90 Monarch Road
Guelph, Ontario, N1K 1S3

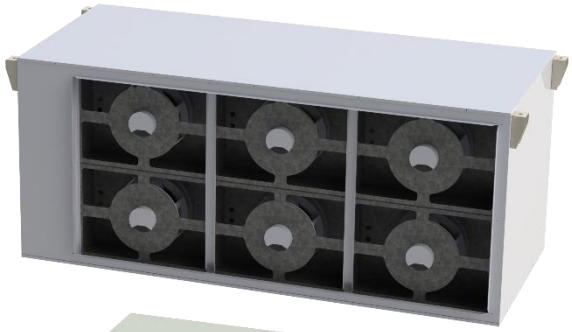
Phone: 855-658-4330
Fax: 855-658-9384

www.ecologix.ca
info@ecologix.ca

Installation Instructions

Industrial Direct Expansion Dehumidifiers & Coolers Variable Capacity Digital Systems

SDH Series Indoor Dehumidifier Units
PDH Series Indoor Dehumidifier Units with Cooling
RCU Series Outdoor Units



ISSUE DATE: 2/21/2022

Copyright (C) 2022 Ecologix Inc. All Rights Reserved. This manual may not be reproduced in whole or part by any means without prior written consent from Ecologix Inc.

Table of Contents

INTRODUCTION

The ECOLOGIX industrial dehumidifiers are direct expansion refrigerant-based systems that are designed for dehumidification and cooling for large industrial process loads or agricultural room loads.
Our indoor units range in capacity from 3Tons to 20Tons of compressor capacity with moisture removal capacities from 300 to3000 pints per day depending on unit size and indoor conditions.
Our stand-alone dehumidifiers are completely self-contained and do not require any on site refrigeration trades for installation.
The combination Dehumidifier cooling units have an outdoor section for rejecting heat outside the building when the space requires both dehumidification and cooling, By providing cooling while dehumidifying we significantly reduce the system energy compared to more traditional systems that run independent air conditioning and dehumidification units in the same space.
Precedence: If there are any discrepancies between documents, the order of precedence for deciding on the correct data shall be: Rating plate, Wiring diagram in unit. Submittal sheets, Specifications, Installation instructions.

Features

ECOLOGIX industrial dehumidifier coolers offer many unique features that set them apart:

EC FANS FOR ALL SYSTEMS
All indoor units use backward included EC motorized blowers (Plug Fans) for air flow control. Multiple fans are used so failure of one single fan will not completely disable the unit. All fans are monitored and an alarm signal is available for central monitoring of units to let you know if a fan has failed. This can be self evident when a small room has one or two fans but in large grow rooms with 10 to 30 units where each unit may have between 2 to 9 fans (depending on individual unit capacity) the need for monitoring becomes much more critical

VARIABLE CAPACITY CONTROL
Dew point conditions are continuously monitored. The system adjusts to optimize dew point to maximize moisture removal over a large range of input conditions. In cooling mode (when equipped) the refrigerant conditions are monitored and outdoor fan conditions modulated to maximize system performance and adapt to cold weather conditions even is extreme cold weather.

EVAPORATOR COIL FREEZE PROTECTION
If the evaporator coil air temperature drops outside of the expected operating range this indicates a potential evaporator coil freeze condition. Coil freezing can lead to slugging (liquid refrigerant going back to the compressor) which will damage the compressor. All systems come equipped with monitoring sensors which will respond by modulating fan or compressor speeds to compensate or in extreme situations cycle off the compressor to allow for system defrost until it is safe to bring the system back on.

PRODUCT MODEL NUMBER EXPLANATION

Model	Description
SDH-05-D-X	Split Dehumidifier, nominal 5-ton, 208-230/1/60 with digital compressor, remote condenser not included

SDH-15-D-Y	Split Dehumidifier, nominal 15-ton, 208-230/3/60 with Digital compressor, remote condenser not included
SDH-15-D-Z	Split Dehumidifier, nominal 15-ton, 460/3/60 with Digital compressor, remote condenser not included
PDH-05-D-X	Split Dehumidifier, nominal 5-ton, 208-230/1/60 with Digital compressor, dehumidification only
PDH-15-D-Y	Split Dehumidifier, nominal 15-ton, 208-230/3/60 with Digital compressor, dehumidification only
PDH-15-D-Z	Split Dehumidifier, nominal 15-ton, 460/3/60 with Digital compressor, dehumidification only
RCU-05-X	Remote Condensing Unit, nominal 5-ton, 208-230/1/60
RCU-15-Y	Remote Condensing Unit, nominal 15-ton, 208-230/3/60
RCU-15-Z	Remote Condensing Unit, nominal 15-ton, 460/3/60

