RenewAire
Energy Recovery Ventilation

DN SERIES DOAS
Start-up Guide

To insure the quality of the installation and the proper operation of this unit, the following Start-Up routines should be completed. Please follow the procedures and recommendations identified in this report and record start-up information in the specified areas. If a problem with the unit becomes apparent, correct the problem by referring to the installation manual or contact the Factory Representative for further assistance. Please verify the accuracy of all model and serial number information before contacting the manufacturer.

JOB NAME:	TAG:	DATE:
MODEL NO:	SERIAL NO:	
CONTRACTOR:	TESTED BY:	

This unit should be started up for a brief period immediately after high and low-voltage wiring are complete. The purpose of the initial start-up is only to verify correct fan rotation direction and that the dampers are opening and closing properly. After the unit has been run for a brief period, it is to be shut back down until the entire installation is complete. **The unit is not to be used for building ventilation before the building has been completed.**

PRIOR TO UNIT START-UP:

⚠ WARNING

Installation of unit and electrical wiring must be done by a qualified professional(s) in accordance with all applicable codes, standards and licensing requirements. Before servicing or cleaning the unit, switch power "off" at the disconnect switch or building service panel and lock-out/tag-out to prevent power from being accidentally turned on. This unit must be grounded as per instructions.

- ☐ The unit must be in its final location.
- ☐ Verify all prefilters are in place and on the correct airstreams (i.e. inlet face of core exhaust and the inlet face of the core supply) if previously removed.
- ☐ High-voltage supply wiring must be complete.
- ☐ All low-voltage wiring, including field-installed sensors, must be completed to the correct numbered terminal on the low-voltage terminal blocks.
- ☐ All debris or construction materials must be removed from the unit.
- ☐ All doors and access panels must be in place.
- ☐ Initial start-up should not be performed if the air is laden with construction dust. Filters will quickly become dirty and require changing for other subsequent testing.
- ☐ If this unit was purchased with a Remote User Terminal (RUT) for the controller, connect the RUT and perform start-up steps with the RUT. If there is no RUT, perform the start-up steps by using the buttons on the Integrated Programmable Controller or the internal web pages.
- ☐ Make sure all power to the unit is "off" and all disconnects are in the "off" position before making final power connections
- ☐ **FOR INDOOR UNITS:** Confirm that the supply and exhaust vent connections have been properly connected and the penetration points have been separated by a minimum of 10', are free of obstructions, and are screened and properly terminated as per directions. Inspect the OA and EA vent pipes to confirm that they are pitched ¼" per foot away from the unit and insulated with vapor barrier insulation.
- ☐ **FOR ROOF TOP UNITS:** Inspect and confirm that all ductwork has been connected and sealed as per installation instructions.
- ☐ Confirm circuit breaker amperage does not exceed the MOP on the nameplate and verify the unit is wired with the correct line voltage.
- ☐ Spin each blower wheel to assure they are not rubbing and are in alignment in the blower housing.
- ☐ Check all set screws and fasteners on blowers, bearings, sheaves, and drives (if adjustments have been made) to assure tightness.

⚠ CAUTION

RISK OF ELECTRIC SHOCK OR EQUIPMENT DAMAGE

Whenever electrical wiring is connected, disconnected or changed, the power supply to the unit and its controls must be disconnected. Lock and tag the disconnect switch or circuit breaker to prevent accidental reconnection of electric power.

⚠ CAUTION

RISK OF CONTACT WITH HIGH-SPEED MOVING PARTS.

Disconnect all local and remote power supplies, verify with a voltmeter that electric power is off and all fan blades have stopped rotating before working on the unit.

Do not operate this unit with any cabinet panels removed.

⚠ WARNING

ARC FLASH AND ELECTRIC SHOCK HAZARD

All RenewAire models operate on high voltages that can cause severe electric shock. Some models use high voltages that are capable of causing dangerous arc flash. Whenever accessing any part or component of the unit, disconnect all electric power supplies, verify with a voltmeter that electric power is OFF and wear protective equipment per NFPA 70E when working within the electric enclosure. Failure to comply can cause serious injury or death.

The unit disconnect switch contain live high-voltage.

The only way to ensure that there is NO voltage inside the unit is to install and open a remote disconnect switch and verify that power is off with a voltmeter. Refer to unit electrical schematic.

Follow all local codes.

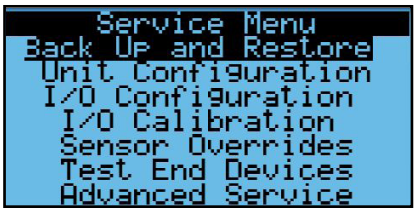
CONTROL MENU STRUCTURE

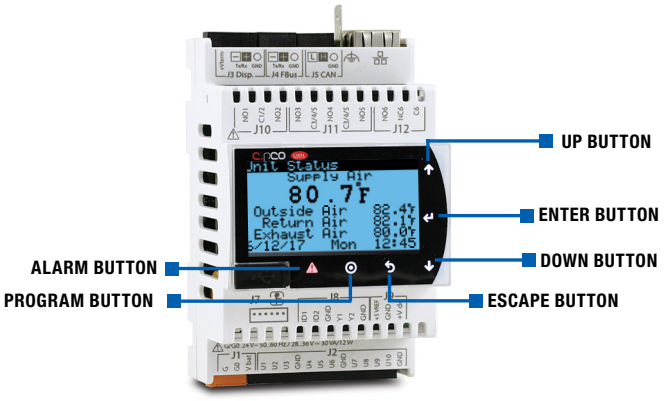
- Each screen has a bar at the top to show within which set of menus it resides.
- Access the first by pressing the Escape button.

