

FSI **NORTH AMERICA**®

SAFETY THROUGH TECHNOLOGY
A Division of Fire Safety International

FSI® 2.5/5 Ton AC/Heat Pump Units (ECU)



Operational Guide for

F-DI25HP0105CM F-DI35HP0100CM

F-DI40HP0100CM F-DI50HP0100CM

Operation guide for the FSI heat pump (ECU)

There are no user serviceable parts within the ECU and the user should not attempt to service the ECU in anyway.

⚠ WARNING

- Failure to use a grounded electrical outlet could result in an electrocution injury.
- Disconnect unit from electrical outlet before performing any service or maintenance.
- A qualified service facility or technician should only carry out any service that the ECU requires.
- The ECU has very high operating pressures, moving parts and high electrical voltages and current that can do bodily injury or can kill an untrained person, all warning labels should be read and complied with.

Basic setup

Position the ECU in the required location to allow for the supplied ducting to be connected to the shelter and the installation of the power supply and control cabling. There should be adequate clearance on all sides of the ECU to allow for adequate airflow around the ECU to aid in proper operation, a minimum of 2 feet on all sides should be maintained.

Lock the wheel brakes so the ECU will not roll away on a slight incline. The ECU is best positioned on level even ground to allow for proper drainage of condensation removed during the cooling cycle.



Wheel brakes are located on the swivel wheel.

Install the ducting to and from the shelter and fasten with the integrated clamps. Slide the ducting over the rings and using a screwdriver or nut driver tighten the integral band clamps on the rings. The left duct is the outlet air from the ECU, supply air to the shelter, and the right duct is the return air from the shelter. Attach to your shelter using the shelter manufacturer's instructions.



Controller cable rain shield

Air supply to the shelter

Air return from the shelter



Controller cable plugged into ECU under rain shield

Approx. outdoor noise level rating is 76db

Route the controller cable into the shelter, one end plugs into the top of the controller and the other end plugs into the ECU. The ECU has a rain shield cover over the control cable jack, lift the cover and align the plug so that it can be inserted into the jack, you may hear a click when it locks in place. Lower the rain shield over the cable.

Install the controller in an appropriate location inside the shelter, on a desk, ledge etc. or hang it from an appropriate location. Plug the control cable into the jack on the top of the controller box.

The controller should not be in a direct draft nor should it be located in an area that does not receive a flow of conditioned air. Centrally located in an open area is the best place for even heat and cooling.

Powering up the ECU

The power supply should be a 208 to 240 volt single phase supply. Do not run on any other power sources. The supply power should be adequately grounded to avoid electrical shocks or the possibility of electrocution.

5 Ton ECU's require a minimum circuit capable of 50 amps if wired to a building supply and 2.5 ton ECU's require a minimum 30 amp circuit for starting purposes. The ECU will draw less current when it is operating but needs the additional current for starting.

If the ECU has the optional resistance heater installed you will need to provide enough power to operate the heater in cold weather. An example would be a 10kw heater installed. This will draw an additional 42 amps at 240 volts or 37 amps at 208 volts this is usually wired as a separate power cable and plug and will need it's own power supply receptacle. In climates where the temperature falls below 30 degree F it will be desirable to have the resistance heat. Simply plug in the second power cord and it's operation will be seamless to the shelter occupants. The resistance heater is controlled by the controller/ECU and is transparent to the user. If it is not plugged in it will not operate nor add any additional load.

Before plugging in the power cabling, verify that the circuit breaker is in the off position. Plug the ECU power cable into either a line power source or an appropriate generator, if resistance heat is installed and needed, plug in the additional power cord.

Turn on the circuit breaker.

The ECU's fan will immediately start to circulate the air within the shelter, but no heating or cooling will be enabled until the controller is turned on.

Controller setting

The controllers will self-test and then display the status of the temperature in the shelter on the top line of the display. (All temperatures are in Fahrenheit)

Controller cable

Temperature sensor



The second line of the display is the set point, this is the temperature that you set for your requirements.

Press the Higher or Lower arrows once and the display will show set point and the temperature that is currently set.

To change the temperature continue pressing or hold the up and down arrows and set your new temperature.

When you are finished adjusting the temperature, and no changes are made for 2 seconds the new temperature setting will lock in and the display will revert to the normal standard display.

An asterisk will show in the display to signify that the controller is ON. While the asterisk is displayed the controller is actively operating the ECU compressor and/or optional electric resistance heat.

Any adjustments of temperature setting can be done while the controller is operating by just pressing the Higher or Lower button once and make your required changes as outlined above.

The controller will start to control the shelter temperature by cycling the ECU thru its heating and cooling modes to maintain the desired setting regardless of whether it needs to heat or cool. The controller is designed to try and maintain the temperature within 2 degrees of the set point chosen without having to switch between heating or cooling modes.

Basic operation of the ECU

Initially there will be a (5) five-minute delay from the time power is supplied to the ECU and the ECU will be able to start heating or cooling. This is not adjustable and is a mandatory period required between cycles to insure that the internal pressures can equalize before the ECU attempts to start.

There is a (5) five-minute delay built into the operating program to allow the unit to equalize pressures before it does a restart. This is normal operation. The ECU will cycle on and off to maintain the set temperature. During startup in a warm humid condition it may require a significant amount of time for the ECU to reach the desired temperature. The ECU will dehumidify the space first, and then lower the temperature second.