Split Dehumidifier Model Number Description	
SDH	Split Dehumidifier
PDH	Packaged Dehumidifier
RCU	Remote Condensing Unit
05	Nominal 5-ton
10	Nominal 10-ton
15	Nominal 15-ton
20	Nominal 20-ton
2	2 Stage compressor
D	Digital Scroll compressor
V	Inverter Compressor
X	208-230/1/60 Power Supply
Y	208-230/3/60 Power Supply
Z	460/3/60 Power Supply

PRODUCT DESCRIPTION

CABINET

All cabinets are galvanized metal with a tough, durable low maintenance powder coat finish.
Cabinet dimensions are designed to provide maximum installation flexibility. Refer to installation requirements for more details.

REFRIGERANT COILS

All coils are copper with aluminum fin. All coils and internal piping conform to ASTM B68 or ASTM B88 standards.
High-density aluminum fins provide maximum heat transfer for small coil surface.

FAN AND MOTORS

All fans are EC motorized blower with variable speed control. Indoor fans are backward inclined plug fans

INSTALLATION

The installer must adhere strictly to all local and national code requirements pertaining to the installation of this equipment. Detailed instructions are shipped with all accessory items and should be followed closely.

MOUNTING INDOOR UNITS

The indoor unit comes complete with hanging brackets that come installed at the top of the unit at each end. The bolt flange may face up or down depending on the need on site. Typically, the brackets are mounted at the top with the bolt flanges face up on ceiling mounted units. The bracket flange may be mounted facing down depending on the choice of vibration isolation to be incorporated. For floor mounting the brackets may be removed and the unit may be supported by isolation pads located at the four corners. See dimensional flat drawings for corner weight values when calculating loading.

A filter is recommended with a regular filter replacement regime to avoid the need for excessive coil cleaning and poor performance.
Position the filter rack so that the filter is readily accessible.
Internal coils and wiring are recessed from the surface to allow the filter rack or return ductwork to be attached directly to the cabinet with sheet metal screws.

Supply air ductwork can be attached directly to the supply air flanges provided

Install and level the unit with all panels firmly screwed in place to make sure the cabinet remains square.

Provide at least 2 feet of service clearance on all sides of the unit. Zero clearance is acceptable on top or bottom faces so unit can be either ceiling or floor mounted.

Install a trap in the condensate line that holds at least 2" of water column to avoid air and water being sucked back up the drain and overflowing the drain pan. Good filter maintenance greatly reduces the potential for this to happen. The trap will positively prevent it from happening, even when filter maintenance has been ignored or forgotten.

MOUNTING OUTDOOR UNITS

The outdoor unit comes complete with a wall mounted hanging bracket that clips onto the back of the unit to securely hold it off the wall. Holes are provided for mounting but additional holes may be drilled anywhere on the back plate to aid in securing the unit to the wall or frame it is to be mounted on.
Please ensure the wall is capable of hold the weight of the unit as shown in the specification sheets for the specific model unit being installed.
Mount the system at least two feet from the finished grade or at least 1 foot above the maximum snow line expected for the region.

The unit is designed for all weather operation. To be able to handle extreme cold operation the outdoor unit does not have horizonal surfaces where wind can blow through the coil unimpeded. All air is drawn into the coil from the bottom and discharged through the face. Care must be taken to avoid any plantings or bushes within 2 feet of the bottom of the unit or within 3 feet of the face of the fans.

Redi rack or frame mounting is very common for roof mounted outdoor units or where no convenient wall is available. Units can be mounted back-to-back so the weigh distribution on any frame is balanced. This will not affect performance provided the 3-foot clearance that is required from each face is observed.

A filter is not recommended on the outdoor unit. Outdoor filters will plug and result in system down time unless a vigilant schedule for filter cleaning and replacement is implemented. An annual or semiannual inspection and cleaning is strongly recommended to avoid reduction in cooling capacity and poor performance.