NOTE: For more information regarding setpoints and unit configurations, see the *Commercial Controls User Manual* furnished with the unit.

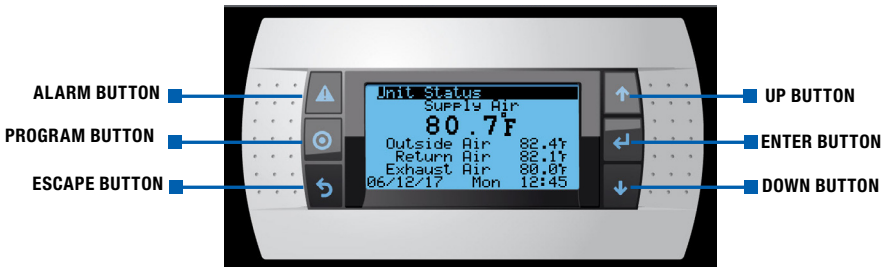
NOTE: Access to the Main Menu does not require a passcode. If you wish to access the Service Menu, you will be asked for a passcode. Use “1000” for the passcode.

NOTE: For units with packaged refrigeration, all operations are done on the main controller which looks like the picture shown unless specifically noted.





INTEGRATED PROGRAMMABLE CONTROLLER



OPTIONAL REMOTE USER TERMINAL (RUT)

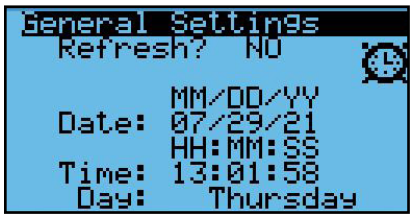
- Pressing Up and Down when the cursor is in the upper left-hand corner will move you from screen to screen.
- Pressing Enter on a screen will move from field to field and Up and Down on another field will change the value.

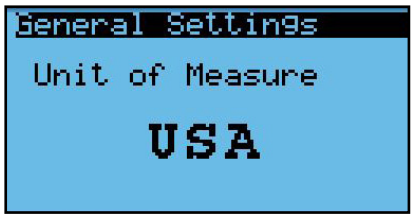
Each screen will have its menu location at the top.

SET THE TIME AND UNIT OF MEASURE

The controller needs the correct time and date for alarm stamps, etc.

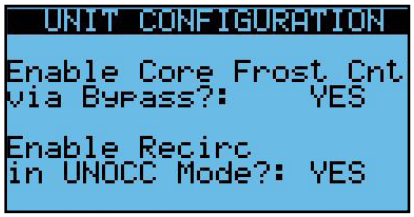
The unit of measure setting will determine the values that show on the display.





CONFIRM THE CONFIGURATION

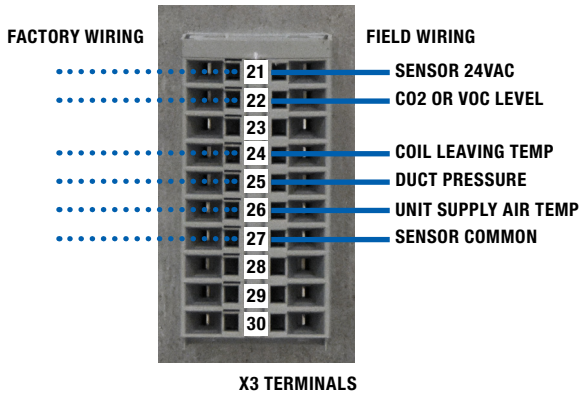
Using these two screens, confirm that the unit has the correct configuration.

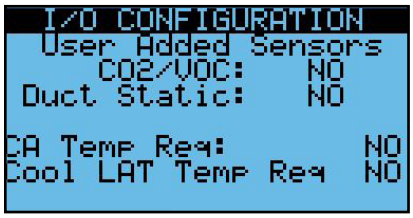


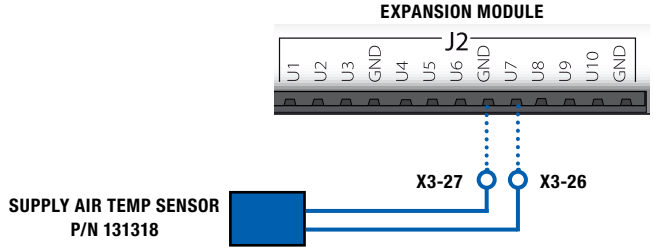
ADD ANY REQUIRED SENSORS

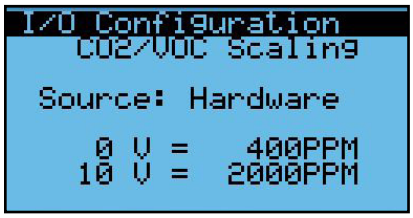
If using premium controls and require the ability to control airflow based on CO2, VOC, Duct Static, or room static, the sensor must be enabled here and installed on the unit. Any scaling can be adjusted in the screens following, if needed.

