# Evolution
## Digital Fan Speed Controller

**3 Year Guarantee**

EcoTechnics

Temperature  Humidity  Fan  Heater

# Introduction

Temperature and humidity are two of the most important environmental factors in your growroom / glasshouse. All plants have an optimum temperature and humidity at which they will grow at and minimum and maximum levels that they can survive at.
Therefore the environment is very important to the health & growth rate of your plants. Plants basically uptake water and nutrients via the root system and combine some of the water with the nutrients and carbon dioxide to form carbohydrates for growth. The rest of the water is transpired into the surrounding air.

The rate of transpiration increases with temperature and decreases with humidity, therefore if your growroom is hot your plants will transpire a lot of water and the humidity in your growroom will rise. This causes your plants to transpire less which in turn will limit their growth rate and possibly even cause rot or mould problems if left unchecked.

The **Evolution Digital Proportional Control System** constantly monitors the temperature & humidity in the growing area and constantly adjusts extractor fan speed in order to optimize conditions for plant growth.
Plants grown in optimized environments grow much faster and bigger resulting in increased yields and decreased crop cycle times.

## EXTRACTOR FANS

Many growers fail to recognize the importance of extractor fans. As a rule of thumb Grow room / Glass house extractor systems should be able to totally remove the air from the room in a 5 minute period. The fan will bring fresh $CO_2$ rich air into the growing area. If an extractor fan with insufficient flow rate is used then it may not be able reduce the daytime temperature sufficiently and the temperature may exceed acceptable levels for your crop.
Minimum run speed ensures a constant supply of fresh air while saving energy and reducing fan noise. Maximum run speed can be set to limit fan noise ie: a 200mm fan run at half speed will move as much air as a 100mm fan run at full speed but the 200mm fan run at half speed will be much quieter.
Always check the suitability of your fans for phase angle speed control with the manufacturer.

## HEATERS

There are many types of heater which are suitable for use with the **Evolution Digital Controller,** generally they fall into two main categories: **Electrical** and **Gas**.

**Electrical heaters** which take a long time to warm up such as oil filled convection heaters which ideally should be avoided.
**Fan heaters are probably among the best electrical heaters for grow room use.**

The main advantages of electrical heaters are low initial cost, fast warm up times and ease of use. The main disadvantage of electrical heating is power consumption which can be undesirable especially when high powered horticultural lighting is in use.

**Gas heaters** which are controlled by an electrical solenoid valve are also very good. There main advantages are very fast warm up time, very low electricity consumption and large amounts of carbon dioxide generated as a byproduct of combustion. Their main disadvantages are large amounts of water vapor (humidity) , relatively high initial cost and large heavy gas cylinders which need refilling on a regular basis.

### PRE-INSTALLATION
Careful consideration at this stage can save a lot of time and trouble later on!
Common considerations would include Power Source, Cable Lengths, Sensor
Positioning, Control-Unit  Positioning, Water Sprayers / Spillages etc.

