Turbo air Speeds Up the Pace of Innovation

REFRIGERATION SYSTEM Turbo air

SMART 7

Part No. KUCST251215
CAREL CONTROLLER

Refrigeration System
Installation & Operation Manual

Please read this manual completely before attempting to install or operate this equipment !

Package Unit (TOP MOUNT)

CONTENTS

Safety Information

Be sure all power sources are turned off before checking the electric wiring or appliances to avoid electric shock.

Do not run fan if cover or case is removed. This is to avoid electric shock.

Keep finger away from moving parts.

Avoid touching refrigerant lines. Some parts are very hot and can cause burns.

Avoid contacting sharp edges or coil surface that are a potential injury hazard.

Avoid touching the units or electric box in wet hands to prevent electric shock.

Please call the specialized installation company or trained personnel when you installing, moving, operating of the unit.

Field wiring must confirm to the requirements of units' electric specification.

Inspection

A person at the job site to receive material holds responsibility. Each shipment should be carefully inspected against the bill of lading. The shipping receipt should not be signed before careful inspection. Check carefully for concealed damage. Any shortage or damages should be reported to the delivering carrier. If damaged material becomes the delivering carrier's responsibility and it should not be returned to Turbo air unless prior approval is given to do so. Check the serial tag information with invoice. Report any discrepancies to Turbo air sales representatives.

Symbols of Flammable Refrigerant

The warning symbols and their meanings are as follows:.

R290 (Propane)

Warning : Risk of fire / flammable materials

WARNING

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

Do not pierce or burn.

Be aware that refrigerants may not contain an odour.

The French translation of this clause's warning in Canada is:

MISE EN GARDE

Ne pas utiliser de moyens autres que ceux recommandés par le fabricant pour accélérer le processus de dégivrage ou pour nettoyer l'appareil.

L'appareil doit & être entreposé dans un local ne contenant pas de sources d'inflammation permanentes (flammes nues, appareil à gaz ou dispositif de chauffage électrique en fonctionnement, par exemple).

Ne pas percer ou brûler.

Attention, les fluides frigorigénes peuvent ne pas dégager d'odeur.

Installation Guide

Installation Guide Flammable Refrigerant Unit (R290)

These products are charged with less than 150g of R290 refrigerant per cycle, so please pay attention to the following when installing.

1) **Before proceeding with installation work, remove all sources of ignition and ensure adequate ventilation.**

2) **When installing the STI series, be sure to install ventilation facilities on the condenser section side.**

3) **Qualification of workers**

   For refrigeration appliances using flammable refrigerants, general installation, repair, maintenance, and disposal should only be performed by engineers certified by national training institutions or manufacturers accredited to teach relevant national competency standards, as defined in UL 60335-2-89, Appendix 101.DVT.

   Examples for such working procedures are :

   a) breaking into the refrigerating circuit;

   b) opening of sealed components;

   c) opening of ventilated enclosures.

4) **Ventilated area**

   Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

5) **Detection of flammable refrigerants**

   Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

   The following leak detection methods are deemed acceptable for all refrigerant systems.

   Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity might not be adequate, or might need

recalibration. (Detection equipment shall be calibrated in a refrigerant-free area).
Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine can react with the refrigerant and corrode the copper pipe-work.

NOTE : Examples of leak detection fluids are:

- ***bubble method,***
- ***fluorescent method agents.***

If a leak is suspected, all naked flames shall be removed / extinguished.
If a refrigerant leak requiring brazing is discovered, follow the maintenance and repair procedures below.

WARNING: Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building-in.

WARNING: Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

WARNING: Do not damage the refrigerating circuit.

WARNING: Do not use electrical appliances inside the food/ice storage compartments unless they are of the type recommended by the manufacturer.

Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.

This units uses R290 flammable refrigerant and must be installed in accordance with the ANSI/ASHRAE 15 Refrigeration System Safety Standard.

Maintenance and Repair

Every working procedure that affects safety means shall only be carried out by competent persons according to Annex 101.DVT in UL 60335-2-89.

1) Qualification of workers

For refrigeration appliances using flammable refrigerants, general installation, repair, maintenance, and disposal should only be performed by engineers certified by national training institutions or manufacturers accredited to teach relevant national competency standards, as defined in UL 60335-2-89, Appendix 101.DVT.

Examples for such working procedures are :

a) breaking into the refrigerating circuit;

b) opening of sealed components;

c) opening of ventilated enclosures.

2) Checks to the area

Before beginning work on a system containing flammable refrigerants, a safety check is required to minimize the risk of ignition. For refrigeration system repairs, steps 3) through 7) below must be completed before beginning work on the system.

3) Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

4) General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

5) Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all

applicable refrigerants, i.e., non-sparking, adequately sealed, or intrinsically safe.

6) Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. A dry chemical or CO_2 fire extinguisher should be adjacent to the charging area.

7) No ignition sources

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment shall be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

8) Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

9) Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the Turbo air’s technical department for assistance.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

a) the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;

b) the ventilation machinery and outlets are operating adequately and are not obstructed;

c) if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

d) marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

e) refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

10) Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment, so all parties are advised.

Initial safety checks shall include:

a) that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

b) that no live electrical components and wiring are exposed while charging, recovering or purging the system;

c) that there is continuity of earth bonding.

11) Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point

to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

12) Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

13) Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts can result in the ignition of refrigerant in the atmosphere from a leak.

NOTE : The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

14) Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

15) Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for

or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity might not be adequate, or might need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area).

Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine can react with the refrigerant and corrode the copper pipe-work.

NOTE : Examples of leak detection fluids are:

- ***bubble method,***
- ***fluorescent method agents.***

If a leak is suspected, all naked flames shall be removed / extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Refrigerant removal must follow the procedure in 16) below.

16) Removal and evacuation

When breaking into the refrigerant circuit to make repairs - or for any other purpose - conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

The following procedure shall be adhered to:

a) safely remove refrigerant following local and national regulations;

b) purge the circuit with inert gas;

c) evacuate (optional for A2L);

d) purge with inert gas (optional for A2L);

e) open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

17) Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

a) Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
b) Cylinders shall be kept in an appropriate position according to the instructions.
c) Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
d) Label the system when charging is complete (if not already).
e) Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging

gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

18) Recovery

When removing refrigerant from a system, either for servicing 아 decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e., special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that FLAMMABLE REFRIGERANT does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Decommissioning

Every working procedure that affects safety means shall only be carried out by competent persons according to Annex 101.DVT in UL 60335-2-89.

1) **Qualification of workers**

   For refrigeration appliances using flammable refrigerants, general installation, repair, maintenance, and disposal should only be performed by engineers certified by national training institutions or manufacturers accredited to teach relevant national competency standards, as defined in UL 60335-2-89, Appendix 101.DVT.

   Examples for such working procedures are :

   a) breaking into the refrigerating circuit;

   b) opening of sealed components;

   c) opening of ventilated enclosures.

