

Operational Overview of the Conviron E(Y)-15 Environmental Growth Chambers

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Use of the Environmental Growth Chambers

Conviron Models E-15 and EY-15

General

DO NOT attempt any repairs to these units without disengaging the main switch on the wall mounted disconnect boxes, located above the left rear of the unit. Please contact the Lab Manager with any operational problems.

Always fill out the log sheets with all operational details relevant to your experiments. It will help to monitor and correct any problems that may be encountered.

Both models are identical in basic operation. The EY-15 contains two humidifiers, so moisture control is more efficient.

The water supply for the humidifiers is controlled by the two valves in the line between the units (descending from the ceiling). The line is connected to the DI water supply at the facing sink. If the building's DI water is out of service, there will be no active humidity control available.

Spare light bulbs are located in the box above the unit (fluorescent) and in the drawers on the west wall near the unit (incandescent).

The programmable control system has a battery backup and will recall the last used program when power is restored.

The interior of the unit should be clean before using, should be kept clean of excessive debris during use and should be cleaned after use. There is a Shop-Vac available for vacuuming debris from the chamber. The bottom platform can be lifted up and out of the chamber to allow cleaning of excessive debris that may have collected beneath it.

Setup

If you are going to use humidity control, verify the valve(s) between the units are on (handles turned counter-clockwise).

Make sure power at the main wall mounted box is on.

Turn on the unit(s) with the switch on the front panel. You will hear the compressor begin running. The compressor may stutter and cycle on and off quickly a few times before fully starting. If this takes longer than about 10 seconds, turn the unit off for at least two minutes then try again. If you cannot get the unit started, inform the Lab Manager.

All following instructions refer to items A through J in Figure 1 (below).