## Example system setup
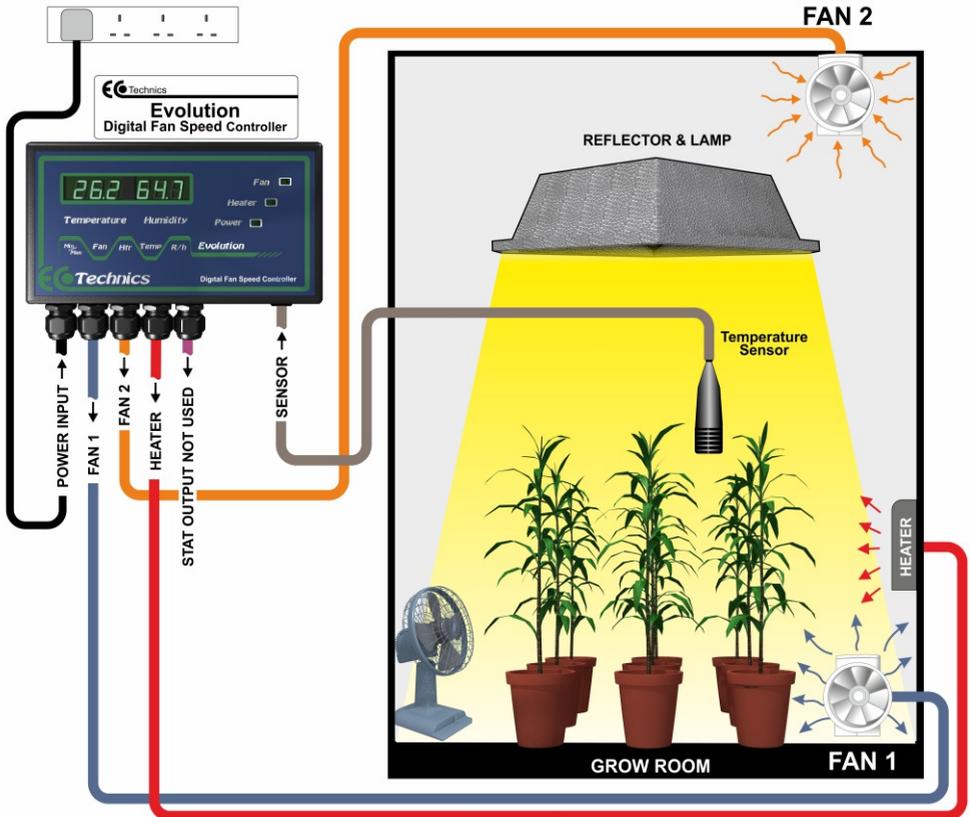


### CONTROL UNIT
The Evolution  Control Unit can be mounted inside or outside of the growing area.
Mains voltages are present in the control  unit and water must not under any
circumstance be allowed to come into contact with the unit. Wall mounting is preferable
using the mounting slots at the back of the unit.
**The unit should always be plugged in via an approved RCD breaker.**

### SENSOR PROBE
The Evolution sensor probe should be suspended from a suitable hanging point,
preferably around level with the plant tops in your growing area.
The sensor probe is a sensitive piece of equipment and should be handled with care.
Under no circumstance should the sensor probe be submersed in water.

# Connections

**Rear view of the Evolution Digital Fan Speed Controller with the cover off**

€€ Technics

**Evolution**
**Digital Fan Speed Controller**

## SAFETY CONSIDERATIONS
**This appliance must be installed by an approved electrician and must be connected via an approved RCD safety breaker.**

Fan 2 - fuse 6.3amp quick blow 20mm
Fan 1 - fuse 6.3amp quick blow 20mm

Main -fuse 13amp

Sensor Socket

**F**

**Sensor**

N 🜨 L   N 🜨 L   N 🜨 L   N 🜨 L   N 🜨 L

**A**  **B**  **C**  **D**  **E**

Stat Output   Heater   Fan 2   Fan 1   Power Input

Ⓝ **neutral - Blue wire**
⏚ **earth - green & yellow wire**
Ⓛ **live - Brown wire**

## A - Stat Out

**Stat Out** (Thermostat Output)∗
This output connects to the stat input (thermostat input) of the Evolution Co2 controller if this controller is working together with the Co2 controller.
∗*Note this output is only used in conjunction with the Evolution CO2 Controller.* **Wire: 0.5mm - 0.75mm**

## B - Heater Out

**Htr Out** (Heater Output)
This output can control Heater loads up to a maximum of 3Kw. **Wire: 1.25mm - 1.5mm**

## C - Fan 2

**Fan 2**
This output is for the Air OUT fans. Multiple fans can be used with a maximum combined load of 6 Amps. **Wire: 0.75mm**

## D - Fan 1

**Fan 1**
This output is for the Air IN fans. Multiple fans can be used with a maximum combined load of 6Amps. **Wire: 0.75mm**

## E - Power Input

**Power Input**
This is the main power supply to the controller and should have a minimum 1.25mm cable with a 13 Amp supply or higher. **Wire: 1.25mm - 1.5mm**

## F - Sensor Input

**Sensor**
The sensor is supplied with a 5M cable and plugs into the small telephone type socket. **Wire: Included with temperature sensor.**

## Setup

Once the controller is connected and mounted in a suitable position power should be connected and the controller should display the current Temperature & Humidity. You can now use the program keys to set the required parameters.
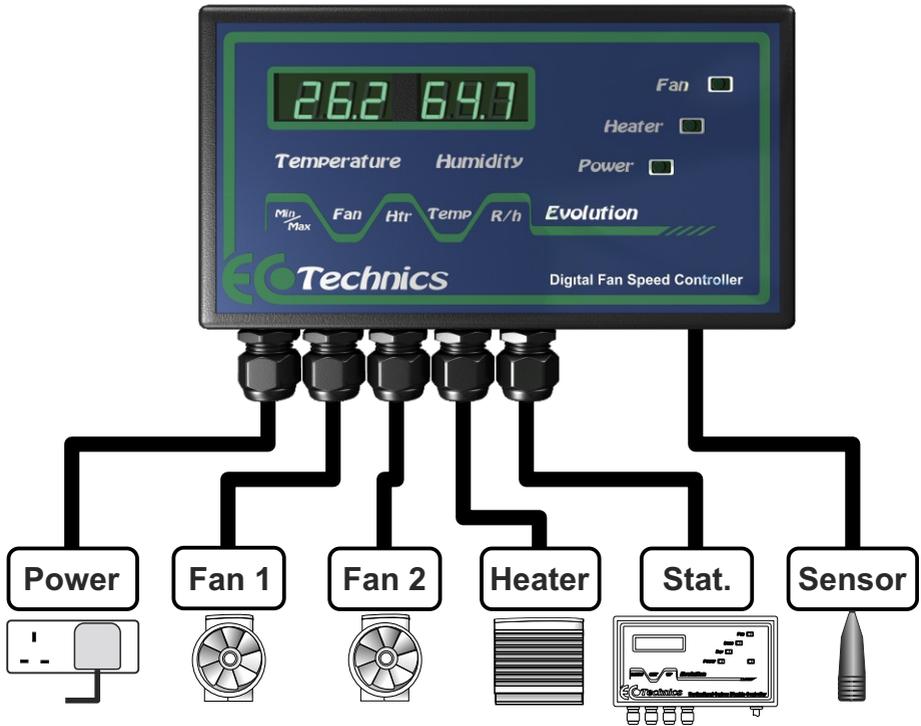
# Button Functions and General controller displays