2) **Proceed with the work according to steps 2) to 16) in the Maintenance and Repair section on page 7.**

3) **Decommissioning**

   Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

   a) Become familiar with the equipment and its operation.

   b) Isolate the system electrically.

   c) Before attempting the procedure, ensure that:

      i) mechanical handling equipment is available, if required, for handling refrigerant cylinders;

      ii) all personal protective equipment is available and being used correctly;

      iii) the recovery process is supervised at all times by a competent person;

iv) recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do not overfill cylinders (no more than 80 % volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

4) Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

5) Recovery

When removing refrigerant from a system, either for servicing 아 decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e., special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are

evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that FLAMMABLE REFRIGERANT does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Unit Specifications

Table 1. INDOOR UNIT - Medium Temperature (Air Defrost System)

Model	Ambient 95℉ Capacity BTUH		Voltage	MCA	MOPD	Refrigerant		NET Weight	Fig.
	35℉	38℉				Ref.	Wt (oz)	(Lbs)	
STI055MP2	5549	5829	208~230/1/60	7.9	15	R290	5.29	219	A
STI078MP2	7859	8276	208~230/1/60	10.0	15	R290	5.29	219	A
STI110MP2	11016	11573	208~230/1/60	13.9	20	R290	5.29x2CYCLE	300	B
STI155MP2	15585	16412	208~230/1/60	17.7	25	R290	5.29x2CYCLE	300	B

Table 2. INDOOR UNIT – Low Temperature (Hot Gas Defrost System)

Model	Ambient 95℉ Capacity BTUH			Voltage	MCA	MOPD	Refrigerant		NET Weight	Fig.
	0℉	-10℉	-20℉				Ref.	Wt (oz)	(Lbs)	
STI025LP2	3282	2539	1919	208~230/1/60	7.6	15	R290	5.29	216	A
STI038LP2	4801	3782	2909	208~230/1/60	9.1	15	R290	5.29	216	A
STI050LP2	6507	5039	3809	208~230/1/60	13.4	20	R290	5.29x2CYCLE	288	B
STI075LP2	9512	7491	5759	208~230/1/60	16.1	25	R290	5.29x2CYCLE	288	B

Table 3. OUTDOOR UNIT - Medium Temperature (Air Defrost System)

Model	Ambient 95℉ Capacity BTUH		Voltage	MCA	MOPD	Refrigerant		NET Weight	Fig.
	35℉	38℉				Ref.	Wt (oz)	(Lbs)	
STX055MP2	5549	5829	208~230/1/60	7.9	15	R290	5.29	233	C
STX078MP2	7859	8276	208~230/1/60	10.0	15	R290	5.29	233	C
STX110MP2	11016	11573	208~230/1/60	13.9	20	R290	5.29x2CYCLE	317	D
STX155MP2	15585	16412	208~230/1/60	17.7	25	R290	5.29x2CYCLE	317	D

Table 4. OUTDOOR UNIT – Low Temperature (Hot Gas Defrost System)

Model	Ambient 95℉ Capacity BTUH			Voltage	MCA	MOPD	Refrigerant		NET Weight	Fig.
	0℉	-10℉	-20℉				Ref.	Wt (oz)	(Lbs)	
STX025LP2	3282	2539	1919	208~230/1/60	7.6	15	R290	5.29	216	C
STX038LP2	4801	3782	2909	208~230/1/60	9.1	15	R290	5.29	216	C
STX050LP2	6507	5039	3809	208~230/1/60	13.4	20	R290	5.29x2CYCLE	305	D
STX075LP2	9512	7491	5759	208~230/1/60	16.1	25	R290	5.29x2CYCLE	305	D

Figure A. INDOOR UNIT – Medium Cabinet (Opening Size : 25 inch x 25 inch)

Minimum installation area (A_{min}) = 6.32 m^2 (67.98 ft^2)

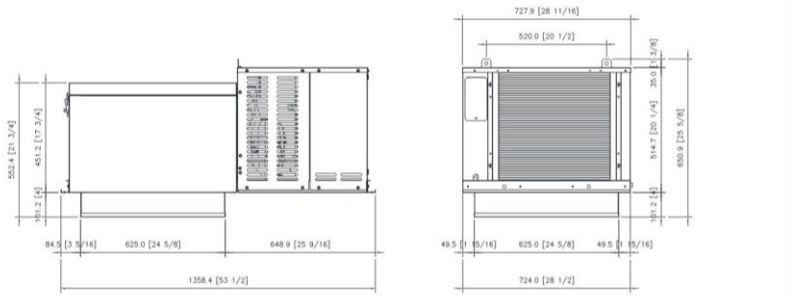


Figure B. INDOOR UNIT – Large Cabinet (Opening Size : 25 inch x 38.5 inch)

Minimum installation area (A_{min}) = 12.63 m^2 (135.97 ft^2)

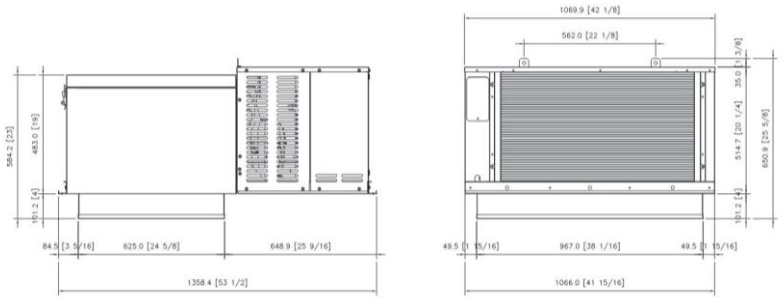


Figure C. OUTDOOR UNIT – Medium Cabinet (Opening Size : 25 inch x 25 inch)

Minimum installation area (A_{min}) = 6.32 m^2 (67.98 ft^2)

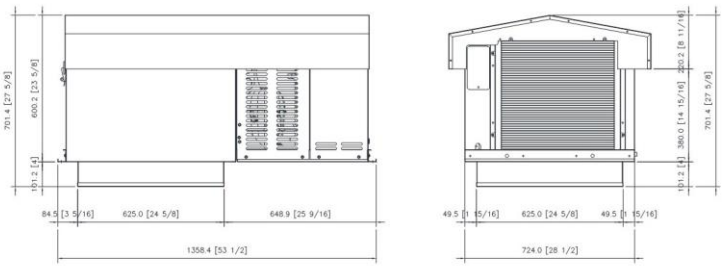
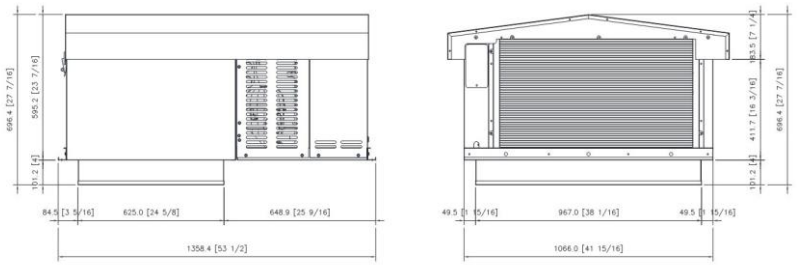


Figure D. OUTDOOR UNIT – Large Cabinet (Opening Size : 25 inch x 38.5 inch)

Minimum installation area (A_{min}) = 12.63 m^2 (135.97 ft^2)



Locating SMART 7 Package Unit

Unit Installation Requirements

1. You must ensure before unit placement on the roof of box that the structural strength of the box can withstand the weight of SMART7 equipment
2. The unit should be installed away from noise sensitive site and must have proper support for noise and vibration not to be transmitted into the building.
3. Unit must be located away from steam, hot air or heat generator and placement should be selected in consideration of ventilation.
4. Indoor units are designed for indoor use only with ambient between 50℉~100℉ and have no system control following ambient variation.
5. Evaporator section must not be located over doors.
6. Air circulation must cover completely inner space.
7. Installation, service and maintenance must be carried out by licensed contractor in conformity with the local standard construction code.

Ignoring above requirement will result in system fault, shorten life span and void the warranty,

Unit Transport Requirements.

1. Do not remove shipping skid until ready to move it upon box rooftop.
2. Always watch out not to contact sharp edges and coil surfaces to avoid potential injury. Wear safety gears always during installation.
3. Use spreader bar to lift the unit upon roof of box not to damage on the cabinet.
4. Do not remove compartment cover of the compressor section, hood for outdoor unit.

Unit Installation location.

1. Space between wall and air in/outlet must be secured at least 2inch.(refer to Fig. 1)
2. There must be 2 feet space secured at least above unit for service and removal of top case.(Refer to Fig. 1)
3. Single unit installation must be carried out following Fig. 2.
4. More than dual units installation must be carried out following Fig. 3.