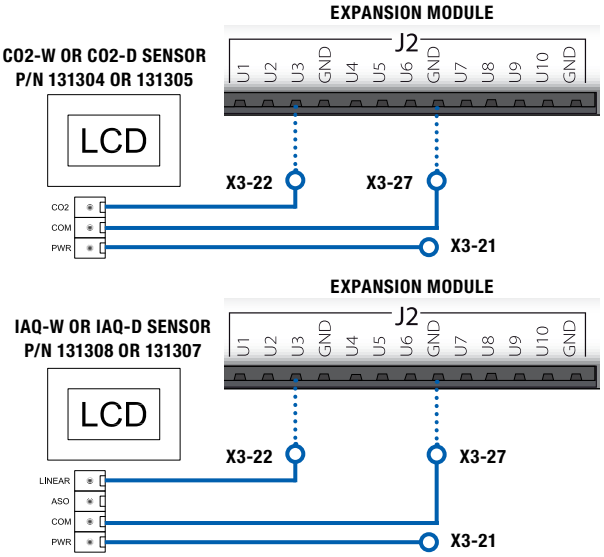
If using premium controls for heating and/or cooling, the supply air temperature sensor must be enabled and installed.

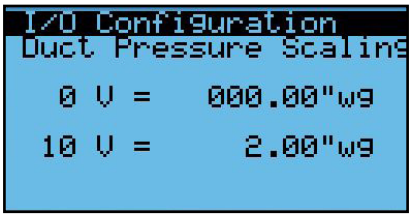


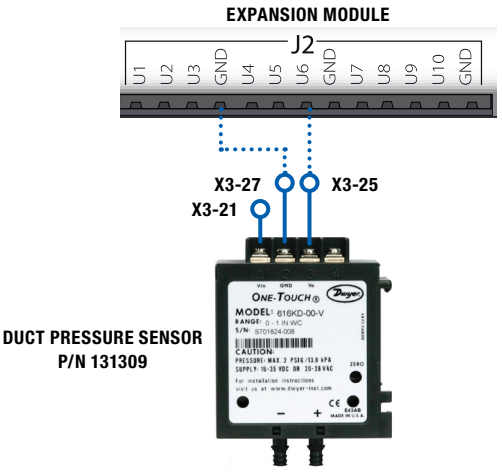


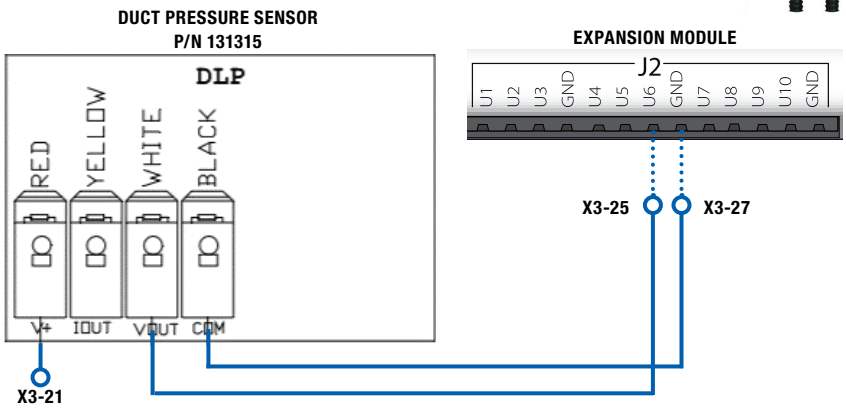


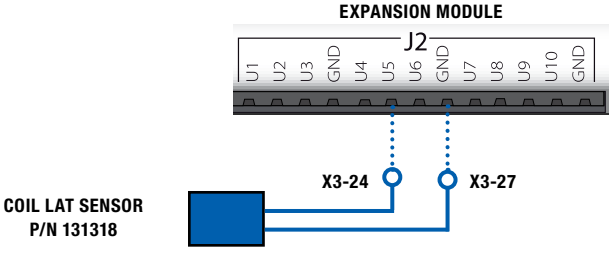












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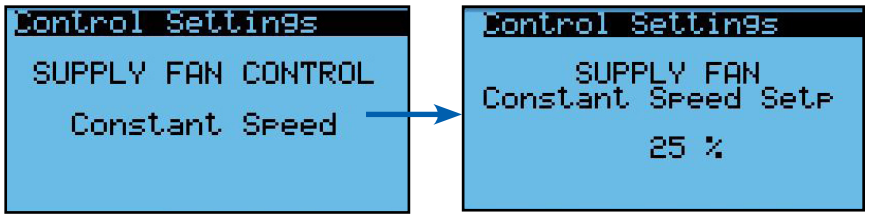