**Left LED display**
Displays live Temperature reading from the sensor probe.
This display is multi functional when programming user settings.

**Right LED display**
Displays live Humidity reading from the sensor probe.
This display is multi functional when programming user settings.

**FAN LED light** ●
The blue Fan light flashes to show that your Fans are currently running, the faster the flashing indicates a higher speed and constantly lit light indicates 100% fan speed, slower blinking indicates slower or idle fan speed.

**Heater LED light** ●
The Red Heater light indicates that the Heater is now active.

**Power LED light** ●
The Green Power light indicates that the Evolution Digital Fan Speed Controller is powered up from the mains supply.
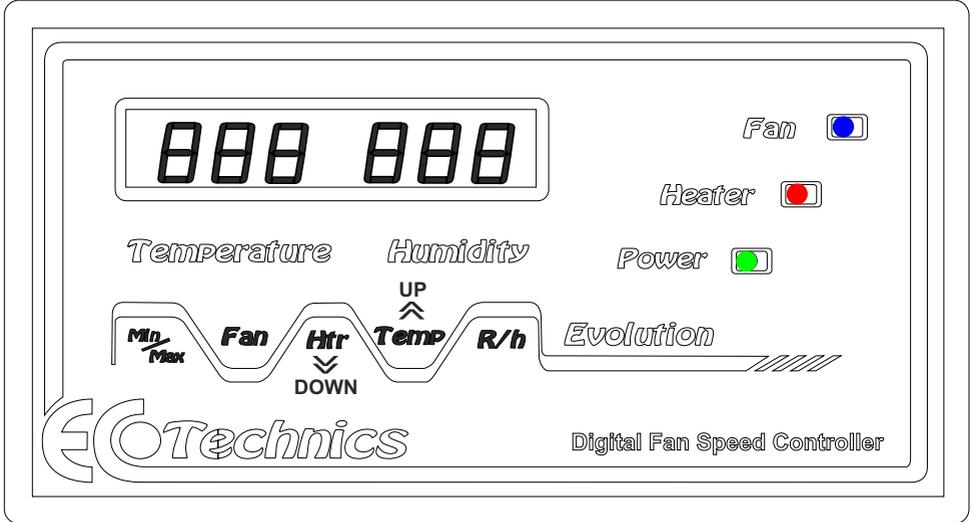


## Min/Max  Button

Function: To swap between min and max fan speed settings.
*note: only works* **after** *you have pressed the FAN button*

## FAN  Button

Press to set the minimum and maximum run speed of your fans.
Press the **min** / **max** button to switch between min and max fan run speed settings.

## HTR/DOWN  Button

Enters HEATER temperature setting and also doubles as the **DOWN** button.
Hold this button down for 5 seconds to adjust HEATER HYSTERISIS.
**ADJUSTABLE HYSTERESIS:**
**HYSTERESIS** is the difference between the temperature at which the heater switches on - and the temperature at which it switches off again - This is the "hysteresis". Without this hysteresis - your FAN AND HEATER  would keep switching on and off every few seconds.

## TEMP/UP Button

Enters the **DESIRED ROOM TEMPERATURE SETTING** and also doubles as the **UP** button.

