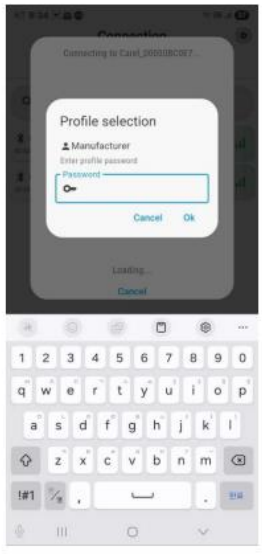


4. After opening the "applica", press "Carel_***".

5. Press "Service" or "Manufacturer.

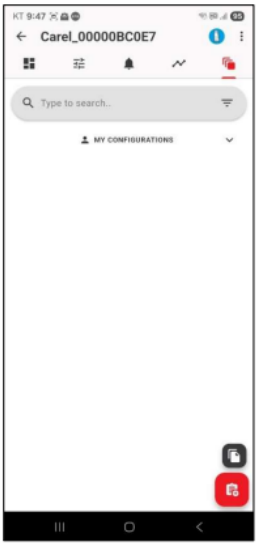


6. Enter password.
Manufacturer : 44
Service : 22

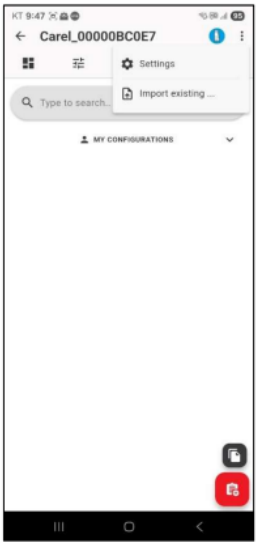


7. Press "  " in the upper right corner.

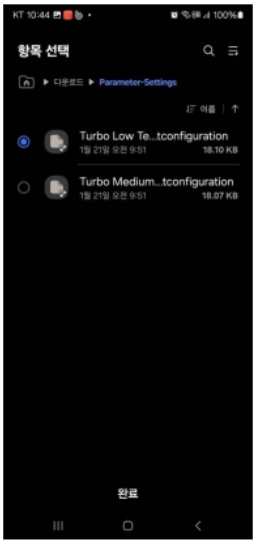
8. Press "  " in the upper right corner.



9. Click "Import existing..." and locate the downloaded file.

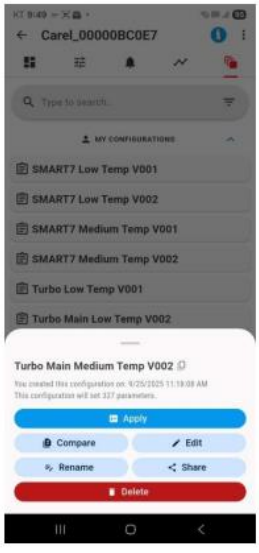


10. Save all downloaded files.

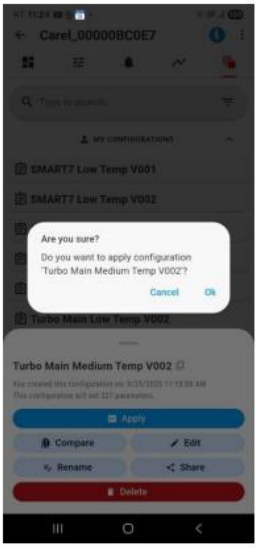


11. Select the parameter you want to use and click on it.

12. Press "Apply".



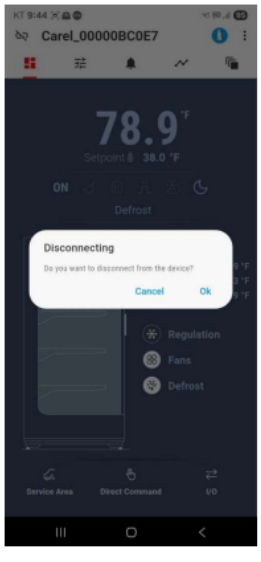
13. Click "OK" and wait until the setup is complete.