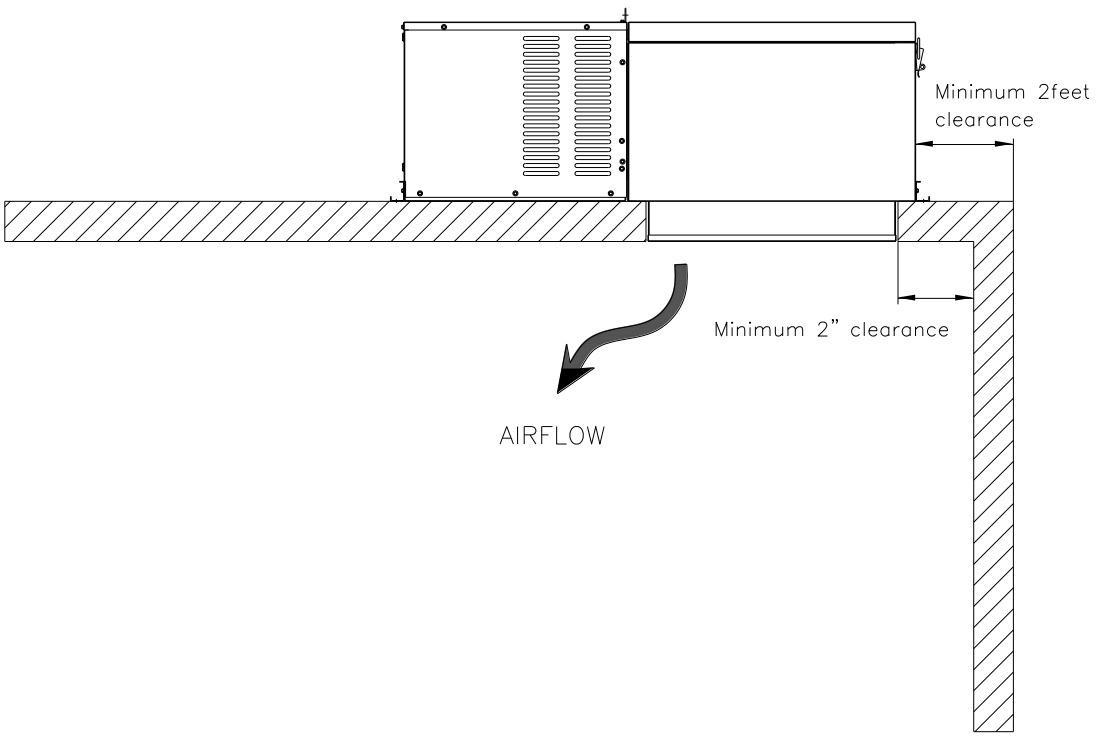
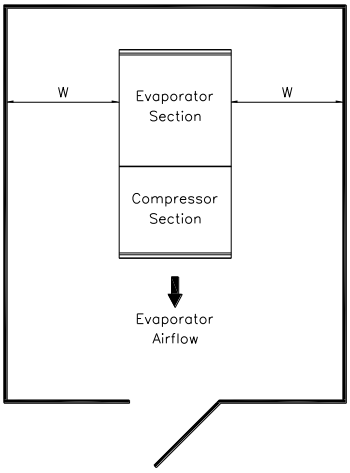
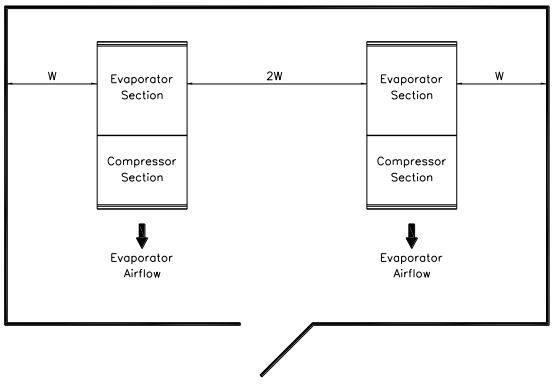


Figure 1. Minimum Clearance at Installation of Unit.



W = UNIT WIDTH

Figure 2. One Unit



W = UNIT WIDTH

Figure 3. Two or more Unit

Installation procedure

Indoor use only (STI Model)

1. Carefully check package for damages during transportation and unit after opening the package.
2. Requirements must be followed for installing location on the page of 6~7.
3. Ensure weights of units on the page of 4~5 and that structural strength of the box can withstand of the weight of the unit.
4. Clean the roof surface of box for close adhesion of unit gasket to the surface.
5. Consult to box manufacturer for any processes necessary to ensure the integrity of the exposed form in the panels is not compromised.
6. Check mounting surface as level of surface should be within 1/8inch per a feet.
7. Place carefully unit into the provided opening with the evaporator air flow directly forward the door and ensure the grill not to damage during installation.
8. Secure that the condenser airflow is not obstructed.
9. Drain is not needed as condensate is vaporized by hot gas lines in the drain panel from the compressor discharge.
10. Install trim pieces around the open on the ceiling of box.

Outdoor use only (STX Model)

Installation is the same as indoor models except as follows :

1. Units must be curb mounted (Figure 4 ~ 5). Cabinet size refer to dimension size on page 5.
2. The condensate drain outlet pipe is located on the side of the unit. Field piping may be connected to the outlet provided it is adequately sloped and heated for freezing weather conditions.
3. After connecting electrical power, reinstall compressor compartment cover and weather hood.

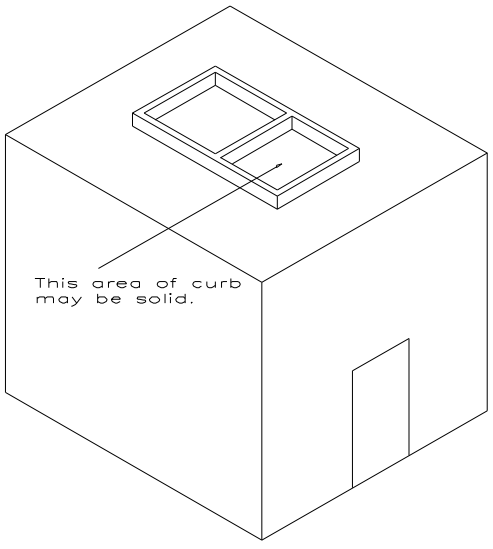


Figure 4. Curb placed on roof of box.

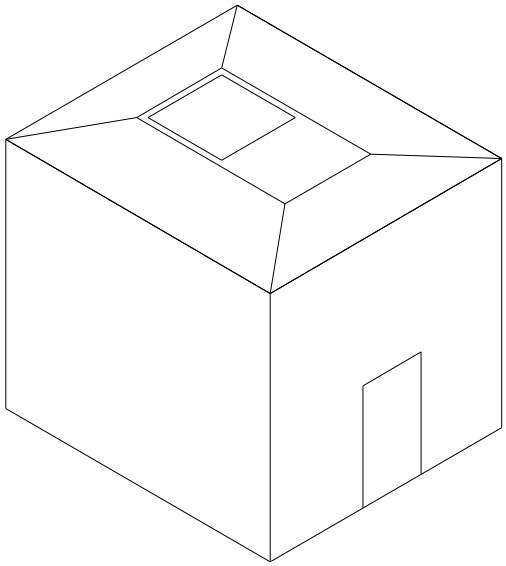


Figure 5. Roof membrane placed over curb.

Check before Unit Start-up.

1. Check all electrical and refrigerant connections.
2. Observe all applicable building and electrical codes when wiring.
3. Make sure power supply has correct voltage and phase for unit and is fused properly.
4. If unit is connected with a power cord, use the cord with plug to connect to power supply.
   If unit is not connected with a power cord, use hard wire to connect to power supply.
   IMPORTANT
   Do not use extension cords to connect unit to power.
   Plug-in to grounded three prong outlet.
   Do not remove grounding prong.
   Do not use a power adapter.
5. All medium and low Temperature Models are preset to factory default settings at table 5.