Install the unit with all panels firmly screwed in place to make sure the cabinet remains square.

REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNITS

SDH series (dehumidifier only) systems have no external refrigerant piping. These units come factory charged and do not require and adjustment of refrigerant charge on start up.

PDH indoor units matched with an RCU outdoor unit require refrigerant piping between units.

The maximum line length shall not exceed 100 feet. See refrigerant pipe sizing table for more information.

Where the indoor unit is below the outdoor unit, the elevation of the outdoor unit shall not exceed 40 feet. Slope all lines without traps between the outdoor unit and the indoor unit.
Where the indoor unit is above the outdoor unit and the elevation is less than 10 feet, run the lines between the indoor and outdoor units without traps in the piping.
Where the indoor unit is above the outdoor unit and the elevation is greater than 10 feet but less than 20 feet provide a trap at the bottom of the riser and a second trap at 10 feet above the bottom of the riser.

Do not install the outdoor unit at an elevation of more than 20 feet above the indoor unit.

ALL joints must be brazed using nitrogen. Dirty refrigerant from failure to use Nitrogen will void the compressor warranty.
Install an appropriately sized filter drier in the return line from the outdoor unit. Ensure the filter/drier is located in a serviceable location inside the building. Use a filter drier with replaceable cartridge or a sealed filter drier with mechanical connections so the filter drier can be replaced after each service of the refrigeration system.

REFRIGERANT VACUUM AND CHARGING
After brazing provide a nitrogen pressure test of at least 40 psi dry nitrogen for one hour to check for leaks.
Vacuum the system to reach a stable vacuum of less than 400 microns for 5 minutes prior to opening the service valves
Follow start up procedure for adding refrigerant to the system to compensate between outdoor and indoor operation.

ELECTRICAL POWER & CONTROL WIRING

Warning! - Make sure unit is properly grounded. Locate air handler on a separate electric circuit.

POWER WIRING
When determining electrical requirements, use rating plate information for wire selection and breaker sizing when available. ALWAYS confirm wire and breaker size against rating plate data before power up.
If there are any discrepancies between documents, the order of precedence for deciding on the correct data shall be: Rating plate, Wiring diagram in unit. Submittal sheets, Specifications, Installation instructions.
See Product Naming and Description sections for power source options

CONTROL WIRING
All control circuits are low voltage, either 24VAC or 0-10VDC.
If there are any discrepancies between documents, the order of precedence for deciding on the correct data shall be: Wiring diagram in unit. Submittal sheets, Specifications, Installation instruction or maintenance instruction wiring diagrams.
Refer to wiring diagrams for external and internal wiring.
The outdoor unit requires 4 wire thermostat wire connection from the indoor unit.
There are three control inputs to the indoor unit
Y – call to bring the dehumidifier on
O – call to switch form dehumidifier only mode to cooling mode.
G- fan call.

G will bring on fans based on the fan speed setting on the control board. There are 3 color coded fan speed controls
RED – Fixed fan speed setting for dehumidification mode
BLUE – Fixed fan speed setting for cooling call
GREEN – Fixed fan speed setting when fan signal is on but other calls are off

Fan (G) can be energized when no cooling or dehumidification calls are one.

Dehumidification (Y) will override fan signal and modulate the compressor speed to control dewpoint conditions to maximize dehumidification
Cooling (O) will operate only when a dehumidification call is on. For PDH units, when Y and O are both energized, the inside unit will operate to maximize humidity removal and the heat rejected to the condenser will be diverted to the outdoor condenser.
For SDH systems (standalone dehumidifier without an outdoor condenser) the cooling signal is ignored.

The humidity control strategy is designed to optimize humidity removal over cooling requirements even when the system is switched to cooling.
The Digital driven compressor system will monitor dew point at the coil and adjust the compressor speed of the indoor unit to optimize moisture removal. For this system while minimizing the need for defrost.

Fan speeds are fixed at the design air flow recommended by the building Engineer or system designer. For systems where air flow is not predetermined by the duct system design the fan speed can be adjusted to optimize humidity performance. This setting will need to be determined on site by measurement of the system as it is installed. See start up and troubleshooting in this manual or the fan control section in the maintenance manual for more details.