14. After completing setup, you will return to the main screen.

15. Check "Setpoint" to make sure the settings are correct.

16. Press the "" in the upper left corner and exit setup..



17. "Setpoint" are follow as;
Medium Temp : 38℉
Low Temp : -10℉

18. To check other parameter values, check the parameter list in the manual.

19. If you are installing more than two units, refer to "MPXzero Main/Secondary Parameter Settings" on the next page for controller parameter settings.

Preliminary configurations

Once the electrical connections have been completed, simply power-up the controller to make it operative. Turbo air recommends to check that the display does not show any alarm signals, and finally set the parameters as desired.

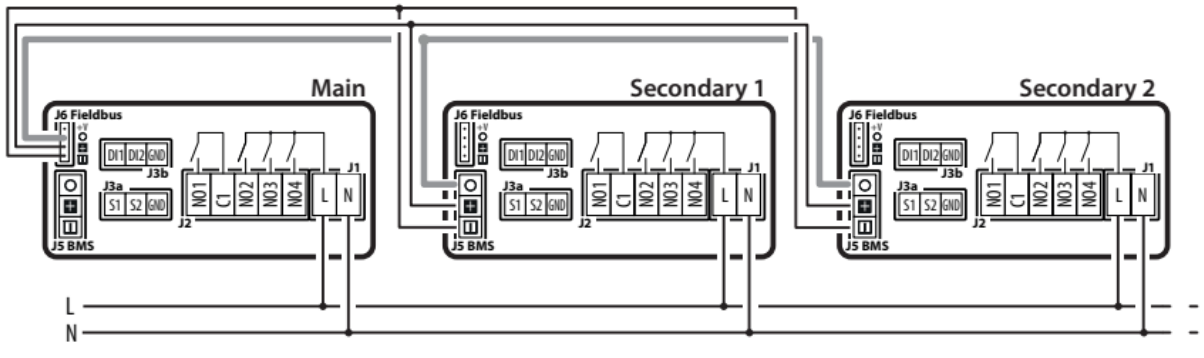
The main parameters are as follows:

Control parameters		Defrost parameters		Alarm parameters	
st	set point	d0	type of defrost	Ad	temperature alarm delay
rd	set point differential	dI	interval between two defrosts	AL	low temperature alarm threshold
		dt1	end defrost temperature	AH	high temperature alarm threshold
		dP1	maximum defrost duration		

Initial configuration parameters

Code	Description	Def	Min	Max	UOM
In	Type of unit: 0 = Slave, 1 = Master	1	0	1	-
Sn	Number of slaves in the local network 0 = No Slaves	0	0	5	-
H0	Serial or Master Slave network address	100	0	199	-
H3	BMS serial port protocol 0 = Carel slave, 1 = Modbus slave	1	0	1	-
/P1	Sensor type group 1 (S1, S2, S3) 0 = PT1000 Standard Range -50T150°C 1 = NTC Standard Range -50T90°C	1	0	1	-

MPXzero Main/Secondary network connection.

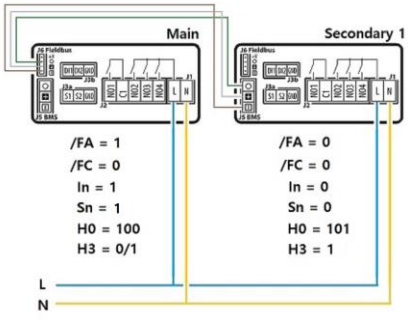


MPXzero Main/Secondary Parameter Settings.

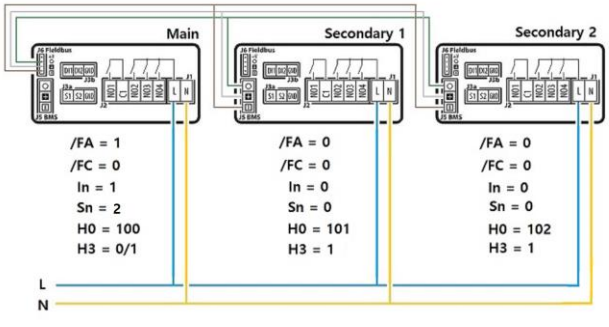
If you are installing two or more products, the Controller settings are divided into Main and Slave, and the settings must be changed for each case.