## RH Button

Enters the **DESIRED ROOM HUMIDITY SETTING**.
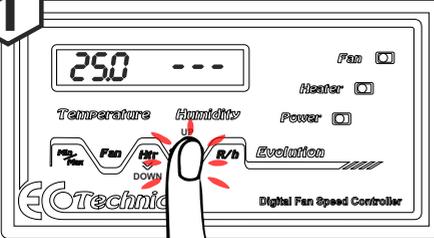
## 1

### Setting the Desired Temperature

Press the **TEMP** button **ONCE**, the left display will show the **Current Temperature Setting**.
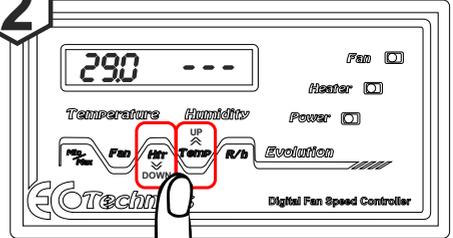Press the **Up (Temp)** and **DOWN (Htr)** buttons to set the temperature.
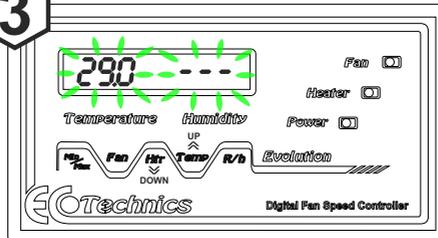After 5 seconds the display will **flash** and the new setting will be **stored.**



press the **temp** button to enter temperature setting mode



you can now adjust the temperature using the **htr** button to lower and **temp** button to raise the temperature setting you need in whole degree increments.



Once you have set your desired temperature simply wait 5 seconds the LED will flash to indicate that it has stored the new settings.

(once stored the display will revert back to live reading of the temperature and humidity)

## Setting the Desired Humidity percentage

2

Press the **R/h** button **ONCE**, the left display will show the **Current Humidity Setting**.
Press the **Up (Temp)** and **DOWN (Htr)** buttons to set the Humidity
After 5 seconds the display will **flash** and the new setting will be **stored.**
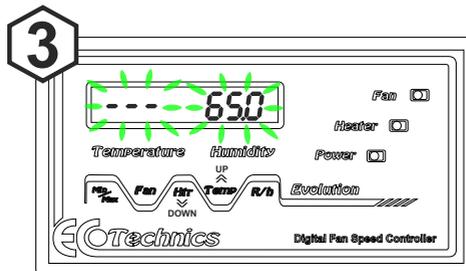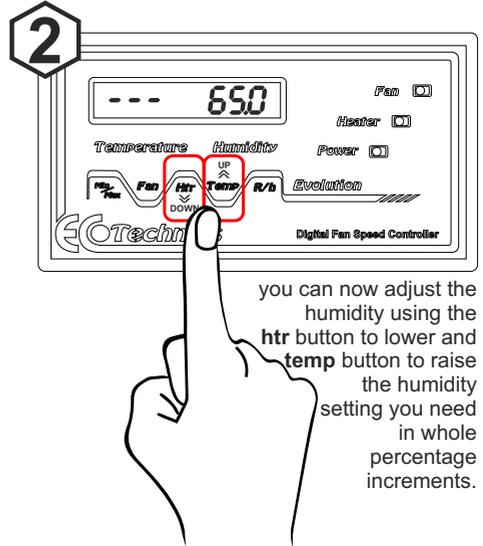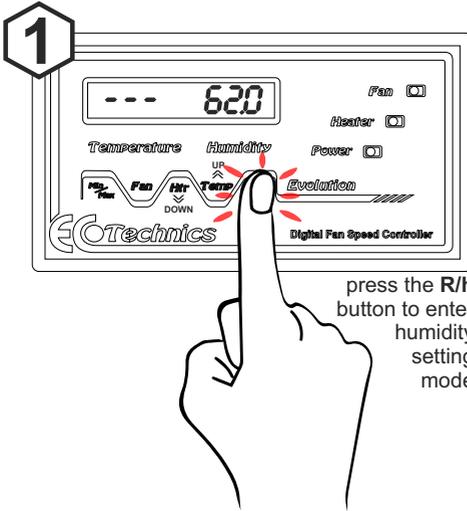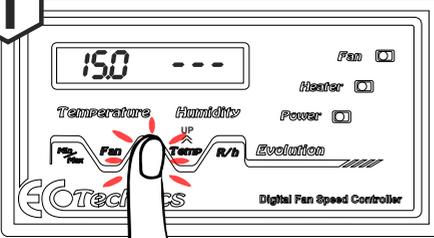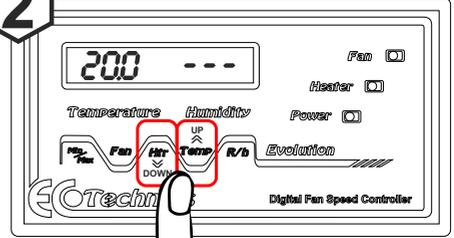


press the **R/h**
button to enter
humidity
setting
mode



you can now adjust the
humidity using the
**htr** button to lower and
**temp** button to raise
the humidity
setting you need
in whole
percentage
increments.



Once you have set your desired
humidity simply wait 5 seconds
the LED will flash to indicate that
it has stored the new settings.