Outdoor fan control is monitored and adjusted to maximize heat rejection and optimize operating pressures of the system under all weather conditions. In hot weather fans may operate close to 100% fan speed. Under cold weather conditions the fans may run at very low speed or shut off completely for periods of time to maintain adequate head pressure to the compressor.
.

EC3-D73 DIGITAL CONTROL

The EC3-D7x series is a stand-alone universal superheat controller with a built-in synchronization control for the Copeland Digital Scroll.

Please note that digital controls do not come with a ECD-002 display keypad. This must be ordered separately from ECOLOGIX or directly form Emerson.

Information in this section has been reproduced from Emerson “EC-series user-guide”
For more information you can download the full user guide from the internet.

APPLICATION

The EC3-D7x series can be applied into a number of different superheat applications in conjunction with either a single Copeland Digital Scroll™ or a tandem unit consisting of one fixed and one Copeland Digital Scroll:

DESCRIPTION OF PERFORMANCE

EC3-D7x series controls the opening of electrical control valve according to desired superheat. As the Emerson Electrical Control Valves (ECV) are able to provide a better positive shut- off function than conventional solenoid valves, there will be no flow through Emerson ECV when the compressor(s) are not running. In the event of a cooling demand request from a third party controller and the Copeland Digital Scroll compressor starts-up, the EC3-D7x needs to be informed through a digital cooling demand input. In addition, upon receiving a capacity demand signal through the 0-10V input, the Digital Scroll will initially run at minimum capacity and will subsequently start to vary the capacity of the compressor. The EC3-D7x will start to control the refrigerant mass flow by precise positioning of the ECV under different operating conditions such as compressor start-up, start of second compressor, high head pressure, low head pressure, high load, low load and partial load operation.

EC3-D7x is capable of alarm handling and diagnostics. The alarm can be received via relay output, via TCP/IP

network as well as optical LED/alarm code on ECD-002.

ALGORITHM

The superheat control algorithm is self-adapting so that it automatically adjusts itself to the characteristics of the evaporator at regular intervals. This guarantees optimal superheat control performance for different types of evaporators and even when the operating conditions of the evaporator change over time.

SUPERHEAT CONTROL FUNCTION

By receiving two measured values from Emerson pressure sensor PT5 and temperature sensor ECN-N60, the EC3-D7x calculates the actual superheat and compares to preset superheat. The EC3-D7x operates the Electrical Control Valvein order to keep superheat at desired setpoint under various operating conditions.

The superheat set point is adjustable in the range between 3K and 30K. If low superheat alarm function is disabled, it is possible to adjust the superheat set point below 3K down to 0.5K for special applications such as flooded evaporators.

MOP FUNCTION

To avoid overload of the compressor motor, the MOP function of the EC3-D7x limits the evaporating pressure to a pre- determined value, which can be adjusted to match the safe operating envelope of the compressor. MOP setpoints are entered as saturation temperature values to match published safe operating data of compressor manufacturer and to avoid unnecessary manual conversions from temperature into pressure values. The MOP function may be totally disabled, when not needed.

LOW SUPERHEAT ALARM

Liquid flooding may lead to serious damage of compressors and must be avoided. The built-in low superheat alarm function of the EC3-D7x detects low superheat conditions and deactivates the alarm relay. If the alarm relay is wired into the serial safety loop of the system controller, the compressor will be switched off when a low superheat alarm occurs and the ECV will close.

HIGH SUPERHEAT ALARM

If this function is enabled, it detects longer lasting high superheat conditions (adjustable) and triggers the high superheat alarm and the ECV will close.

DIGITAL INPUT STATUS (FACTORY SETTING)

The digital input is the interface between EC3-D7x and system controller. The digital status is dependent on the operation of system's compressor/thermostat. The Copeland Digital Scroll should always be regarded as the base load; compressor 1.