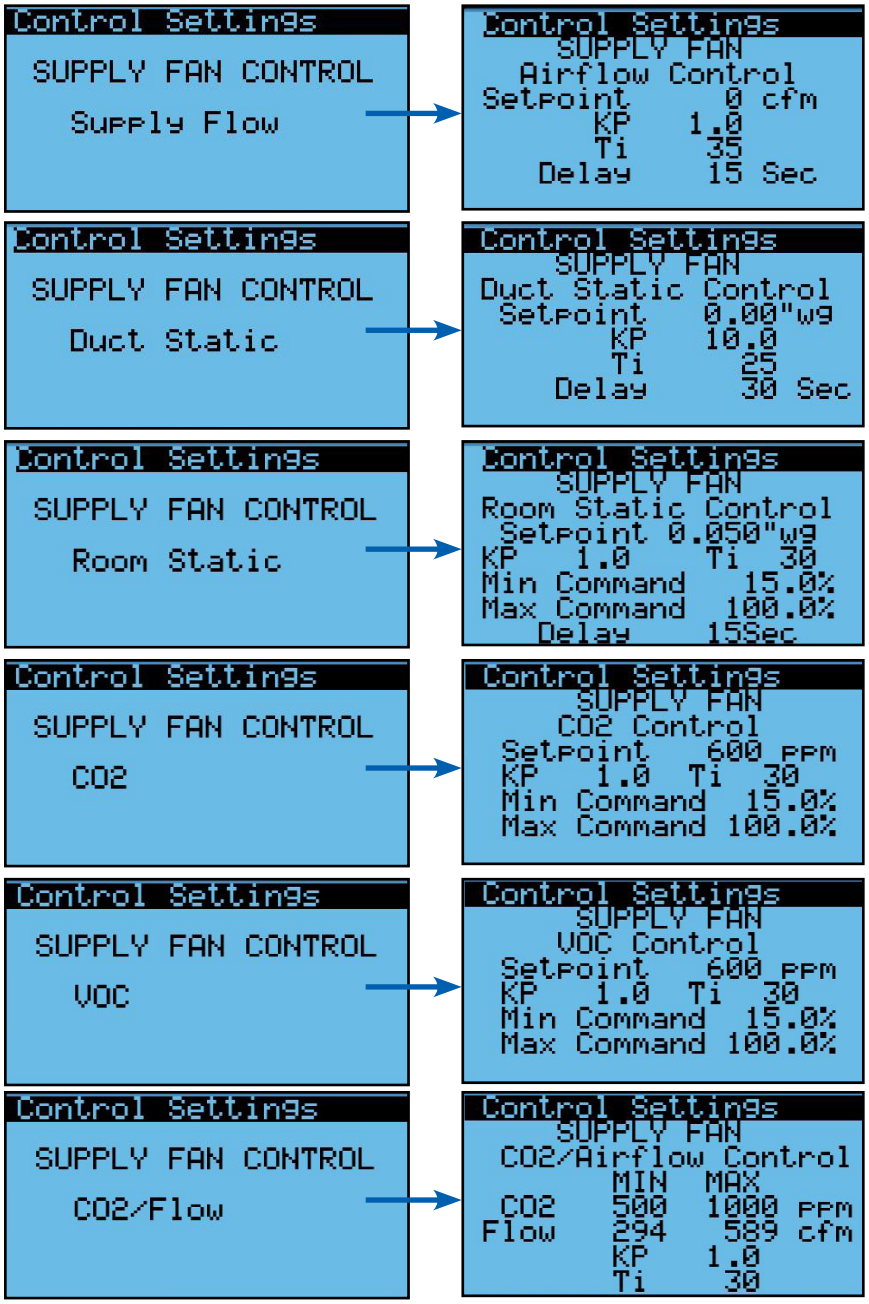
CONFIGURE AIRFLOW FOR SUPPLY AND RETURN FANS

If you choose constant speed fan control, you will be allowed to set the variable speed fans to a specific fan speed as a percentage.

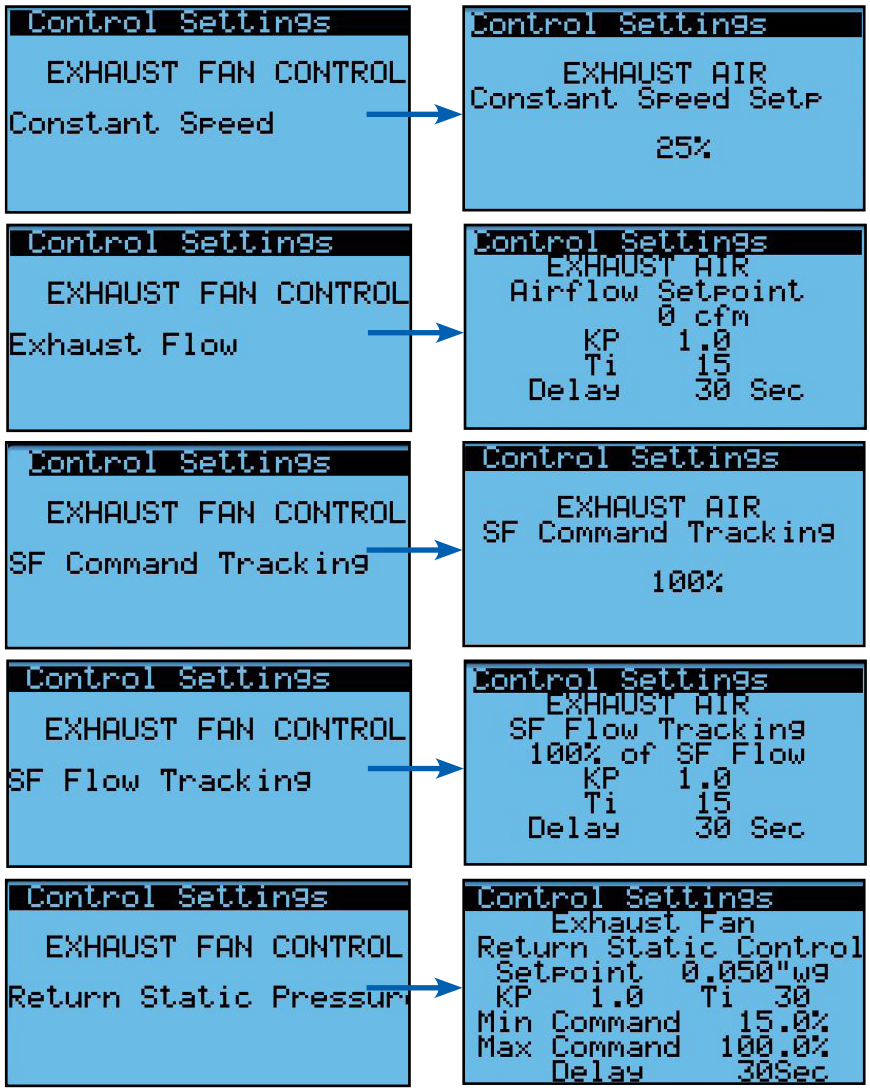
You will have these additional options. Choose your type and set the corresponding settings for that type.