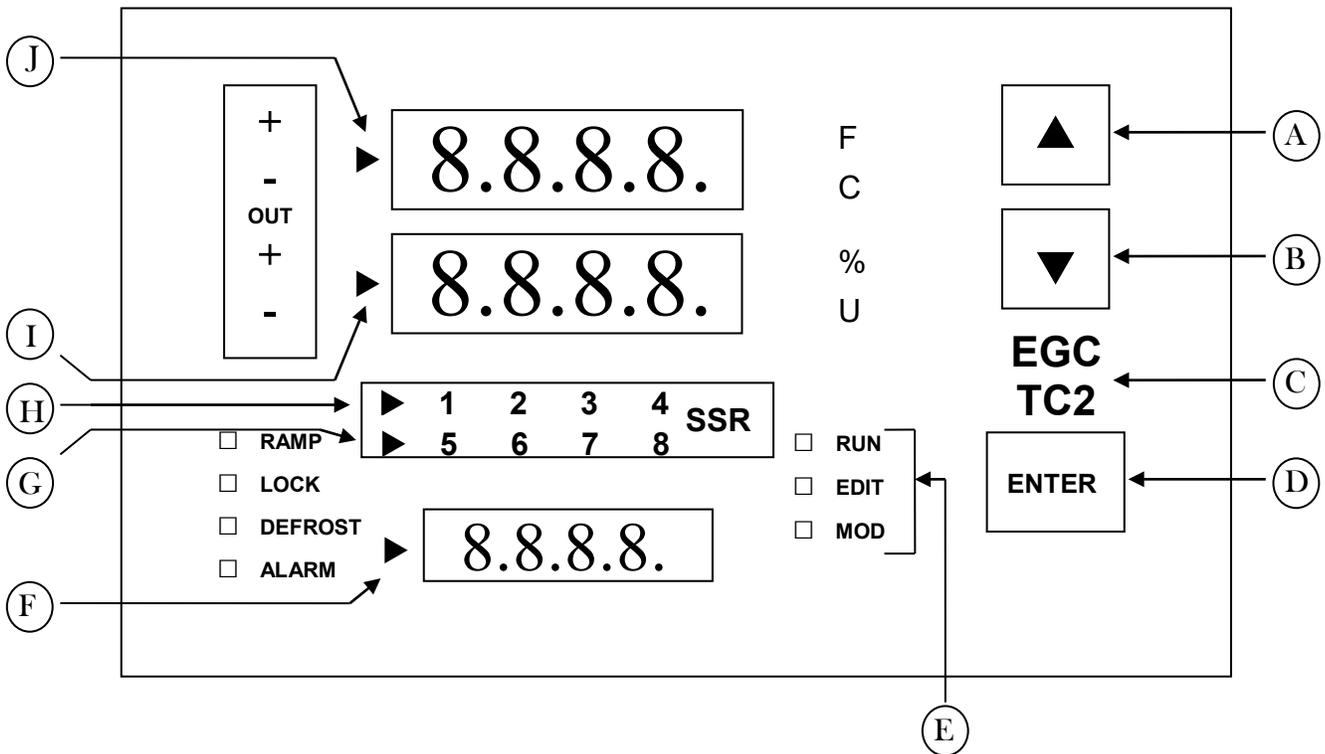


Figure 1

Check Light Bulb Operation (optional)

If all light bulbs are not illuminated when the unit is turned on, then follow the following steps to check them:

Press ▼ (B) until EDIT is illuminated (E). Immediately press ENTER (D).
Press ▲ (A) or ▼ (B) until the bottom display (F) shows a time value (24 hour) immediately preceding the current time. Press ENTER (D).
While ► (J) is illuminated and the display reads EDIT, press ENTER (D).
Press ▼ (B) until ► (H) is illuminated. Press ENTER (D).
Press ▼ (B) until all numbers 1, 2, 3, 4 (H) are illuminated. Press ENTER (D).
Press ▼ (B) until ► (G) is illuminated. Press ENTER (D).
Press ▼ (B) until all numbers 5, 6, 7, 8 (G) are illuminated. Press ENTER (D).
Press EGC (C) until RUN (E) is illuminated to save and exit.

All bulbs should now be on. If any bulbs are not on, they need to be checked and/or replaced (see troubleshooting).

Verify Humidity Control (optional)

If necessary, set the humidity value of the currently displayed program to some value above ambient (try 60%). If you need to change values, follow these steps:

Press ▼ (B) until EDIT is illuminated (E). Immediately press ENTER (D).
Press ▲ (A) or ▼ (B) until the bottom display (F) shows a time value (24 hour) immediately preceding the current time. Press ENTER (D).
While ► (J) is illuminated and the display reads EDIT, press ENTER (D).
Press ▼ (B) until ► (I) is illuminated. Press ENTER (D).
Press ▲ (A) or ▼ (B) until the desired value is displayed. Press ENTER (D).
Press EGC (C) until RUN (E) is illuminated to save and exit.

Shut the chamber doors and observe humidity readings. The observed value should begin to rise toward the set level within a few minutes. If no change is observed after several minutes, see the troubleshooting section.

If all seems to be working, you may set your program and load the chamber with your samples (in either order).

Programming

When the unit is first turned on, there will probably be a program in memory from the previous user. You may use that program as is or modify the program to suit your needs.

To View or Edit the Current Program:

Press ▼ (B) until EDIT is illuminated (E). Immediately press ENTER (D).
Press ▲ (A) or ▼ (B) to scroll through the setpoints. Each point displays a start time (24 hour) in the bottom display (F) and the corresponding temperature, humidity and light values in displays J, I, H and G.

To Exit and Leave the Program as is

Press EGC (C) until RUN (E) is illuminated to exit.

To Edit a Particular Setpoint

When the desired setpoint time is displayed (F), press ENTER (D).
If you want to delete the setpoint, press ▼ (B) until ► (I) is illuminated and dEL is displayed. Press ENTER (D).
Otherwise, while ► (J) is illuminated and the display reads EDIT, press ENTER (D).
Press ▲ (A) or ▼ (B) until the appropriate indicator ► (J, I, H, G, F) is illuminated.