System Operating condition	**Digital Inputs**	**0-10V input from third party controller**
Comp. 1 & Comp.2 in stop mode	"Cooling demand" open (0V) "Comp 2 Running" open (0V)	ECV remains closed irrespective of voltage input value

Comp. 1 inrun & Comp.2 in stop mode)	"Cooling demand" closed (24V) / "Comp 2 Running" open(0V)	ECV active Input =0V: digital valve capacity at 10% default capacity. When the digital comp. is in by-pass the ECV will: Close when capacity is <70% Be inhibited when the capacityis >70%
Comp 1 & Comp. 2 in run mode	"Cooling demand" closed (24V) / "Comp 2 Running" closed (24V)	ECV active The ECV will always modulate even when the digital compressor is in by-pass mode.
Comp.1 in stop and Comp. 2 in run mode starts	"Cooling demand" open (0V) / "Comp 2 Running" closed (24V)	ECV remains closed irrespective of voltage input value

SHUT-OFF FUNCTION

When the cooling demand digital input is open (0V), the EC3- D7x will drive the electrical control valve to closed position. Due to the positive shut-off capabilities of the EX4/5/6 valves a separate liquid line solenoid valve is not required. The shut-off function is guaranteed in case of power loss due to built-in internal battery.

If this function is disabled, the user must ensure appropriate safety precautions are in place to protect the system against damage caused by a power failure. Refer to operating instructions

ANALOGUE OUTPUT (4-20MA SIGNAL) FUNCTION

EC3-D72 requires the outlet pressure level of evaporator for superheat and MOP control. The output signal from the PT5 is used by EC3-D7x and again provided as 4 to 20mA signal (galvanized) for connection to any other third party controller, which can receive a 4 to 20 mA signal. Please see the wiring diagram for more details. If system controller does not have capability of using this signal, the terminal will not be wired to any other device.

PUMP-DOWN FUNCTION

When the pump-down function is active, the electrical control valve will close in event of no demand i.e. the digital input is 0V (open), but the Digital Scroll compressor will keep running to perform a pump down of the refrigeration system until the pump-down threshold pressure (adjustable) is reached. If after a time delay (adjustable) the pump-down setpoint is not reached, the output pump-down relay trips to stop the compressor and an alarm is indicated. This relay must be wired into the Digital Scroll compressor control wiring.

LOW PRESSURE SWITCH FUNCTION/ALARM

The use of low-pressure switch is very common for preventing of compressor running in event of refrigerant charge loss and alarming. When the low-pressure function is active, a software routine detects excessively low pressure level (adjustable) and after a time delay (adjustable) output alarm relay trips and the ECV will close.

FREEZE PROTECTION FUNCTION/ALARM

This feature permits the elimination of a separate freeze protection thermostat in a water chiller application. When the freeze protection function is activated, the evaporating temperature is

constantly monitored and if it drops below the freeze protection threshold, the freeze protection alarm triggers the alarm relay and the ECV will close.

SAFETY / INTERNAL BATTERY FUNCTION

In event of power failure to the entire system, the stepper motor driven valve would not be able to move. Due to the differential pressure between condenser and evaporator, the refrigerant could continue to flow through the valve if the valve is open. The compressor must be protected after power recovery against wet running. EC3-X32 contains an internal rechargeable battery and smart battery charge control to automatically close the valve in case of power failure. Whilst the battery is maintenance free, the life expectancy will depend upon the working ambient; as the temperature increases the life expectancy reduces.

It is recommended to replace the battery annually to maintain the system in optimum operating condition.

⚠ If the output relays are not utilized, the user must ensure appropriate safety precautions are in place to protect the system against damage caused by a power failure

ALARM AND MAINTENANCE FUNCTIONS

EC3-D7x provides several alarms to facilitate diagnosis as well as shut down of compressor/system if alarm relay is wired into the serial safety loop. Built-in diagnostics routines constantly monitor the battery health, sensors, the Electrical Control Valve and the associated wiring for open and short circuits. When such errors are detected, the controller goes into an alarm condition and closes the valve.

Additional to hardware errors also EC3-D7x will monitor the minimum operating superheat. If the superheat drops below 0.5K for continuous period of one minute, the low superheat alarm will occur. The low superheat alarm can be disabled for applications such as flooded evaporator, which lower operating superheat is required.

There are several other alarms such as low pressure alarm, freeze protection alarm and high superheat alarm if they are enabled.

In case of alarm, EC3-D7x will close the valve and the alarm relay will be deactivated. All alarms are automatically cleared after correction. Battery alarm, low superheat alarm, freeze protection alarm and low-pressure alarm can be modified for manual reset.

ALARM RELAY FUNCTION (FACTORY SETTING)

Alarm relay contains a SPDT contact. If the relay is wired to system controller, it is possible to stop compressor/system. The alarm relay is activated during normal operation and deactivated during alarm conditions as well as supply power interruption.