Standard Maintenance Guideline.

After first year of operation and under normal usage, maintenance should cover the following items at least once every six months.

1. Check all electrical and refrigerant connections.
2. Check all wiring and insulators.
3. Check contactors for proper operation and for state of contact points.
4. Check all fan motor. Tighten motor mount bolts, nuts and fan set screws.
5. Clean the heatexchanger (evaporator and condenser) coil surface.
6. Check the operation of the control system. Make sure all safety controls are operating properly.
7. Check the defrost control system. Make sure all defrost controls are operating properly.
8. Check the drain pan and drain line. If necessary, clean the drain pan and drain line.
9. Check the all heaters. Make sure the crankcase and drain line heaters are operating properly.

After installation of unit, it must be checked at least once for proper defrosting. The amount and pattern of frosting can vary considerably. It is dependent on the temperature of the room, the type of product being stored, how often new product is brought into the room and how often door is opened. Therefore, it may be necessary to periodically change the number of defrost cycles or adjust the duration of defrost.

Sequence of Operation.

Operation of Refrigeration.

1. When power is connected to the SMART7 unit, 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.

   How to end the defrost

   a) Press the " ⊙ " button on the controller display.
   b) Press " ↑ ↓ " button and searching “def ”.
   c) Press “def ” and Finish the defrost mode.
   d) Press " ↑ ↓ " button and searching “ESC ”.
   e) Press “ESC ” and Finish.

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

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

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 hot gas defrost operation, the temperature/defrost control will de-energize the evaporator / condenser fans and energize the compressor. 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, compressor 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℉or 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

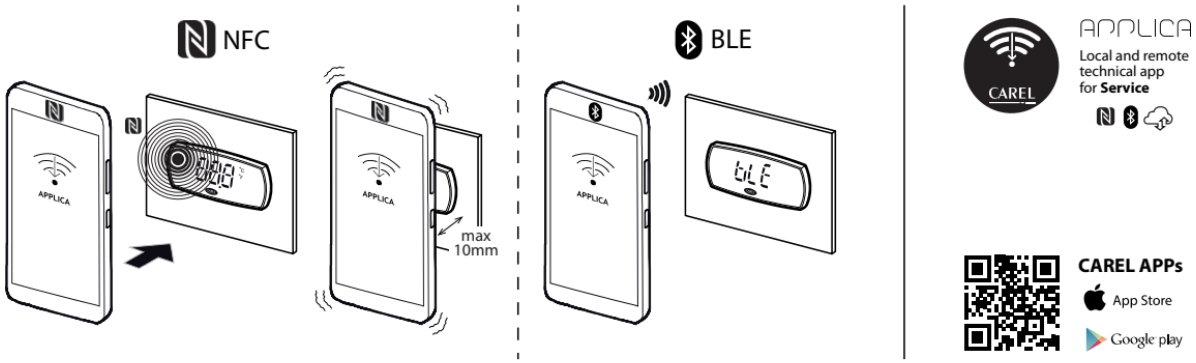
The “APPLICA” app can be used to configure the controller from a mobile device (smartphone, tablet), via NFC (Near Field Communication, Android devices only) or Bluetooth.

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.



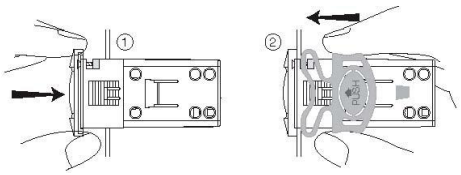
Electrical Connections

WARNINGS:

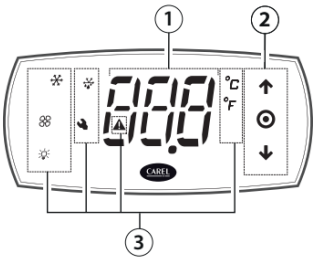
- the electrical connections must only be completed by a qualified electrician;
- a power supply other than the type specified may seriously damage the system;
- separate as much as possible the probes and digital input signal cables from the cables carrying inductive loads and power cables to avoid 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.

Panel installation using 2 rear brackets

- insert the instrument in the opening (phase 1);
- secure the instrument by sliding the brackets in the guides on the instrument until compressing them against the panel (phase 2);



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 th 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”

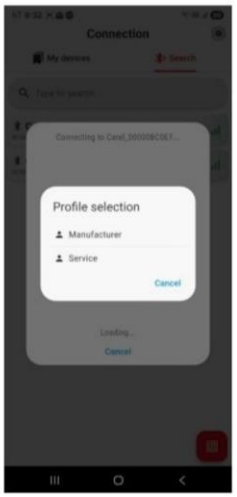
CAREL APPs

App Store

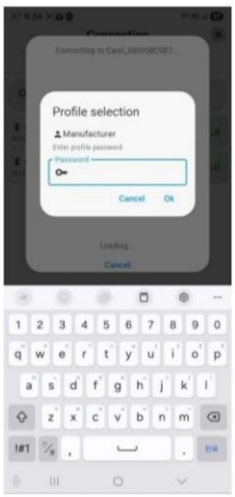
Google play

4. Press “Carel_***”.

5. Press “Service” or “Manufacturer.



6. Enter password.
Manufacturer : 44
Service : 22



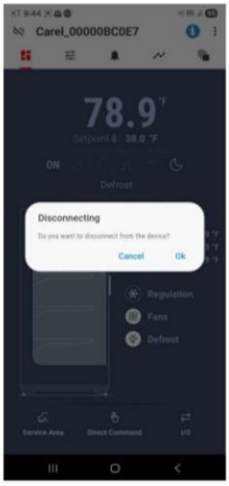
7. Press “Direct Command" in the center of the bottom of the screen.

8. Press the number above “Setpoint”.

9. Enter the setpoint and press "OK".

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

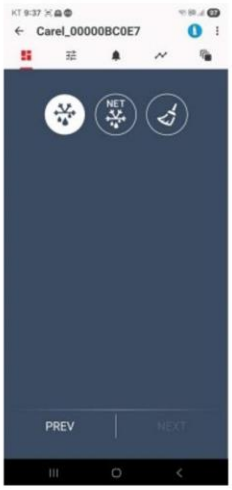
11. Press “OK" to exit setup.

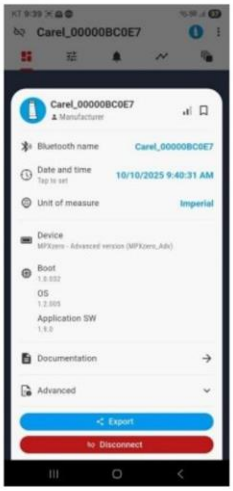


12. If you proceed with manual defrost, press “Next” in step 8.

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.