*J represents the desired temperature value in °C.
I represents the desired humidity (%).
H represents the incandescent bulbs (all numbers on/off = all lamps lit/dark).
G represents the fluorescent bulbs (all numbers on/off = all lamps lit/dark).
Use combinations for H and G to control light intensity.
F represents the start time for the setpoint (24 hour format).*

Press ENTER (D). Press ▲ (A) or ▼ (B) to change the displayed value.
Press ENTER (D). Repeat until all values are set as desired.
Press EGC (C) until RUN (E) is illuminated to save and exit.

To Enter a New Setpoint

Press and hold ▲ (A) then press ▼ (B) and then release them both. The display should be blank except for a time in F.
Press ▲ (A) or ▼ (B) until the appropriate indicator ► (J, I, H, G, F) is illuminated.

*J represents the desired temperature value in °C.
I represents the desired humidity (%).
H represents the incandescent bulbs (all numbers on/off = all lamps lit/dark).
G represents the fluorescent bulbs (all numbers on/off = all lamps lit/dark).
Use combinations for H and G to control light intensity.
F represents the start time for the setpoint (24 hour format).*

Press ENTER (D). Press ▲ (A) or ▼ (B) to change the displayed value.
Press ENTER (D). Repeat until all values are set as desired.
Press EGC (C) until RUN (E) is illuminated to save and exit.

You should display and scroll through the setpoints of your program (as described above) to verify it is correct.

Advanced Options

These operations should not be necessary under normal conditions. Take care to not incorrectly alter any internal values as improper operation of the unit may occur.

The following actions start with the following steps:

Press ▼ (B) until MOD is illuminated (E). Immediately press ENTER (D).
Press ▼ (B) until ► (J) is illuminated and the display reads Func. Press ENTER (D).
The bottom display (F) will show the current function (e.g. Fn 0).

Change Time of Day Clock

Press ▲ (A) or ▼ (B) until the display (F) reads “Fn 2”. Press ENTER (D).
The displays will now show the currently set date and time:

106	=2006
2.28	= February 28
SSR	
2030	= 8:30 PM (24 hour format)

Press ▲ (A) or ▼ (B) until the appropriate ► display (J, I, F) is illuminated. Press ENTER (D).

Press ▲ (A) or ▼ (B) to change the value accordingly. Press ENTER (D).

Repeat until all values are correct. Press EGC (C) until RUN (E) is illuminated to save and exit.

Temperature/Humidity Display Adjustment

Press ▲ (A) or ▼ (B) until the display (F) reads “Fn 8”. Press ENTER (D).

Press ▲ (A) or ▼ (B) until ► (J for temperature or I for humidity) is illuminated.
Press ENTER (D).

Press ▲ (A) or ▼ (B) to change the displayed value to match the observed standard.

Press ENTER (D). Adjust the other setting if required.

Press EGC (C) until RUN (E) is illuminated to save and exit.

You should let the unit stabilize for approximately 10 minutes to determine if further changes are required.

The following actions follow just the steps listed, starting from the main display.

Delete Entire Current Program

Press ▼ (B) until MOD is illuminated (E). Immediately press ENTER (D).
Press ▼ (B) until ► (I) is illuminated and the display reads PLoc. Press ENTER (D).

The bottom display (F) will show the current parameter location (e.g. PL 0).
Press ▲ (A) or ▼ (B) until the display (F) reads “PL 0”. Press ENTER (D).
Press ▲ (A) or ▼ (B) until the display (F) reads 1. Press ENTER (D).
Press EGC (C) until RUN (E) is illuminated to save and exit.

Press ▼ (B) until MOD is illuminated (E). Immediately press ENTER (D).
Press ▼ (B) until ► (J) is illuminated and the display reads Func. Press ENTER (D).

The bottom display (F) will show the current function (e.g. Fn 0).
Press ▲ (A) or ▼ (B) until the display (F) reads “Fn 13”. Press ENTER (D).
Press EGC (C) until RUN (E) is illuminated to exit.

The current program has been cleared and replaced with a single line, ambient temperature/humidity and no light version.