NOTE: FOR AIRFLOW CONTROL WITH VFDS YOU MAY NEED TO SET THE KP VALUES AS LOW AS 0.1 TO PREVENT HUNTING.



Repeat for exhaust fan.

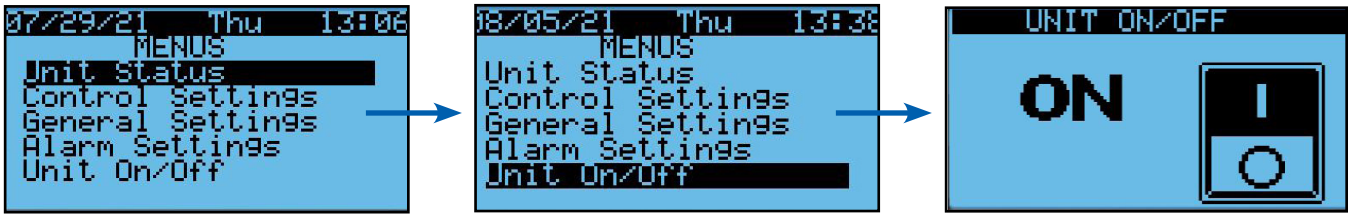


UNIT START-UP:

Start the unit through the keypad. The digital input ID1 (terminals 17 to 18) has to be closed. *See the images on the below.*

The unit is now powered up and the dampers should begin moving. Once the dampers are in their programmed positions, the fans will begin to run.

- ☐ Verify that fans are turning the correct direction and that dampers are functioning. If fan rotation is reversed, change any two of the three-phase high-voltage supply wires to the motor.



MAIN MENU SCREEN

HIGHLIGHT AND PRESS ENTER ON UNIT ENABLE

CLICK UP OR DOWN ARROW BUTTON TO CHANGE STATUS TO ON.
CLICK THE ESCAPE BUTTON TO RETURN TO THE MAIN MENU.

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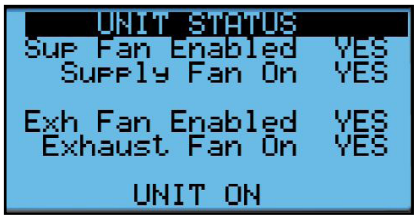
Observe this status screen for status of fans and unit. All four answers should be “YES” and the Unit should show UNIT ON. If the Fan On is NO when the fans are running the current switch for that fan needs to be adjusted.

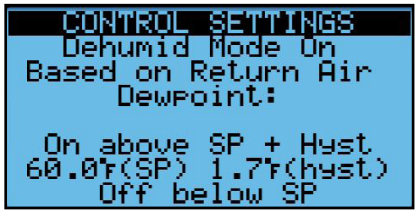


- ☐ Shut down the unit by switching UNIT ON/OFF back to OFF and turning the disconnect switch to OFF.
- ☐ SECURE ALL PANELS AND DOORS TO PREVENT ACCIDENTAL ACCESS TO LIVE HIGH-VOLTAGE OR TO THE FANS.