The settings are as follows.

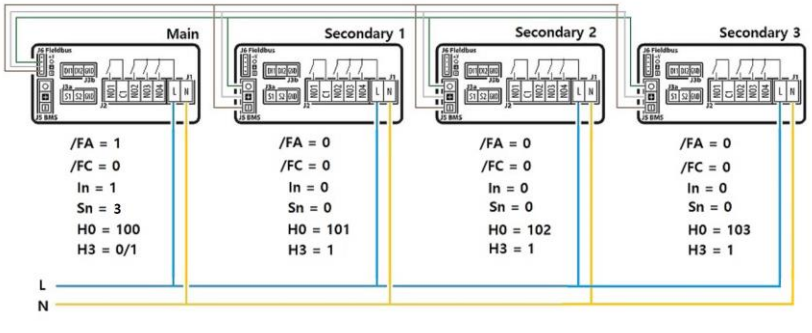
a. Install two unit coolers (Main : 1 unit cooler, Slave : 1 unit cooler)



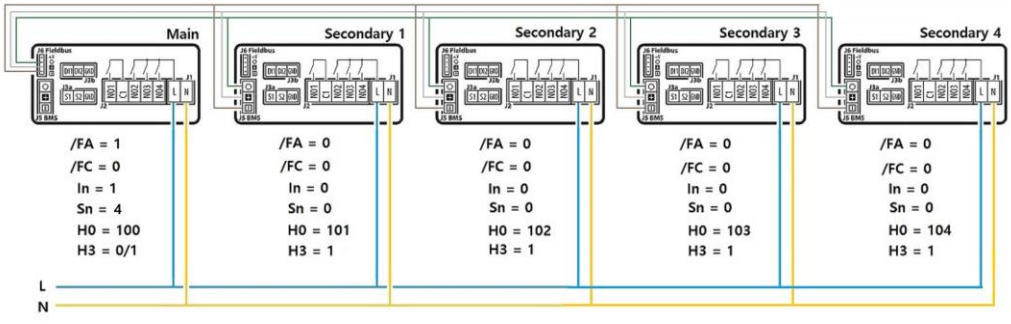
b. Install three unit coolers (Main : 1 unit cooler, Slave : 2 unit cooler)



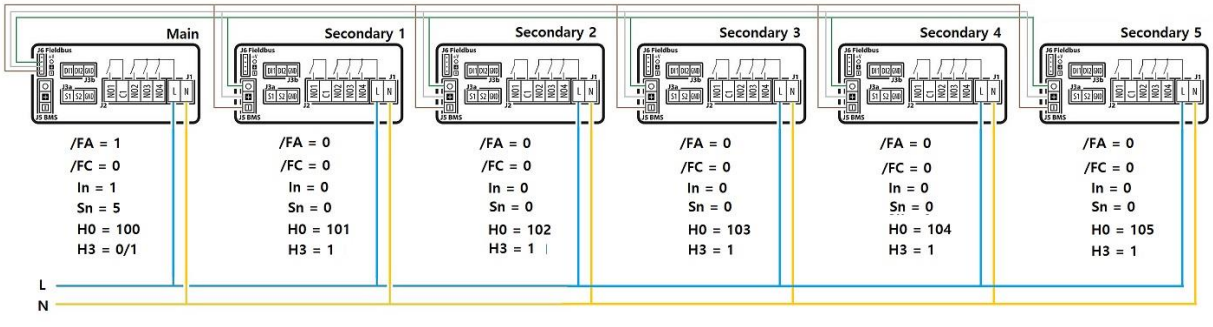
c. Install four unit coolers (Main : 1 unit cooler, Slave : 3 unit cooler)



d. Install five unit coolers (Main : 1 unit cooler, Slave : 4 unit cooler)



e. Install six unit coolers (Main : 1 unit cooler, Slave : 5 unit cooler)



NOTE

- If you have downloaded the Main and Slave settings from your "Turbo air website" and uploaded them to the Main and Slave controllers, you only need to change the parameter "Sn" for the Main controller and "H0" for the Secondary controllers.