(once stored the display will revert back to live reading
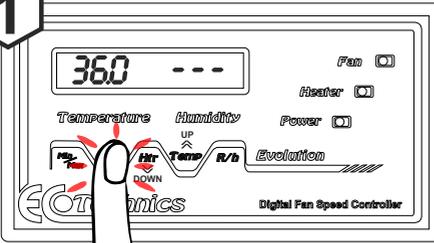of the temperature and humidity)

**Setting the Desired Heater temperature**

3

Press the **Htr** button **ONCE**, the left display will show the **Current Heater Setting**.
Press the **Up (Temp)** and **DOWN (Htr)** buttons to set the Heater
After 5 seconds the display will **flash** and the new setting will be **stored.**



**1**

press the **Htr**
button to enter
heater setting
mode



**2**

you can now adjust the
humidity using the
**htr** button to lower and
**temp** button to raise
the heater
setting you need
in whole degree
increments.



**3**
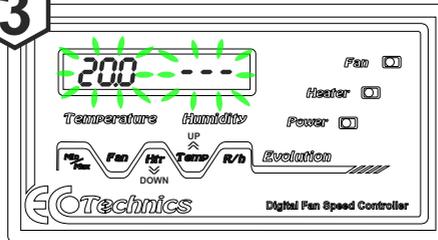
Once you have set your desired
humidity simply wait 5 seconds
the LED will flash to indicate that
it has stored the new settings.

(once stored the display will revert back to live reading
of the temperature and humidity)

# Setup

## Setting the Minimum and Maximum fan speeds

**4**
Press the **FAN** button **ONCE,**
The left display will show the **Current Minimum Run Speed** setting in percent.
Use the **Up (Temp)** and **DOWN (Htr)** Buttons to set the **Minimum Speed**.

**A**
Note:
After 5 seconds of inactivity from pressing any buttons the display will flash and the new settings will be automatically **stored.**
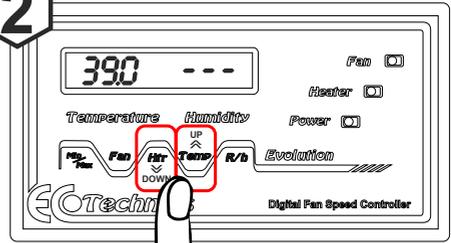
Once you have your desired Minimum fan speed you can press the **Min/Max** button to swap over and start to adjust your Maximum fan speed setting.*.*

**1**

36.0   - - -

Fan
Heater
Power

Temperature    Humidity

UP
Min/Max   Fan   Htr   Temp   R/b   Evolution
DOWN

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press the **Fan** button to enter **minimum fan speed** setting percentage mode

**2**

39.0   - - -

Fan
Heater
Power

Temperature    Humidity

UP
Min/Max   Fan   Htr   Temp   R/b   Evolution
DOWN

ECOTechnics    Digital Fan Speed Controller

you can now adjust the **minumum speed** using the **htr** button to lower and **temp** button to raise the fan speed setting you need in whole percentage increments.

**3**

- - -   82.0

Fan
Heater
Power

Temperature    Humidity

UP
Min/Max   Fan   Htr   Temp   R/b   Evolution
DOWN

ECOTechnics    Digital Fan Speed Controller
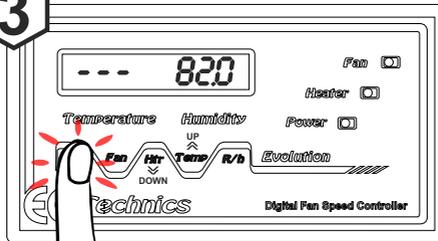
press the **Min/Max** button to swap over to the **maximum fan speed** setting percentage mode

# Setup

### Setting the Minimum and Maximum fan speeds

**4**

Once you have pressed the min/max button the right display will show the **Current Maximum Run Speed** setting in percent. Use the **Up (Temp)** and **DOWN (Htr)** Buttons to set the Maximum **Speed**.

**B**

Note:
After 5 seconds of inactivity from using any buttons the display will flash and the new settings will be automatically  **stored.**
The Blue Fan Light will flash slowly when the fan is set slow and flash faster until maximum speed where it will be constantly on.
*When Set, your controller will run the fans at the minimum speed required to maintain the set levels of temperature and humidity resulting in quieter fan operation, reduced running costs and optimum growing conditions.*



**4**
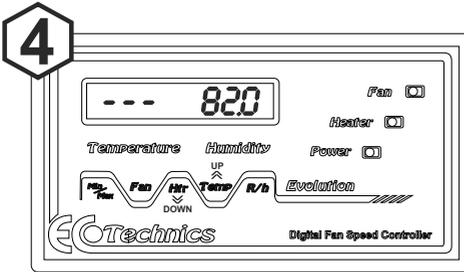
you are now in **maximum fan speed** setting
percentage mode



**5**
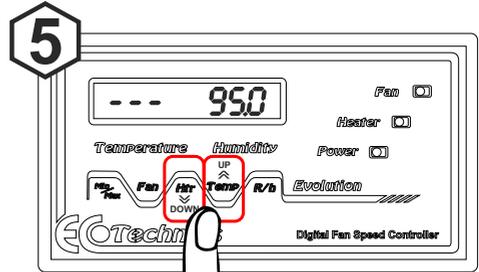
you can now adjust the
maximum speed using the
**htr** button to lower and
**temp** button to raise
the fan  speed
setting you need
in whole
percentage increments.