Set or Adjust Alternating Display

Press ▼ (B) until MOD is illuminated (E). Immediately press ENTER (D).
Press ▼ (B) until ► (I) is illuminated and the display reads PLoc. Press ENTER (D).

The bottom display (F) will show the current parameter location (e.g. PL 0).
Press ▲ (A) or ▼ (B) until the display (F) reads “PL 60”. Press ENTER (D).
Press ▲ (A) or ▼ (B) to adjust the number of seconds the between displays of the current setpoints. Set to 0 to disable the alternating display. Press ENTER (D).
Press EGC (C) until RUN (E) is illuminated to exit.

If displayed, the current setpoints are visible for one second and the current conditions are visible the set number of seconds. Pressing the ENTER key (D) at any time during a running program will display the current setpoints.

Soft or Hard Reset of Equipment

*Note: A soft reset is equivalent to powering the unit off and then on again.
A hard reset wipes the memory and reloads all parameters from system ROM.*

Press ▼ (B) until MOD is illuminated (E). Immediately press ENTER (D).

Press ▼ (B) until ► (I) is illuminated and the display reads PLoc. Press ENTER (D).

The bottom display (F) will show the current parameter location (e.g. PL 0).

Press ▲ (A) or ▼ (B) until the display (F) reads “PL 0”. Press ENTER (D).

*For a **SOFT** reset, press ▲ (A) or ▼ (B) until the display (F) reads -6.*

*For a **HARD** reset, press ▲ (A) or ▼ (B) until the display (F) reads -7.*

Press ENTER (D).

Press EGC (C) until RUN (E) is illuminated to save and exit.

Press ▼ (B) until MOD is illuminated (E). Immediately press ENTER (D).

Press ▼ (B) until ► (J) is illuminated and the display reads Func. Press ENTER (D).

The bottom display (F) will show the current function (e.g. Fn 0).

Press ▲ (A) or ▼ (B) until the display (F) reads “Fn 15”. Press ENTER (D).

Press EGC (C) until RUN (E) is illuminated to exit.

Troubleshooting

Light Bulbs

Note: You should turn off the power before changing any bulbs.

Incandescent bulbs

You may need to pull the ceiling of the chamber down to have access to the top of the bulb socket in order to hold it steady while installing bulbs. Do not turn the socket as to twist the wires. Use bulbs that match those remaining installed.

Fluorescent bulbs

Note: These are high output bulbs and may be very hot.

Many of the tubes require removal of the adjacent bulbs to gain access. You have to remove several to change the one you need. The bulbs mount in spring-loaded sockets. Push the bulb to one end or the other to remove it from the socket. Some older bulbs may not light individually even if they light with adjacent bulbs. Replacement may be needed if you do not use all the bulbs at once.

Humidity

Note: You should turn off the power before attempting service.

When attempting to humidify, the humidity lamp near the power switch will light. If it is not lighting, check your program values.

If you have no humidity control (level will not rise), check all water valves in the line. There is one valve for each chamber, located between the units, and one valve in the line under the facing sink. Verify that the DI faucet has water flow and that the main valve in the DI line (PVC) under the sink is also on.

The humidifiers are located in the bottom of the units, below the chambers.

To access:

Remove all of your plant specimens.

Remove the bottom platform (it lifts out in one or two pieces).

Note: There are moving parts under here, so make sure power is turned OFF!

Remove the screws from the front set of metal plates that were below the bottom platform.

The humidifiers are black with red caps. Remove the red cap. Carefully remove the top portion (centripetal fan) of the humidifier and lay on the bottom of the unit (it is wired to the unit).

There should be water in the black base or flowing in from the valve in the front. Pushing the white float down should cause water to flow. If there is little to no water and/or no flow, work the arm up and down to see if the flow will resume. There may be a blockage. If there is no water at all, verify all valves are open and that the water supply is active. If there is water, then aside from verifying the program settings, there may be a problem with the fan or motor in the humidifier top. Contact the Lab Manager. Do not attempt to start the unit while disassembled.