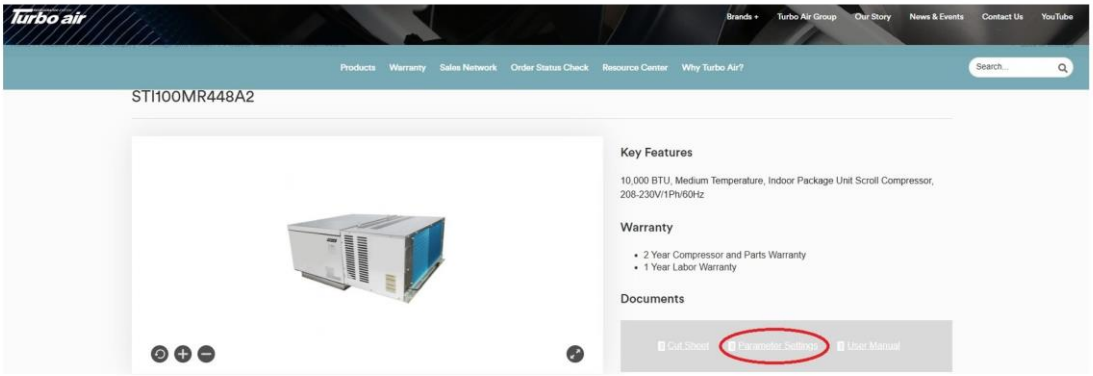
Imperial : Fahrenheit
International : Celsius

How to load PARAMETER

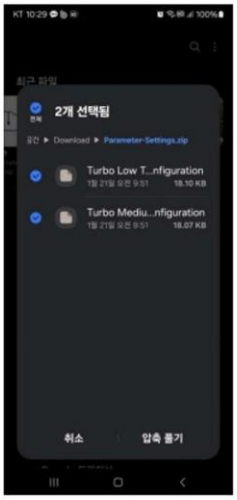
1. Scan the QR code on the right to access the turbo air website.

PARAMETER

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

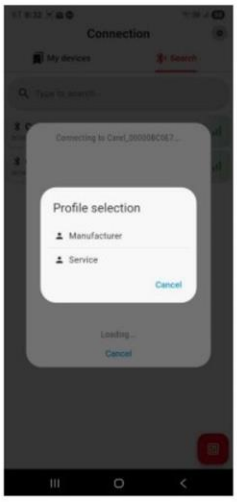


3. Unzip the downloaded file.

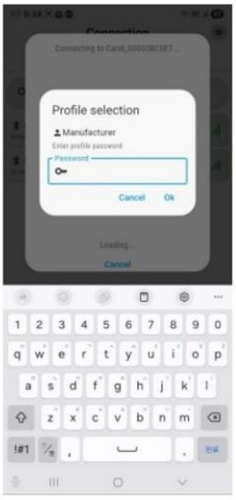


4. After opening the “applica”, press “Carel_***”.

5. Press “Service” or “Manufacturer.



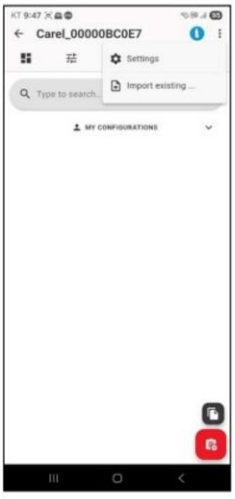
6. Enter password.
Manufacturer : 44
Service : 22



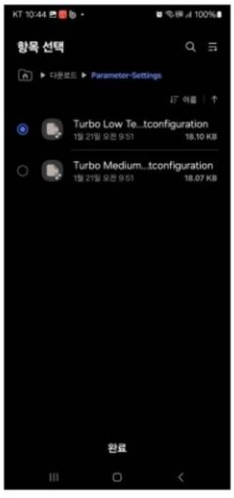
7. Press “ ” in the upper right corner.

8. Press “ ⋮ ” in the upper right corner.

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



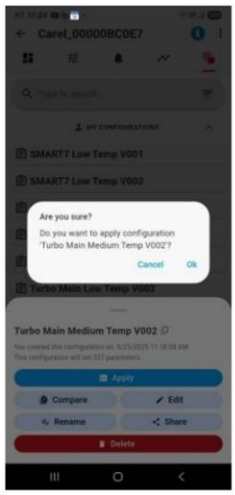
10. Save all downloaded files.



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

12. Press “Apply”.

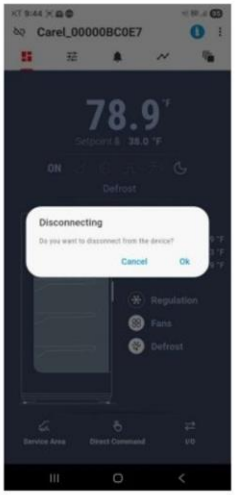
13. Click “OK” and wait until the setup is complete.



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℃ 1 = NTC Standard Range -50T90℃	1	0	1	-

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

Code	Description
HF	HACCP type HF
Etc	Real time clock not updated
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°F) 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
Condenser fans				
F00	Condenser fan management: 0 = follows compressor ON-OFF 1 = modulating	0	1	1
F4	Condenser fan deactivation temperature	-58	392	45
F5d	Condenser fan activation differential	0.2	108	10
/F0	Assign Condenser temp. probe (Sc) 0 / Function disabled - 1 / Serial probe S11 1 / Probe S1 - 2 / Serial probe S12 2 / Probe S2 - 3 / Serial probe S13 3 / Probe S3 - 4 / Serial probe S14	-4	3	3
Ac	Dirty condenser alarm set point	0	250	110
AE	Dirty condenser alarm differential temperature	0.2	36	10
Acd	Dirty condenser alarm delay	0	240	0
Dot	Assign Condenser Fan Digital out channel	0	4	4
rOt	Config. Condenser Fan digital output logic	FALSE	TRUE	TRUE
Display				
/5	Evaporator fan management (0 = °C/barg, 1 = °F/psig)	0	1	1
Connectivity				
In	Evaporator fan management (0 = Secondary, 1 = Main)	0	1	1

Low temperature (SET POINT : -10℉) Hot Gas Defrost

Code	Description	Min	Max	Default
Control				
St	Set point	32	50	-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	1
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	20
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
Condenser fans				
F00	Condenser fan management: 0 = follows compressor ON-OFF 1 = modulating	0	1	1
F4	Condenser fan deactivation temperature	-58	392	45
F5d	Condenser fan activation differential	0.2	108	10
/F0	Assign Condenser temp. probe (Sc) 0 / Function disabled - 1 / Serial probe S11 1 / Probe S1 - 2 / Serial probe S12 2 / Probe S2 - 3 / Serial probe S13 3 / Probe S3 - 4 / Serial probe S14	-4	3	3
Ac	Dirty condenser alarm set point	0	250	110
AE	Dirty condenser alarm differential temperature	0.2	36	10
Acd	Dirty condenser alarm delay	0	240	0
Dot	Assign Condenser Fan Digital out channel	0	4	4
rOt	Config. Condenser Fan digital output logic	FALSE	TRUE	TRUE
Display				
/5	Evaporator fan management (0 = °C/barg, 1 = °F/psig)	0	1	1
Connectivity				
In	Evaporator fan management (0 = Secondary, 1 = Main)	0	1	1

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

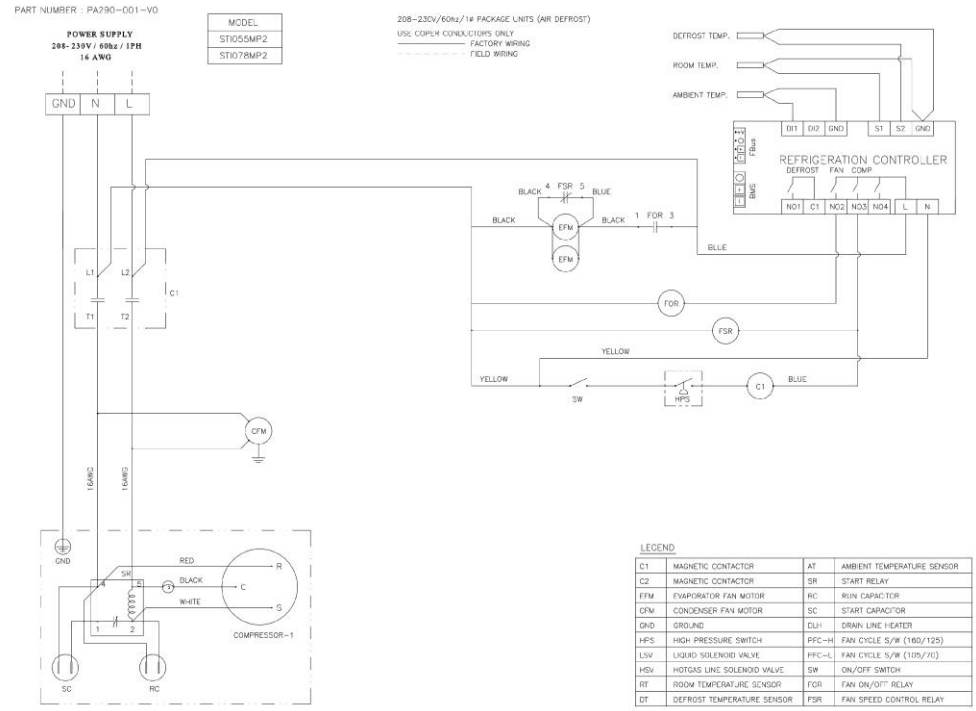
System troubleshooting.