**6**
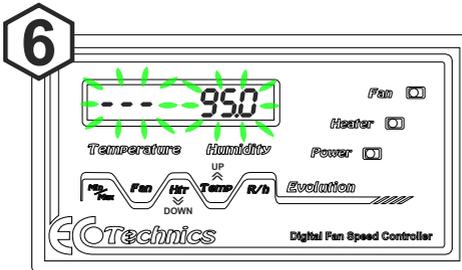
Once you have set your desired
humidity simply wait 5 seconds
the LED will flash to indicate that
it has stored the new settings.

(once stored the display will revert back to live reading
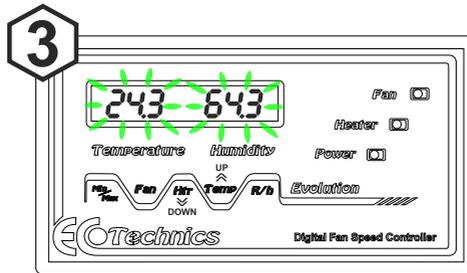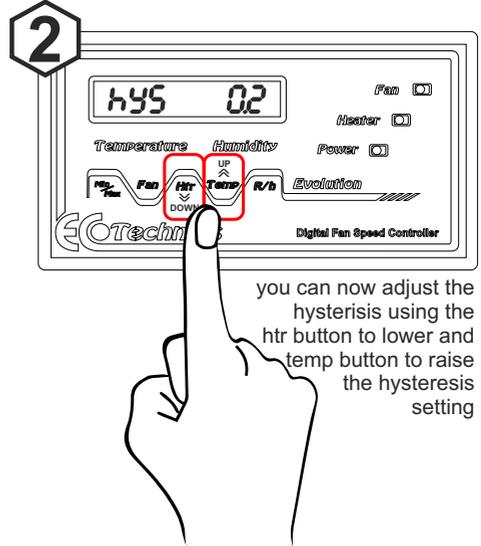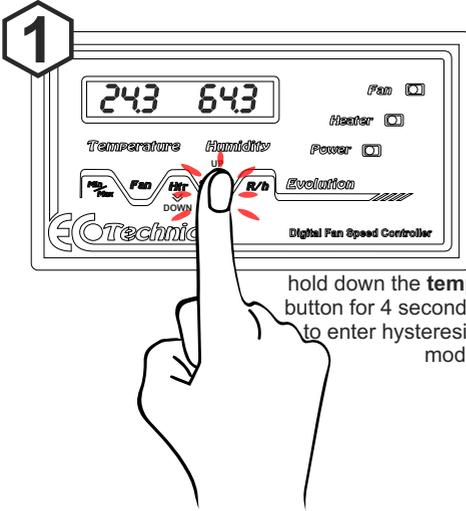of the temperature and humidity)
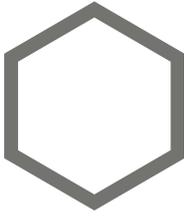
# Advanced settings section

# Advanced Settings & Calibration modes

## TEMPERATURE HYSTERESIS

Press and hold **Temp** button for 4 seconds enables adjustment of
temperature hysteresis. Adjustment is 0.2 to 5.0 degrees, initial setting is 0.2 degrees.

**1**

hold down the **temp**
button for 4 seconds
to enter hysteresis
mode

**2**

you can now adjust the
hysterisis using the
htr button to lower and
temp button to raise
the hysteresis
setting

**3**

Once you have set your desired
hysteresis point simply wait 5 seconds
the LED will flash to indicate that
it has stored the new settings

# Advanced Settings & Calibration modes

## HUMIDITY HYSTERESIS

Press and hold **R/H** button for 4 seconds enables adjustment of
humidity hysteresis. Adjustment is 0.2 to 5.0%, initial setting is 0.2%



hold down the **R/h**
button for
4 seconds
to enter
hysteresis
mode



you can now adjust the
hysterisis using the
htr button to lower and
temp button to raise
the hysteresis
setting