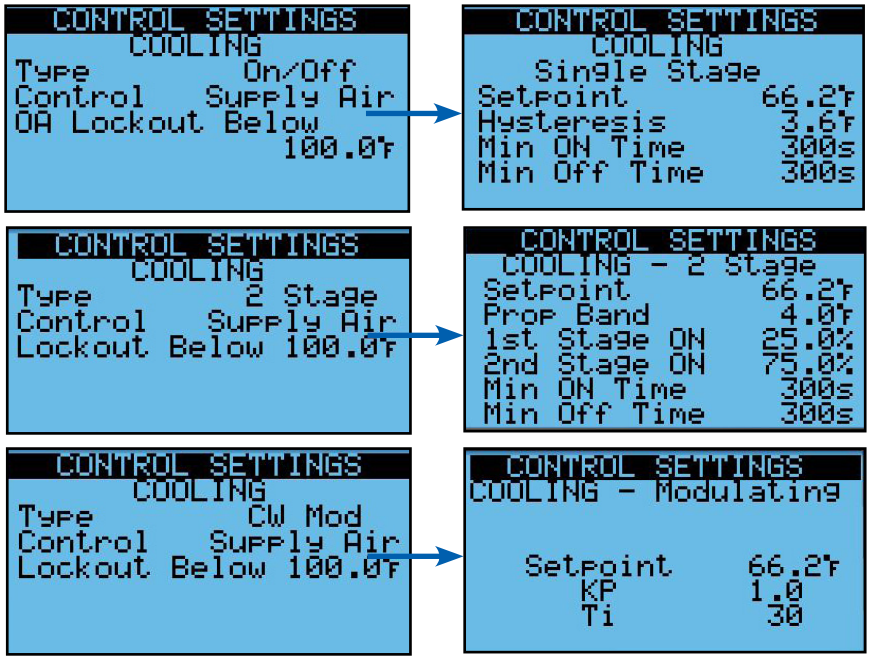
SET THE COOLING SETTINGS

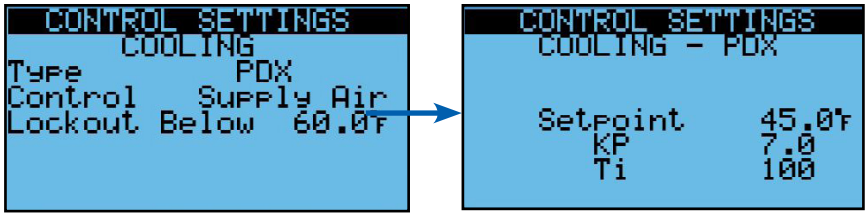
If you have a unit with packaged refrigeration, go around to the other side of the unit and enable the refrigeration controller. Once done, return to the main controller.

If enabled, adjust the dehumidification setting so that the dehumidification will be locked out.



- Confirm that the correct cooling type is set. For units without packaged cooling, make sure the connections are physically in place.
- Choose between control off supply or return air.
- Be sure to make sure the outdoor air lockout temperature is above the current outdoor temperature.
- Depending upon the cooling type, set the appropriate setting. Continue to lower the setpoint until the cooling comes on.





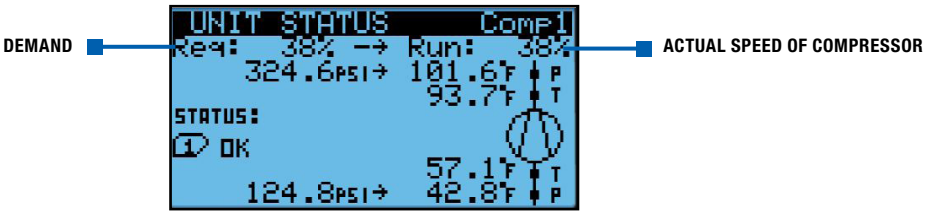
COOLING CHECKOUT

Observe the cooling behavior in the status screens. **IF THE UNIT DOES NOT HAVE PACKAGED DX, PROCEED TO HEATING.**

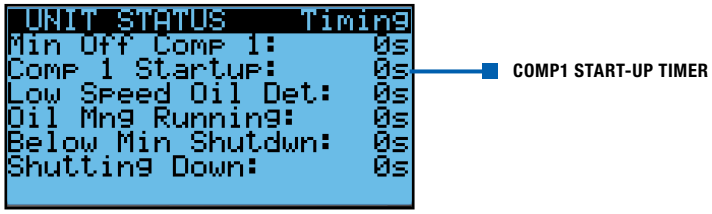
If the unit has packaged DX continue with the following steps.

ADDITIONAL STEPS FOR PACKAGED DX UNITS

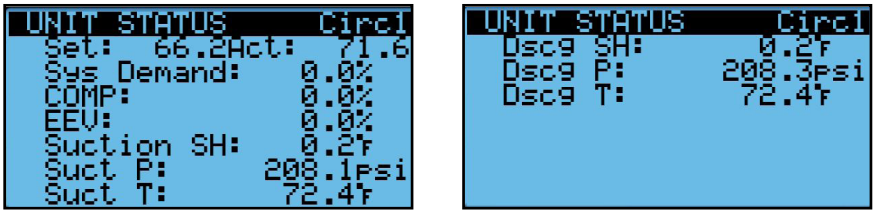
Observe in this screen that the unit runs at the desired speed once the startup time elapses.



The status of the startup timer can be seen in this screen.



Once running out of startup mode, record the values on these screens. The expected suction superheat should be around 12°F. If it is far from this value, observe the sight glass to determine whether the refrigerant change needs to be adjusted.



REFRIGERANT CIRCUITS						
STAGE	DISCHARGE PRESS	DISCHARGE TEMP[1]	DISCHARGE SUPERHEAT	SUCTION PRESS	SUCTION TEMP	SUCTION SUPERHEAT
First	#	°	°	#	°	°
Outside air temperature:				db °F		

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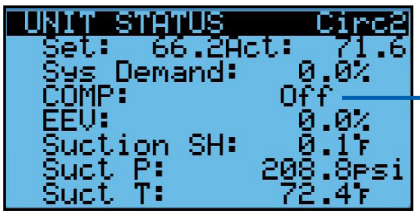
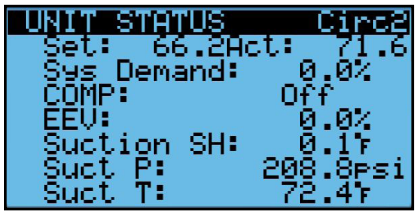
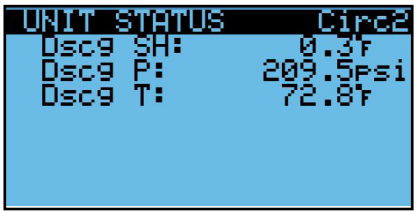
For units with two refrigerant circuits, continue to lower temperature setpoint until the second circuit comes on if the environmental conditions allow. (If not, see Verify Second Circuit Manually section.)