Alarms

When an alarm occurs, the ALARM icon turns red and the user terminal displays the corresponding alarm code.

Code	Description
rE	Control probe
E1	Probe S1 fault
E2	Probe S2 fault
E3	Probe S3 fault
E11	Serial probe S11 not updated
E12	Serial probe S12 not updated
E13	Serial probe S13 not updated
E14	Serial probe S14 not updated
LO	Low temperature
HI	High temperature
LO2	Low temperature
HI2	High temperature
HA	HACCP type HA
HF	HACCP type HF
Etc	Real time clock not updated

Code	Description
IA	Immediate alarm from external contact
dA	Delayed alarm from external contact
Dor	Door open for too long
MA	Communication error with the Master (only on Slave)
u1..u9	Communication error with the Slave (only on Master)
n1..n9	Alarm on unit 1..9 in the network
GHI	Generic function : MAX threshold exceeded alarm
GLO	Generic function : MIN threshold exceeded alarm

Device setup.

Download parameter configurations

Download the parameter configurations from the Turbo Air website to your mobile device. Follow these steps to save the parameter configurations to "applica" and apply it to the controller.

Medium temperature (SET POINT : 38℉)　Air defrost

Code	Description	Min	Max	Default
Control				
St	Set point	32	50	38
rd	Differential	0.1	179.8	3
r1	Minimum set point	-58	r2	32
r2	Maximum set point	r1	392	50
Defrost				
d0	Type of defrost	0	4	2
d4	Defrost at power on	0	1	0
dI	Maximum interval between consecutive defrosts	0	240	6
dt1	End defrost temperature (read by Sd)	-58	122	65
dP1	Maximum defrost duration	1	240	40
dd	Dripping time after defrost (fans off)	0	15	1
Evaporator fans				
F0	Evaporator fan management	0	3	0
F2	Evaporator fans with compressor off	0	1	0
F3	Evaporator fans during defrost	0	1	0
Fd	Post-dripping time after defrost (fans off with control active)	0	15	0

Low temperature (SET POINT : -10℉)　Electric defrost

Code	Description	Min	Max	Default
Control				
St	Set point	-30	32	-10
rd	Differential	0.1	179.8	3
r1	Minimum set point	-58	r2	-30
r2	Maximum set point	r1	392	32
Defrost				
d0	Type of defrost	0	4	0
d4	Defrost at power on	0	1	0
dI	Maximum interval between consecutive defrosts	0	240	6
dt1	End defrost temperature (read by Sd)	-58	122	75
dP1	Maximum defrost duration	1	240	40
dd	Dripping time after defrost (fans off)	0	15	2
Evaporator fans				
F0	Evaporator fan management	0	3	0
F2	Evaporator fans with compressor off	0	1	0
F3	Evaporator fans during defrost	0	1	1
Fd	Post-dripping time after defrost (fans off with control active)	0	15	2

Alarms and signals.

Signals

Signals are messages shown on the display to notify the user of the control procedures in progress (e.g. defrost) or to confirm keypad input.

Code	Description
dEF	Defrost running
Ed1	Defrost on evaporator 1 ended by timeout
Ed2	Defrost on evaporator 2 ended by timeout
OFF	Switch OFF
Stb	Standby status
CLn	Clean status
dEA	End defrost in advance due to high temperature
SrC	Unit maintenance signal
uGH	Generic warning function – high threshold exceeded
uGL	Generic warning function – low threshold exceeded
MAn	Output status forced to manual mode

Electrical Wiring Diagram.

Diagram 1. ADR series (Air Defrost　115V / 1Ph / 60Hz).