Once you have set your desired
hysteresis point simply wait 5 seconds
the LED will flash to indicate that
it has stored the new settings
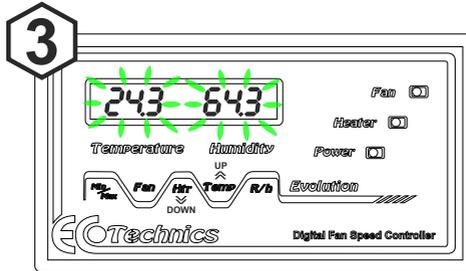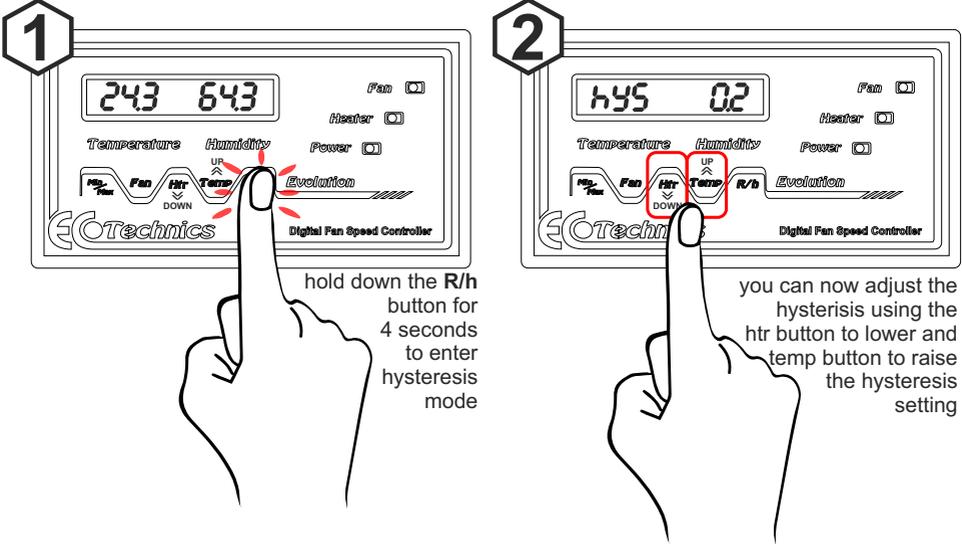
# Advanced Settings & Calibration modes

## FAN / HEATER Mode

0P0 = When heater is on fans are off/min.
0P1 = When heater is on fans are on.

## Please note in normal use the controller should be set to OP0.

1.Make sure the Evolution Fan speed controller is **OFF** before you start (no electrical power)

Press and hold **"htr"** button down
(keep the **htr** button held down)
Then plug in and turn the power on to power up the Evolution Fan Speed controller.

2.Once powered up, the controller will display
- - - - - - you may now release the **"htr"**
button at this point.

3.The display will flash up the current chip code for example: E1.9 PHA
then shortly afterward the heater mode will flash up briefly such as:
HTR OPO or HTR OP1

To toggle heater modes simply re-power up the unit with the same procedure and it will switch over to the opposite mode of either OPO or OP1 depending on the last mode it was in.

**1**

hold down before power on

**2**

**release** once the display shows - - - - - -

**3**
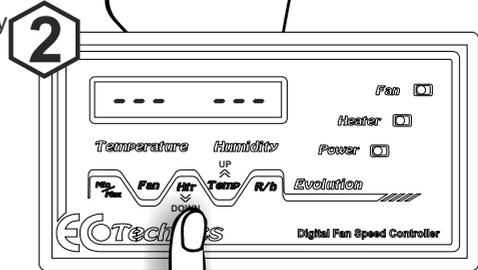
the current htr mode will display **briefly** OPO or OP1 before switching back to live reading mode of the temperature and humidity

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# Advanced Settings & Calibration modes

## FAN OUTPUT Mode

Default is 'PHA' mode (PHAse angle control).

**Phase angle mode** the controller will control the speed of the fans and you can set a % speed for them in min and max.

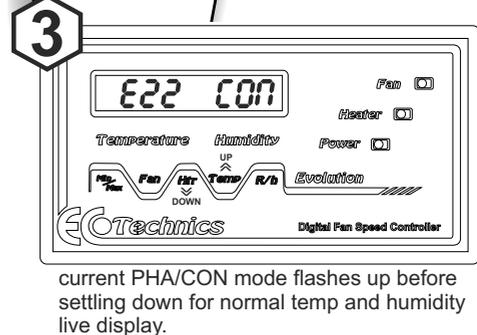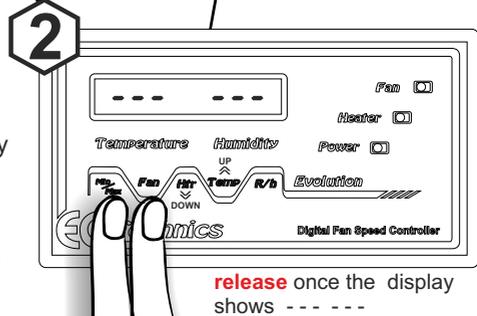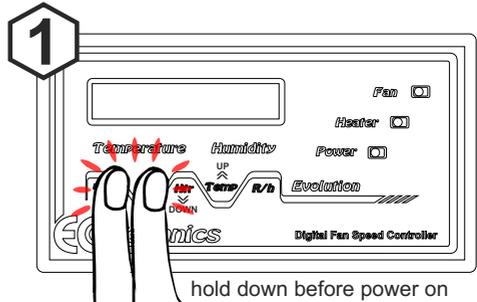**Contactor mode** the fans will just switch either on or off (0% and 100%).