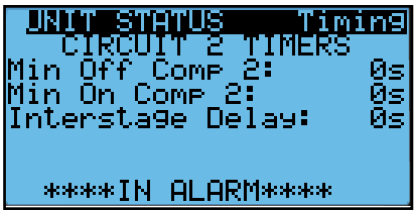
Once settled, record the values on these screens. The expected suction superheat should be around 12°F. If it is far from this value, observe the sight glass to determine whether the refrigerant change needs to be adjusted.





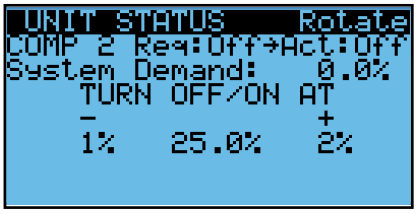
REFRIGERANT CIRCUITS						
STAGE	DISCHARGE PRESS	DISCHARGE TEMP[1]	DISCHARGE SUPERHEAT	SUCTION PRESS	SUCTION TEMP	SUCTION SUPERHEAT
Second	#	°	°	#	°	°
Outside air temperature:				db °F		

Lower the setpoint until the compressors turn off. You will see the variable speed go to a minimum position for a time before turning off. The status of all modes can be seen on this screen.

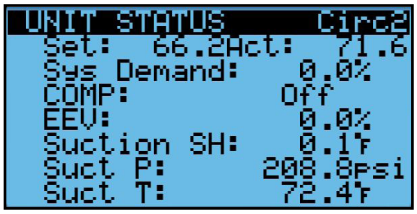


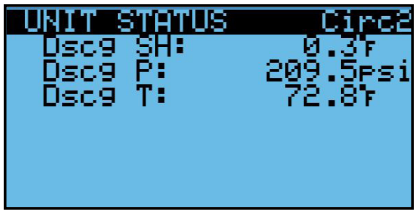
VERIFY SECOND CIRCUIT MANUALLY

If the conditions will not allow for two refrigeration circuits to run without overcooling, the second circuit can be tested manually using the following screen in the Advanced Service menu. All safeties are overridden during this test so care should be taken to manually limit cycling.



Once settled, record the values on these screens. The expected suction superheat should be around 12°F. If it is far from this value, observe the sight glass to determine whether the refrigerant change needs to be adjusted.



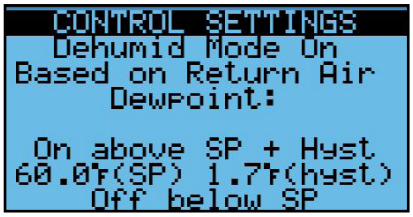


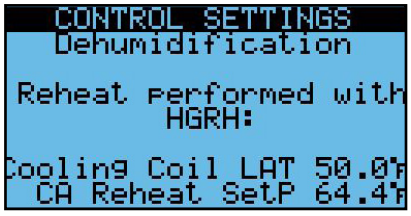
REFRIGERANT CIRCUITS						
STAGE	DISCHARGE PRESS	DISCHARGE TEMP[1]	DISCHARGE SUPERHEAT	SUCTION PRESS	SUCTION TEMP	SUCTION SUPERHEAT
Second	#	°	°	#	°	°
Outside air temperature:					db °F	

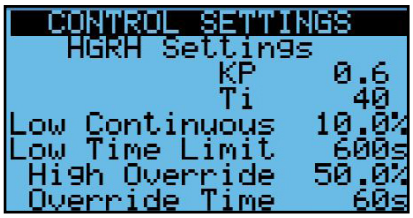
Turn the manual command back off.

SET THE HOT GAS REHEAT SETTINGS

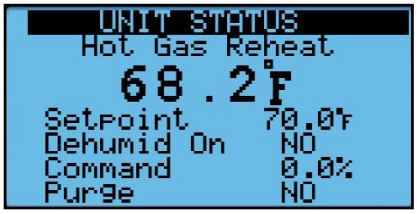
If hot gas reheat is available on the unit, adjust the dehumidification setting that will enable the hot gas reheat as well as the setting for reheat.