START-UP CONFIGURATION FUNCTION

Built-in valve opening (%) at start-up for certain period of time helps the compressor's start-up and prevents erratic low-pressure cut-out for the following cases:

- Operation of systems with air cooled condenser in lowambient temperatures

- Compressor start-up after long period standby time in lowambient environment
- Start-up of very large single stage compressor capacity

EMERSON PRESSURE SENSOR PT5 FUNCTION

The pressure sensor measures the saturation pressure at the outlet of the evaporator. The output signal is 4 to 20 mA corresponding to a pressure range. Based on type of refrigerant and system, different types of pressure sensor are needed.

- PT5-07M for evaporators operating with R22/R124/R134a/R404A/R407C refrigerants
- PT5-18M for evaporators operating with R410A refrigerant
- PT5-30M for evaporators operating with R744

Every type of pressure sensor is calibrated in temperature range for the above specified applications. The feature set and performance of the PT5 Series is a perfect match for the EC3- D7x. Other pressure sensors are not released for use with EC3- D7x and when applied, may lead to poor performance.

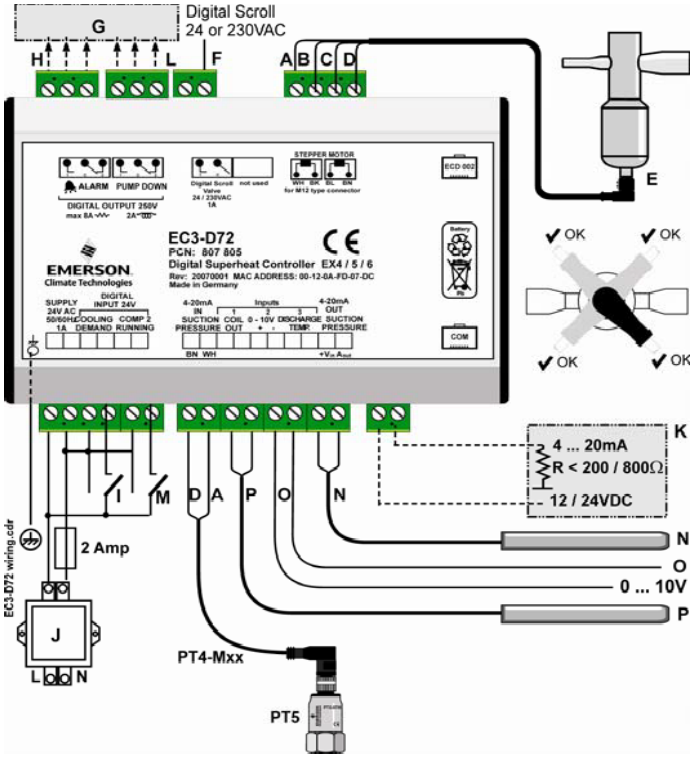
EMERSON TEMPERATURE SENSOR ECN-N60 FUNCTION

The temperature sensor measures the refrigerant temperature at the outlet of the evaporator. It is important to use only this dedicated temperature sensor because the ECN-N60 has the right performance such as desired time constant and tolerance compensation within the specific working range. The use of other temperature sensors is not recommended/released. The sensor is hermetically sealed for high reliability and long life. The sensor has metal housings for optimal thermal conductivity.

OPTIONAL ECD-002 DISPLAY/KEYPAD UNIT

The ECD-002 is the only means of visualizing the parameters for the EC3-D73. ECD-002 may be connected or removed from EC3-D73 at any time. The display unit can be switched from K/bar/°C to R/psig/°F. Indicator LEDs show the status of valve opening, valve closing, demand and alarm.

WIRING DIAGRAM-PERMANENT



A: White wire **B**: Black wire **C**: Blue wire **D**: Brown wire

E: Plug cable assembly EXV-Mxx for connection to EX4/EX5/EX6

F: Output for Copeland Digital Scroll solenoid valve

G: Remote control panel, system controller

H: Alarm relay, dry contact. Relay coil is not energized at alarm condition or power off

⚠

The use of the relay is essential to protect the system in case of power failure if the ECD-002 is not utilized