Symptoms	Possible causes	Solution
Compressor not running	Main switch open	Close switch
	Blown fuse	Check electrical circuits and motor winding for shorts or grounds. Replace fuse after fault is corrected.
	Loose wiring	Check all wire junctions. Tighten all terminal screws.
	System cable shut down	Replace shutdown cable.
	Thermal overload tripped	Overloads are automatically reset. Check unit when unit come back on line.
	Defective contactor or contactor coil	Replace or repair
	System shut down by safety devices.	Check cause of shut down
	No cooling required.	Wait until calls for cooling
	Motor electrical trouble.	Check motor for open windings, short circuit or burn out.
Noisy Compressor	Flooding of liquid refrigerant into crankcase	Check expansion valve setting
	Worn compressor.	Replace compressor
High discharge pressure.	Non-condensable in system.	Remove non-condensable.
	Too much refrigerant	Remove excess refrigerant
	Fan not running	Check electrical circuit and fuse.
	Dirty condenser coil	Clean condenser coil
	Liquid line solenoid not open	Repair or replace coil
Low discharge pressure.	Insufficient refrigerant	Check leaks. Add charge.
	Low suction pressure	See corrective steps for low suction pressure.
High suction pressure	Excessive loads	Reduce load.
	Expansion valve overfeeding.	Check bulb location and clamping. Adjust superheat..
Low suction pressure.	Expansion valve malfunctioning.	Check and reset for proper superheat.
	Lack of refrigerant.	Check for leaks. Add charge.
	Evaporator dirty or iced.	Clean. Check defrost parameters and modify as required.
Compressor thermal protector switch open.	Evaporator dirty or iced	Clean and defrost.
	Condenser coil dirty.	Clean coil
	Too much refrigerant	Remove excess refrigerant
	Clogged liquid line filter drier.	Replace filter drier.
	Operating beyond design conditions	Add facilities so that conditions are within allowable limits.
Fan(s) will not operate	Main swich open.	Close switch.
	Blown fuses.	Replace fuses. Check for short circuits or overload conditions.
	Defective motor	Replace motor.
	Coil does not get cold enough to reset thermostat.	Adjust fan delay setting of control.
	Controller or sensor defective.	Replace defective component.
	Unit in defrost cycle.	Wait for completion of cycle.
Room temperature too high.	Controller temperature set too high.	Adjust control
	Superheat too high.	Check and reset for proper superheat
	Insufficient refrigerant	Check leaks. Add charge
	Evaporator coil iced	Manually defrost coil. Check defrost controls for malfunction.
Ice accumulating on ceiling around grill.	Defrost duration is too long.	Adjust defrost termination temperature.
	Fan delay not delaying fans after defrost period.	Adjust fan delay setting or replace sensor.
	Defective defrost control or sensor.	Replace defective component.
	Too many defrost.	Adjust number of defrosts.
Coil not clearing of frost during defrost cycle.	Coil temperature not getting above freezing point during defrost.	Check heater operation.
	Not enough defrost cycles per day.	Adjust control for more defrost cycles.
	Defrost cycle too short.	Adjust defrost control, defrost duration setting.
	Defective defrost control or sensor.	Replace defective component.
Ice accumulating in drain pan.	Defective heaters.	Replace heater.
	Unit not installed properly (out of level)	Check and adjust if necessary.
	Drain line plugged.	Clean drain line.
	Defective control.	Replace defective component.

Electrical Wiring Diagram.

Diagram 1. Wiring diagram for SMART 7, Air Defrost 208~230V / 1Ph / 60Hz.

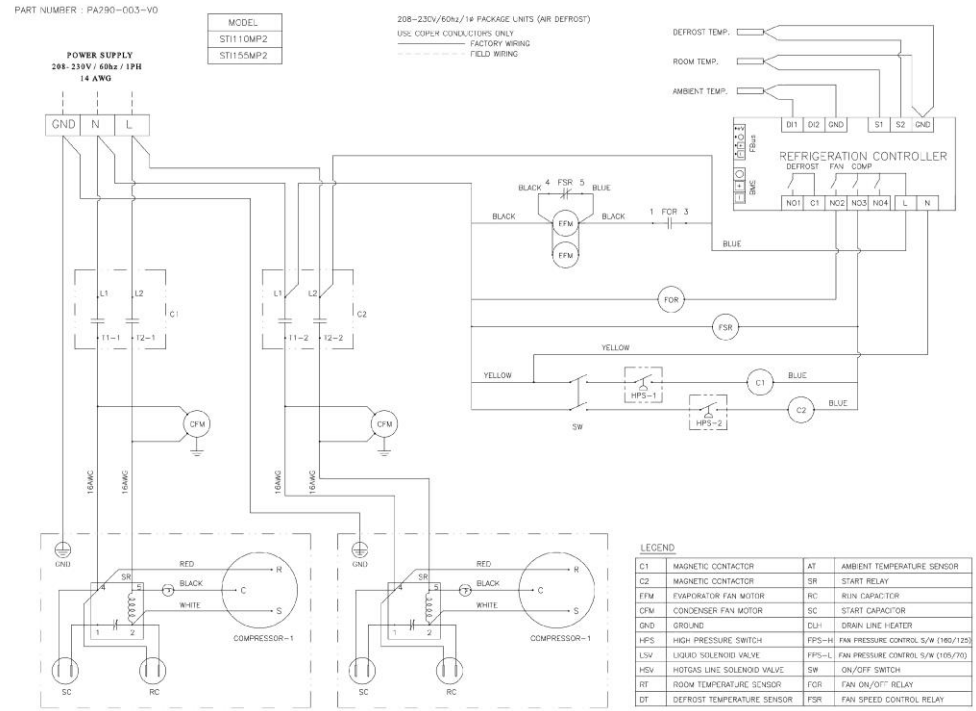
Model : STI055MP2 , STI078MP2



LEGEND			
C1	MAGNETIC CONTACTOR	AT	AMBIENT TEMPERATURE SENSOR
C2	MAGNETIC CONTACTOR	SR	START RELAY
EFM	EVAPORATOR FAN MOTOR	RC	RUN CAPACITOR
CFM	CONDENSER FAN MOTOR	SC	START CAPACITOR
GND	GROUND	DLH	DRAIN LINE HEATER
HPS	HIGH PRESSURE SWITCH	PFC-H	FAN CYCLE S/W (160/125)
LSV	LIQUID SOLENOID VALVE	PFC-L	FAN CYCLE S/W (105/70)
HSV	HOTGAS LINE SOLENOID VALVE	SW	ON/OFF SWITCH
RT	ROOM TEMPERATURE SENSOR	FOR	FAN ON/OFF RELAY
DT	DEFROST TEMPERATURE SENSOR	FSR	FAN SPEED CONTROL RELAY

Diagram 2. Wiring diagram for SMART 7, Air Defrost 208~230V / 1Ph / 60Hz.