The ECU during it's heating mode at certain outside temperatures will develop frost and ice on the outside coils. In order to maintain the optimum conditions for heating the ECU will automatically go into a defrost mode. The defrost mode may last as long as 15 minutes and during this time there will be a lack of heat supplied to the shelter. This is normal operation and immediately upon completion of the defrost cycle the unit will again go back to normal mode and start to supply heat to the shelter. If the ECU has optional additional resistance heaters they will continue to supply heat during a defrost cycle.

The fan is constantly ON to allow a better air mix of heating and cooling to help avoid uneven cooling or heating of the shelter when the compressor unit cycles off.

Shut down procedure.

Turn the controller off by simply unplug it from the control cable.

If the ECU compressor was running it will stop. The ECU fan will continue to circulate air until it is turned of at the power supply breaker. This is normal operation.

Turn off the power supply breaker.

Remove the plug from the power source.

Remove the ducting and controller cable from the ECU.

Clean and store the ducting, controller and ECU unit.

Storage of the ECU is best in a clean dry location.

ECU "QUICK SET UP / SHUT DOWN

ECU Set Up:

1. Position ECU next to tent with supply/return duct connections facing tent supply/return boots. Make sure it is on a level surface.
2. Run Power Cord to Power Source. DO NOT CONNECT.
3. Connect PVC Supply Duct to ECU. This provides the conditioned air to the shelter. Connect to air plenum if applicable.
4. Connect PVC Return Duct to ECU - This brings the air back from the shelter. Make sure return duct is not blocked by anything inside the tent.
5. Position/Hang Remote Temperature Controller inside tent. Make sure RTC will not be in the direct air flow from tent air plenum. Connect controller cable to controller. Run controller cable thru the tent duct boot and connect to the ECU.
6. Connect Power Cable to Power Source. Take special care to make sure the breaker on the power source is in the OFF position prior to connect ECU power cable.
7. Switch breaker to the ON position.
8. The ECU has a 5 minute delay before it will engage the compressor and start conditioning the air inside your shelter or space. You will hear and feel the fan start to blow air. This will let you know that the ECU has power to it. Make sure to check the remote temperature controller for the asterisk which will indicate that the system is powered and the ECU is in good working order. Finally set the temperature to the desired setting and wait for the ECU compressor to start and the evaporator fan to start turning. Manually adjust the RTC for desired temperature.

ECU Shut Down:

1. Power the ECU down by switching the breaker at the power source to the off position.
2. Disconnect the power cord from the power source. Take special care to make sure that the power source is turned off or shut down prior to disconnecting the ECU power cable. Wrap power cable around the ECU push handle for storage.
3. Disconnect the remote temperature controller and return it to its storage case. Store the remote temperature cable in the case as well.
4. Disconnect the PVC ducting from the shelter then from the ECU. You may want to keep it stretched out on the ground so it has a few minutes to dry before storing it.
5. Store ECU in a clean dry area. Adding a cover will help keep dust and debris from entering the condenser fan area.

ECU Trouble Shooting:

1. The ECU will not run. - Check electrical connections, power cord, Temp controller cable, etc.
2. The ECU is operational (condenser fan running) but not providing cold/hot air from the supply ducting. Have an authorized HVAC technician examine the unit.
3. The ECU compressor won't engage. Check your power source; make sure you have the appropriate power connect to the ECU. Check the power source; make sure you have a power source capable of operating your ECU.
4. The ECU is icing up. Check that the supply and return ducts are installed correctly. The ducts should be as straight as possible without hard bends or kinks. Check return air duct. Make sure it is free of debris. Check tent air plenum. Make sure there are NO choke points or obstructions. Check to make sure the ECU is positioned on level ground.
5. Remote Temperature Controller won't show set point/current temp correctly. Please the controller in a cool dry area out of direct sunlight like a vehicle with AC running. Try and cool the RTC.
6. Remote Temperature Controller does not have power. Check cable connections. Replace if necessary.

Warranty Limited Parts Warranty

The manufacturer warrants to the original purchaser / user that the above-described unit shall be operational and free of defects at the time of delivery.

The warranty covers normal parts replacement for a period of (12) twelve months.

The warranty is dependant on good operational practices of the owner and operation of the unit in accordance with the above operational manual information.

Parts can be pre ordered and purchased, but will not be credited until the manufacturer or his designated agent returns said parts for inspection and deemed to be defective.

This warrant does not cover labor costs, shipping costs or associated customs duties or other miscellaneous costs incurred in the removal or replacement of the defective parts and does not cover for consequential damages that may or may not have occurred due to a defective part or unit failure.

The foregoing warranty is in lieu of all other warranties, express or implied, including those of merchantability or fitness for any purpose not expressly set forth herein. No affirmation of Manufacturer, by words or action, other than as set forth in this Section shall constitute a warranty. Manufacturer warranty does not apply to any Goods which have been subjected to misuse, mishandling, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, modification (including but not limited to use of unauthorized parts or attachments), or adjustment or repair performed by anyone other than Manufacturer or one of Manufacturers authorized agents. When returning products to Manufacturer, packaging must be adequate or all warranty is null and void. Buyer will pay for the cost of Shipping to the Manufacturer for all warranty repairs.

For warranty replacements contact your original equipment supplier for a return merchandise authorization number (RMA#) to expedite the claim process.

Any parts or equipment shipped without an RMA# will be refused by the Manufacturer and returned to the shipper.



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