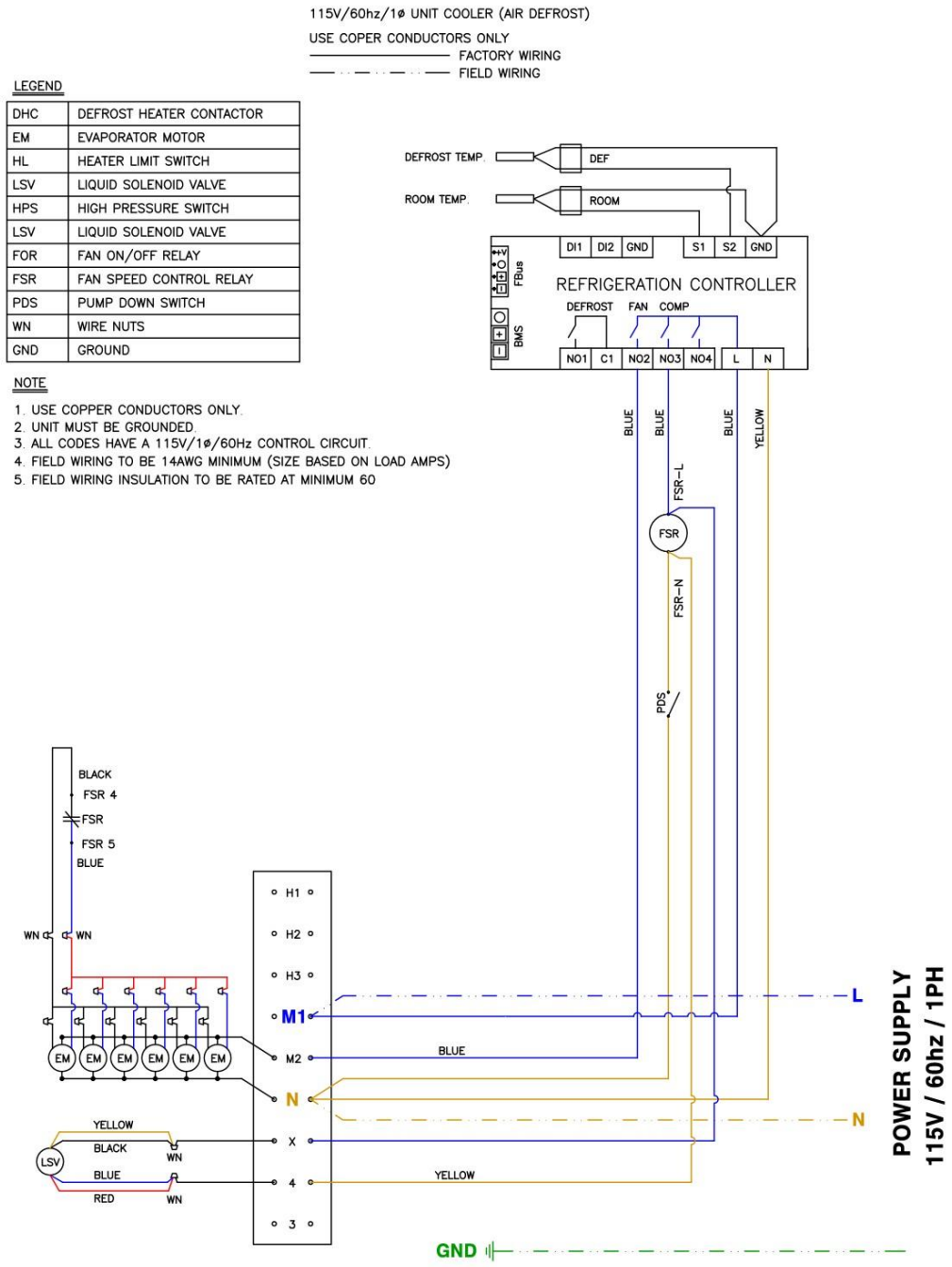
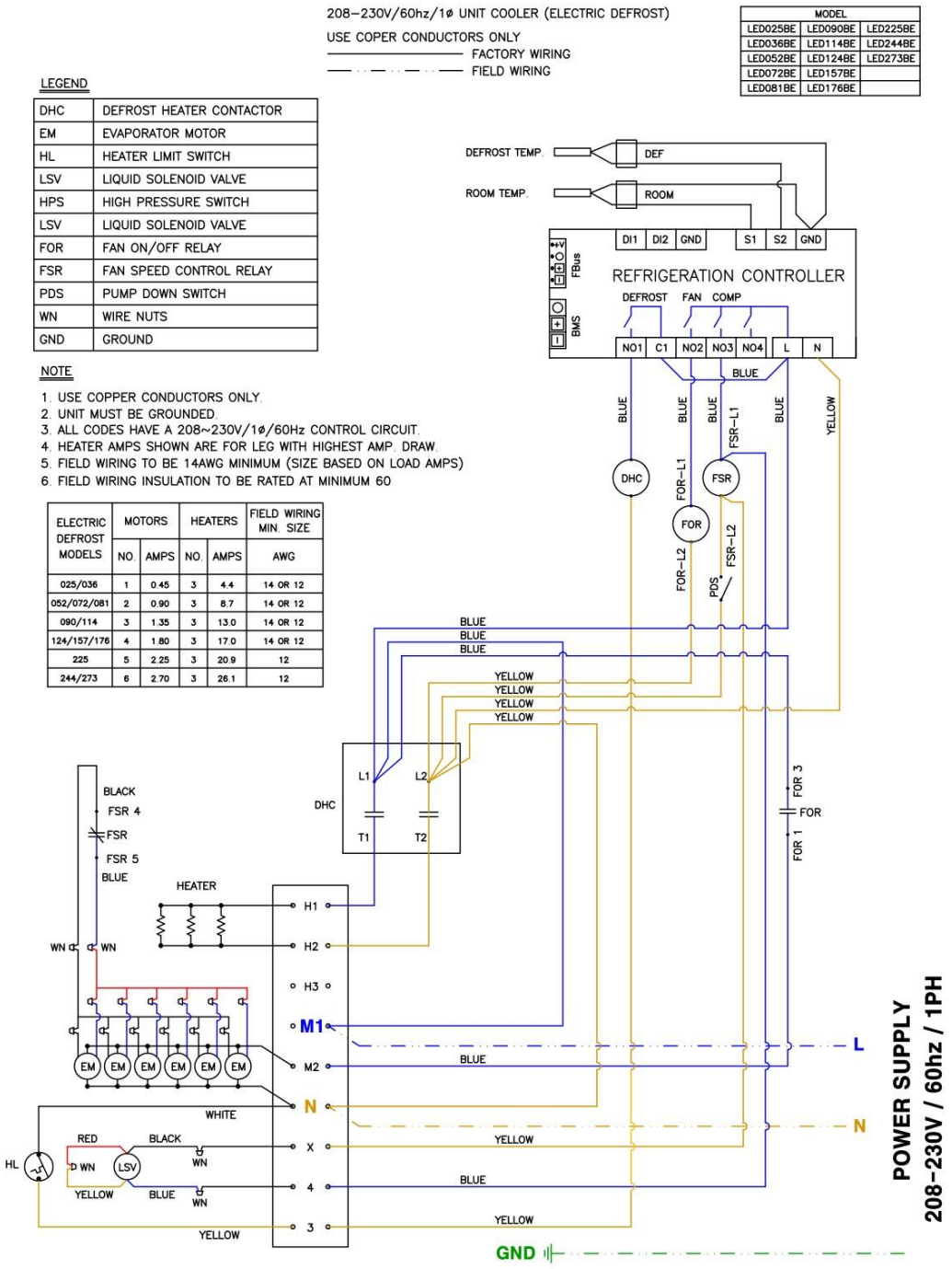


Diagram 2. LED series (Electric Defrost 208-230V / 1Ph / 60Hz).



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