Model : STI110MP2 , STI155MP2



LEGEND			
C1	MAGNETIC CONTACTOR	AT	AMBIENT TEMPERATURE SENSOR
C2	MAGNETIC CONTACTOR	SR	START RELAY
EFM	EVAPORATOR FAN MOTOR	RC	RUN CAPACITOR
CFM	CONDENSER FAN MOTOR	SC	START CAPACITOR
GND	GROUND	DLH	DRAIN LINE HEATER
HPS	HIGH PRESSURE SWITCH	FPS-H	FAN PRESSURE CONTROL S/W (160/125)
LSV	LIQUID SOLENOID VALVE	FPS-L	FAN PRESSURE CONTROL S/W (105/70)
HSV	HOTGAS LINE SOLENOID VALVE	SW	ON/OFF SWITCH
RT	ROOM TEMPERATURE SENSOR	FOR	FAN ON/OFF RELAY
DT	DEFROST TEMPERATURE SENSOR	FSR	FAN SPEED CONTROL RELAY

Diagram 3. Wiring diagram for SMART 7, Hot Gas Defrost 208~230V / 1Ph / 60Hz.

Model : STI025LP2 , STI038LP2

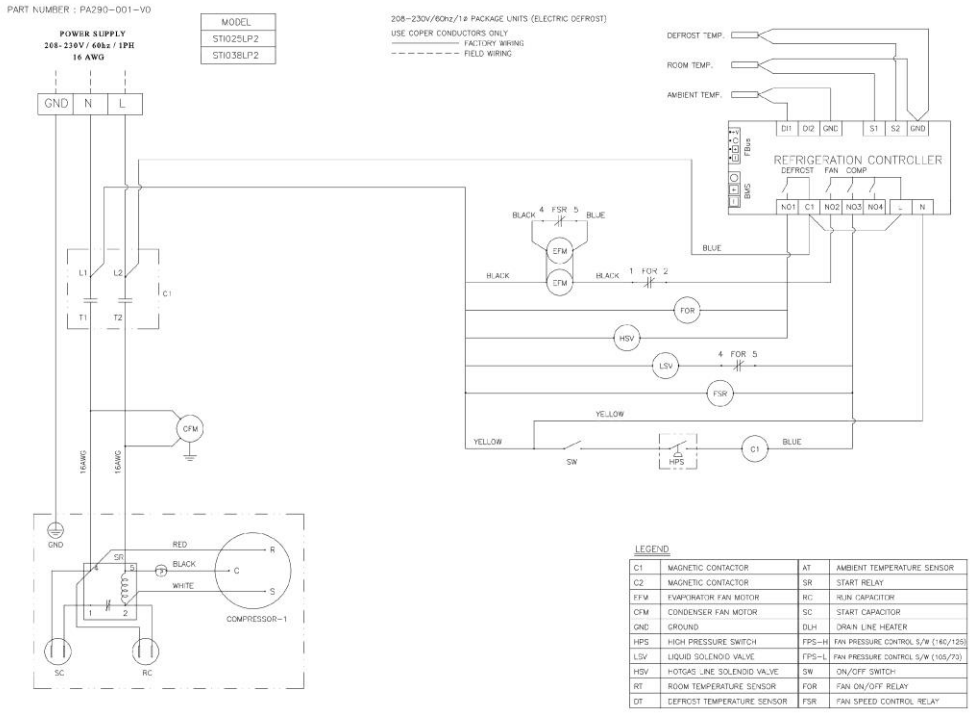


Diagram 4. Wiring diagram for SMART 7, Hot Gas Defrost 208~230V / 1Ph / 60Hz.

Model : STI050LP2 , STI075LP2

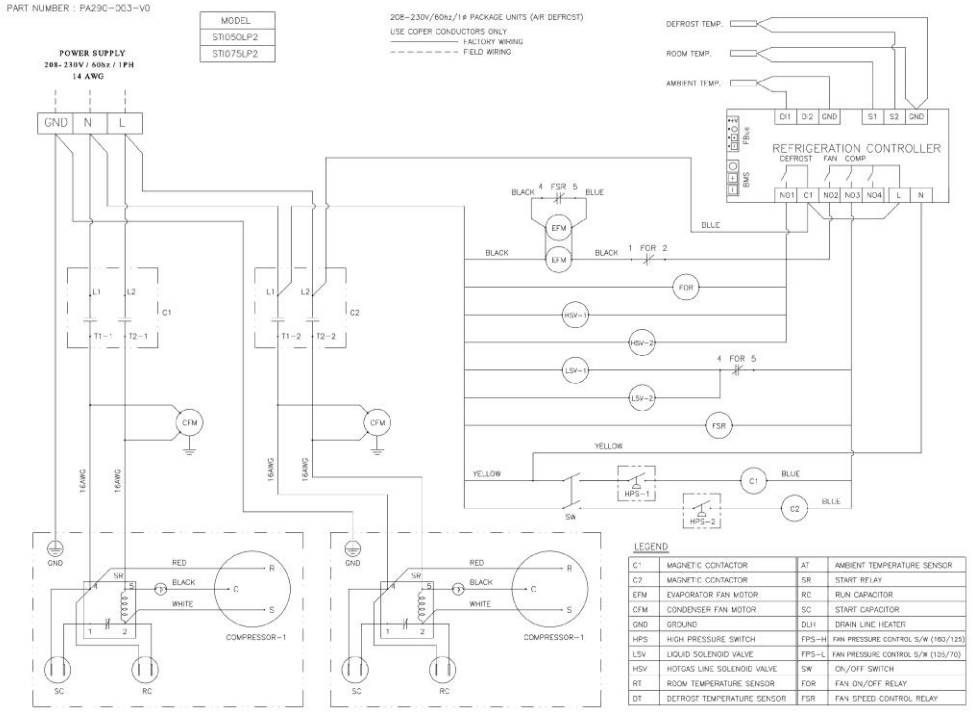


Diagram 5. Wiring diagram for SMART 7, Air Defrost 208~230V / 1Ph / 60Hz.

Model : STX055MP2, STX078MP2

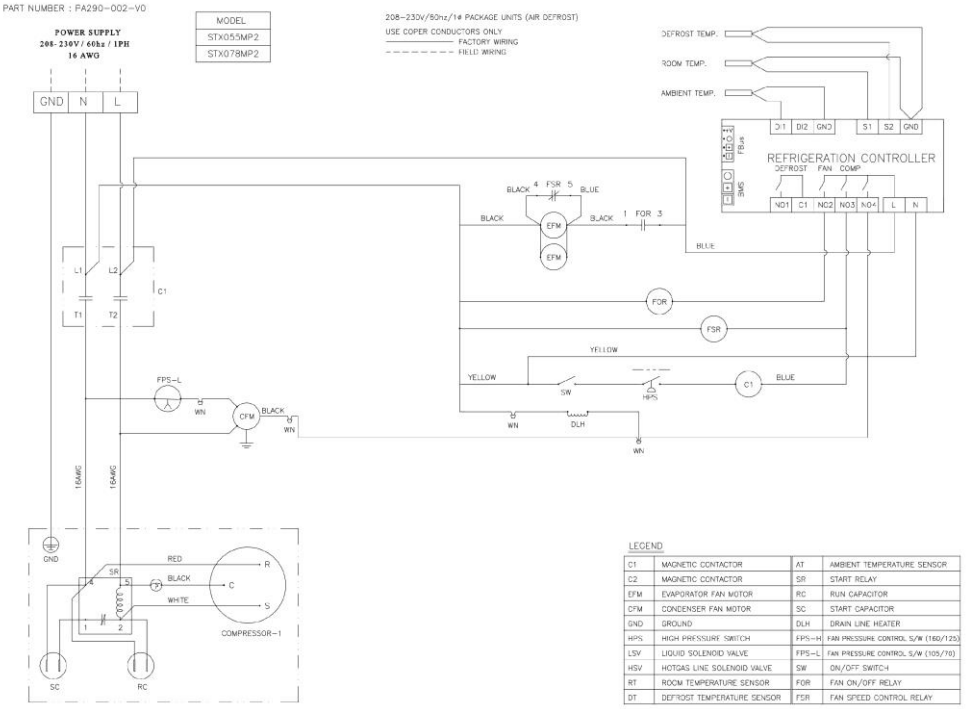


Diagram 6. Wiring diagram for SMART 7, Air Defrost 208~230V / 1Ph / 60Hz.