START-UP PROCEDURE

INDOOR DEHUMIDIFIER ONLY (SDH) UNIT

1. Confirm all above steps have been completed and unit is correctly mounted and wired.
2. Turn on electrical breaker.
3. Make a fan call (G) and adjust fan speed (green knob on EC110 control board)
4. Make a dehumidifier call (Y) and adjust fan speed. (Red knob on EC110 Control board) For this Digital driven system the fan speed setting will be fixed by the fan selector and the compressor will modulate in capacity to optimize humidity removal.
5. Selecting the correct dehumidification (red) fan speed for the anticipated operation can take some trial and error. There is no ideal setting for fan speed. There will be a compromise being made between peak and off-peak loading, and desired minimum air speed required for air distribution or to inflate fabric duct systems.
   When a system designer has specified a specific back pressure required for the duct system, using a manometer or slope gauge, the contractor can adjust the fan speed to obtain the desired duct back pressure. Record the setting and measurement during commissioning.
   When a system designer has specified a required air flow, with the help of an air balancing contractor, adjust the fan speed to obtain the desired air flow.
   When no back pressure or specific air flow is mandated, optimum fan speed can be obtained by observation. When starting conditions are cool and dry relative to peak load conditions the system can be operated at low fan speed for ½ hour at fan speed setting 1 or 2. Set EC3 to read compressor loading (refer to section of digital drive control. Adjust fan speed up in 10-minute increments until compressor capacity is approximately 50%.
   When the room is in operation so it is close to maximum load (highest temperature and humidity permitted by the building management system) this procedure can be again used to tune the fan speed. Under high humidity and temperature, the same procedure would be used to adjust compressor speed to approximately 95% load.
   Refer to troubleshooting section or operation and maintenance instructions for more details on setting optimum fan speed for a room.

INDOOR UNIT (PDH) WITH COOLING

1. Follow instructions above for Indoor unit. DO NOT make a call for cooling until all steps for indoor set up are complete
2. Before starting make sure outdoor unit is connected and powered and line sets have been properly evacuated. Do not weigh in extra charge based on line set length. Charge balancing is handled dynamically while unit is operating as described below.
3. Provide a call (Y) to bring on the system in dehumidification mode. Check the sight glass for bubbles. If the sign glass is full or showing only a small stream of bubbles, proceed to the next step. If the sight glass shows a frothy mixture passing in the sight glass, weigh in refrigerant until sight glass goes clear or there is a small stream of bubbles passing by the sight glass. Record the amount of refrigerant added in this step. Proceed to next step
4. Switch system to cooling signal (O). Make sure outdoor fans start on outdoor condenser. Add refrigerant until sight glass goes clear or there is a small stream of bubbles passing by

the sight glass. Record amount of refrigerant added in this step. Proceed to next step.

5. Remove the cooling call (O) so the unit runs in dehumidify mode for at least 10 minutes. With asset of gauges measure the subcooling entering the receiver. Subcooling should be above 6F and below 18F under normal operating. If subcooling is outside of this range contact the factory for further instructions. DO NOT put the unit into operation until the subcooling issue is resolved. Record the value.

OUTDOOR (RCU) UNIT

1. Confirm power and control wiring are complete and system is installed in accordance with these instructions.
2. Turn on the power to the unit.
3. When the indoor unit is switched to cooling make sure fans start up and all fans are running.

Check troubleshooting section for any issues after start up procedure is completed prior to putting the system into full operation.

MAINTENANCE CHECK LIST

FILTER

All **Ecologix** units require filters to be installed on the inlet to the indoor unit. This filter should be inspected monthly and replaced as required.

DUCT CLEANING

If proper filter maintenance is adhered to, duct cleaning will not be required for the life of the equipment.

COILS

Refrigerant coils should not require cleaning if the filter maintenance schedule is adhered to. If a filter is damaged or collapses from plugging, dust may foul the coils. If this happens, replace the filter and carefully vacuum the coil. Coils may be power washed or cleaned with a cleaning solution approved by the grow room operator.

OUTDOOR COIL

Inspect the outdoor coil on both side of the coil to check for debris. Regular cleaning may be required to maintain optimum efficiency.

DRAIN CONNECTION

On a monthly basis check the drain connection to the evaporator coil to ensure it is free of debris and free flowing. The drain is on the suction side of the fans. The drain will require a trap to avoid water being drawn back into the unit and overflowing the drain pan.