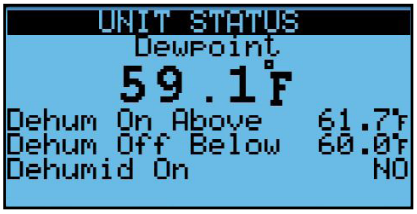






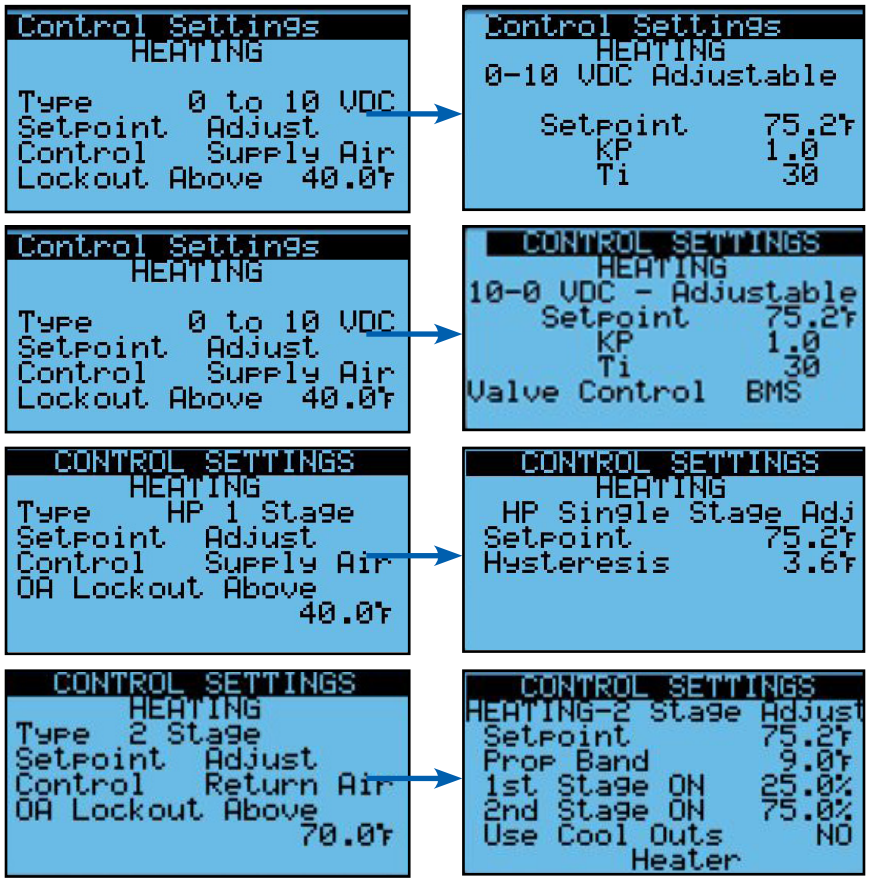
Use the unit status screens to see that the unit is performing reheat correctly.



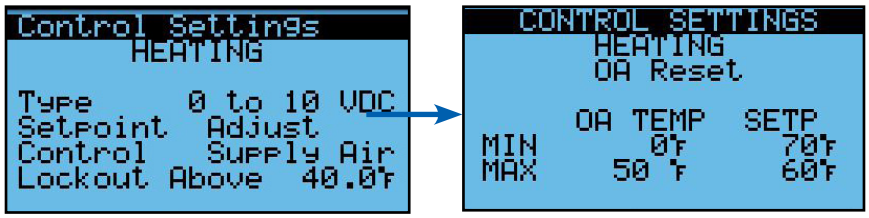


SET THE HEATING SETTINGS

- Confirm that the correct heating type is set. Make sure the connections are physically in place.
- Choose to control to the heating setpoint or to a reset schedule with outdoor air.
- Choose between control off supply or return air.
- Be sure to make sure the outdoor air lockout temperature is below the current outdoor temperature.
- Depending upon the heating type, set the appropriate setting. Refer to the appropriate manual to proceed for heating checkout.



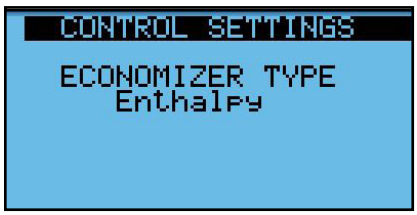
If you chose the outdoor air reset option you will also need to set the reset schedule. Screens above will no longer show a setpoint option.

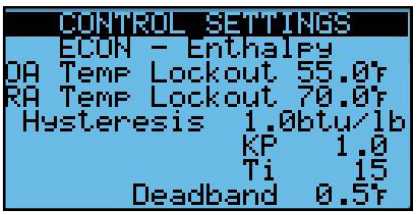


OPTIONAL SETTINGS

Economizer

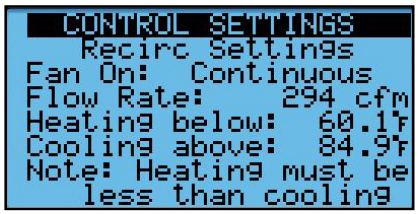
If the unit will support an economizer, set the following settings.





Recirculation

If the unit will run in unoccupied mode, set the following settings.



Defrost

If the unit will bypass for defrost, set the following settings.

SAVE YOUR SETTINGS

Once done save the parameters for future use.

ENGINEERED DESIGN CONDITIONS			ACTUAL PERFORMANCE CONDITIONS		
EXHAUST (RA) CFM	E.S.P.	BLOWER R.P.M.	EXHAUST (RA) CFM	E.S.P.	BLOWER R.P.M.
SUPPLY (FA) CFM	E.S.P.	BLOWER R.P.M.	SUPPLY (FA) CFM	E.S.P.	BLOWER R.P.M.
MCA (MIN CIR. AMPS)	MFS (MAX FUSE SIZE)		MOTOR AMPS (OA)	MOTOR AMPS (EA)	
UNIT VOLTAGE:			LINE VOLTAGE L1-L2	L2-L3	L3-L1

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