Model : STX110MP2, STX155MP2

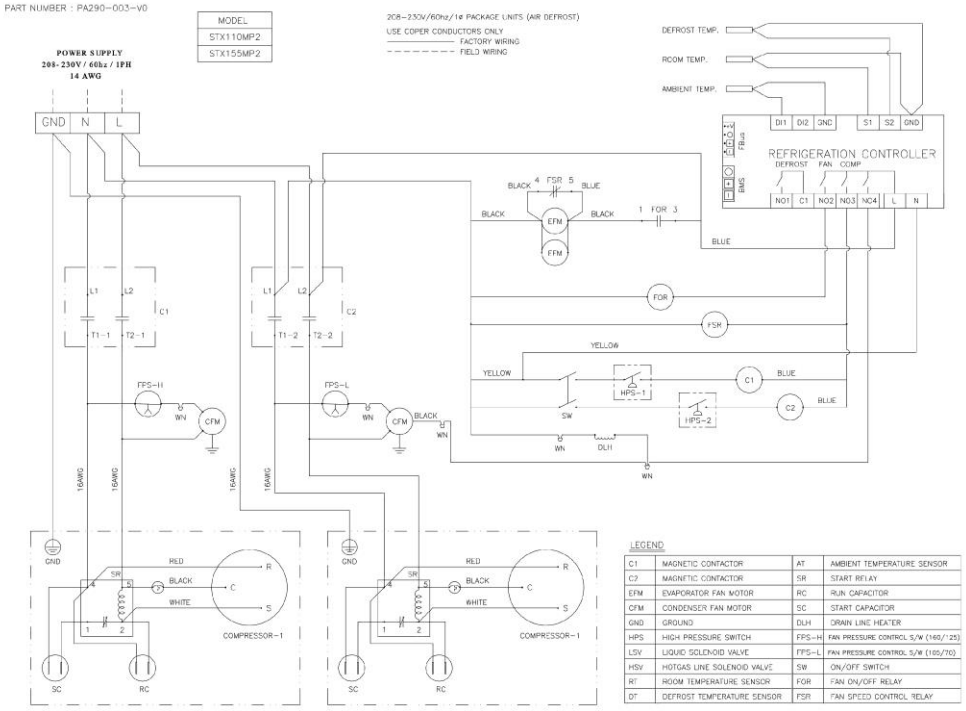


Diagram 7. Wiring diagram for SMART 7, Hot Gas Defrost 208~230V / 1Ph / 60Hz.

Model : STX025LP2, STX038LP2

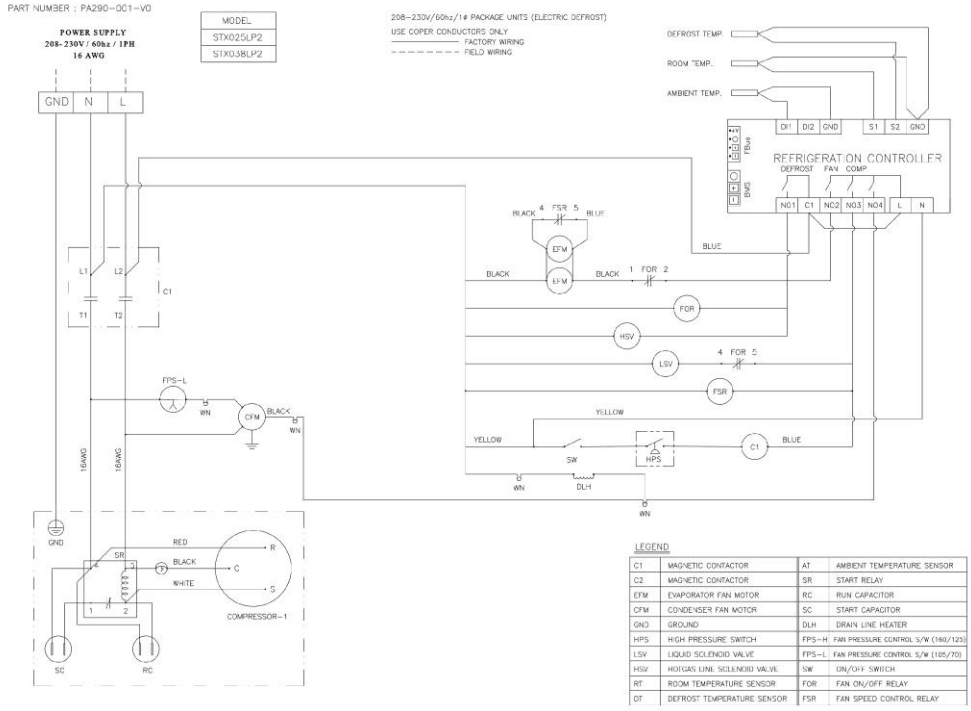
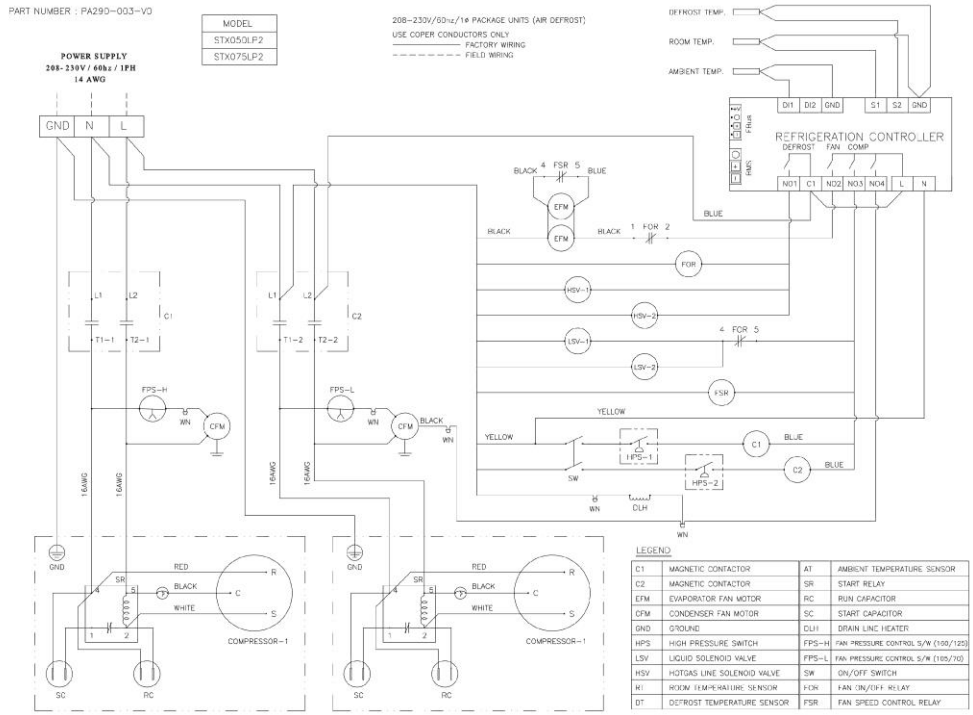


Diagram 8. Wiring diagram for SMART 7, Hot Gas Defrost 208~230V / 1Ph / 60Hz.

Model : STX050LP2, STX075LP2



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