FAN AND MOTOR

Check fan for dust once a year. If dirty, vacuum to remove dust. Keeping the fan blades clean will reduce noise and improve the capacity and efficiency of the system

.

START UP TROUBLESHOOTING

This section is reserved

CATAGORY	ISSUE	RESOLUTION
ELECTRICAL	No lights on EC110	1) Fuse blown – check and replace 2) Transformer. Check continuity and replace if failed 3) Blown fuse on L3 check and replace
	No light on EC3 control	1) Blown fuse(s) check and replace 2) Bad EC3 internal fault – consult factory before replacing control. 3) Low voltage

	Outdoor fans don't run when switched to cooling	1) Check fuses in RCU – check power into RCU 2) Check wires from indoor control connected to outdoor control. Confirm connections 1to1, 2to2, 3to3
CONTROL	Unit won't start – EC110 control board suspected.	1) No light above Y connection – faulty external signal 2) Light above Y connection on, lights below Y connection green – switch Tstat select to HP (blue lights) 3) Light on above Y connection and Tstat selection switch (blue). Signal to EC3 interrupted. Consult factory
	Unit wont switch to cooling – EC110 control	1) No light above O connection – faulty external signal 2) Light above O connection, lights below O connection green – switch Tstat select switch to HP (blue lights) 3) Light above O is on but light below O (output) in off. Signal to reversing valve is failed. Replace board. 4) Light above O is on, O output is on. – check for 24 V at O output. If 24 volts present check continuity on reversing valve coil. If coil ok, replace reversing valve.
REFRIGERANT	System blows cold air in dehumidification mode	1) Reversing valve stuck. Unplug O-output from EC110 board. If issue persists replace reversing valve. If this fixes issue, consult factory.
	Excessive Bubbles or frothy appearance in sight glass	1) Low refrigerant. In new system, it may be undercharged from start up. Add refrigerant and add amount added to commissioning record. NOTE: Trickle of bubbles that collapse and come back is normal for 410a systems. Don't overfill by more than 16 ounces
FANS	Outdoor unit runs hot, system goes off on high head pressure	1) One or more fans may have failed. Check outdoor fan control board. LEDs should be lit for all fans. If any are off fan has failed and needs to be replaces PLEASE NOTE fans will free wheel backwards when not powered. A failed fan will spin but in reverse to the others and it may not be easy to spot without looking at the control.
	Compressor seems to run slower than other units in the room or air flow seems reduced	1) Could be fan failure- check fan control board for lights to ensure all are working. Replace failed fans. 2) Check that fan speeds matches the other units in the room.

WARRANTY

This product is warranted by Ecologix Inc to be free from defects in materials and workmanship that affect product performance under normal use and maintenance within the applicable periods specified below. Replacements furnished will carry only the un-expired portion of the original warranty.

Two-Year Parts
Ecologix Inc will provide replacement parts for **ANY part** that fail within two years of purchase, subject to the **terms** below.

Five-Year Parts
Ecologix Inc will provide replacement parts for any **heating coils**, **cooling coils**, **cabinetry** and **piping** that fail within five years of purchase, subject to the **terms** below.

Terms

- Reasonable proof of original purchase date must be provided in order to establish the effective date of the warranty, failing which, the effective date will be based on the date of manufacture plus thirty days.
  The warranty does not cover failure or damages caused by:
  - improper installation or operation
  - accident, abuse or alteration
  - operation of device at temperatures or pressures outside of the rated capacities
  - lime or scale deposits
  - corrosive operating environment
  - equipment moved from original installation location
- Replacements furnished under this warranty will be F.O.B. Ecologix product distribution points in the United States and Canada. They will be invoiced at regular prices. The account will be credited the full amount when the defective part is received by Ecologix, examined and approved as a valid warranty.
- Warranty applies to the original purchaser, but may be transferred to another owner provided the equipment is not moved from the original installation site.
- This warranty does not apply to labour, freight or any other cost associated with the service repair or operation of the product.
- Ecologix shall not be liable for any direct, special, incidental or consequential damages caused by the use, misuse, or inability to use this product.
- Ecologix is under no legal obligations to rectify, including but not limited to, lost profits, downtime, good will, damages to, or replacement of equipment and property
- Purchaser assumes all risk and liability of loss, damage or injury to purchaser and purchaser's property and to others and their property arising out of the use, misuse or inability to use this product.