1.Make sure the Evolution Fan speed controller is **OFF** before you start (no electrical power)

Press and hold **Fan and Min/Max** buttons down (keep them held down)
Then plug in and turn the power **on** to power up the Evolution Fan Speed controller.
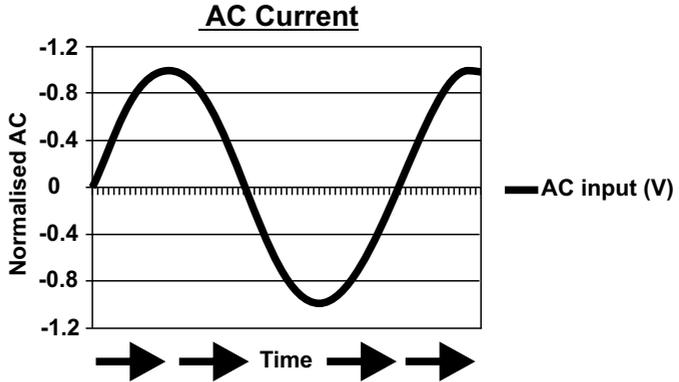
2.Once powered up, the controller will display
- - - - - - you may now release the **Fan and Min/Max** buttons at this point.

3.The display will flash up E22 in the left and the current setting of either **CON** or **PHA** in the right LED window before reverting to live readings.
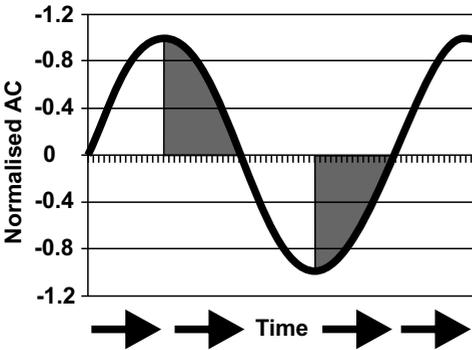
*To revert the current setting simply repeat this procedure, each time it will swap from one mode to the other.*
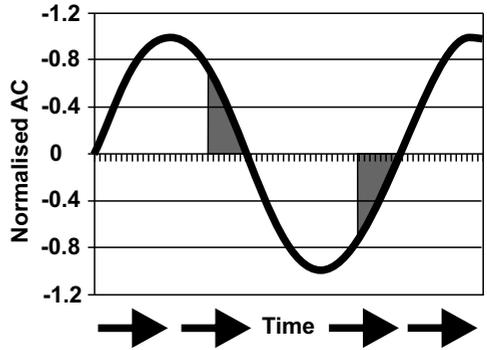
hold down before power on

**release** once the display shows - - - - - -

current PHA/CON mode flashes up before settling down for normal temp and humidity live display.

## AC Current



## Phase Angle set at 50%



## Phase Angle set at 25%



# Phase Angle Fan Speed Control

Phase Angle control uses a low frequency switch to chop an AC sine wave.
The firing angle of the switch is varied. (25% - 100%)
The average voltage is proportional to the area under the sine wave. Thus, the average voltage is the integral from the firing angle to the zero crossing, the cosine of the firing angle.

Phase Angle control provides a excellent method to control the average voltage of an AC source. However, the low frequency AC waveform presented to the motor will create some torque ripple and acoustic noise, to keep this to a minimum we keep the range of control between 25% and100%.
*note:*
*All universal motors operated from an AC source will have some torque ripple.*

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# Advanced Settings & Calibration modes

## Humidity Ignore Mode

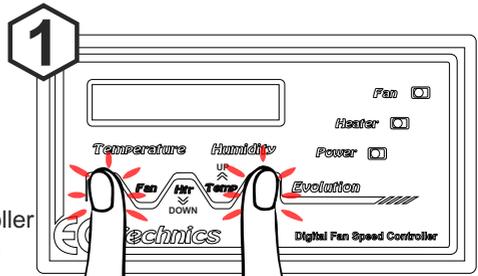**This mode can be useful in winter or wet season if external humidity is above desired and temperature is below.**



1.Make sure the Evolution Fan speed controller is **OFF** before you start (no electrical power)

Press and hold **Min/Max and R/H** buttons down (keep them held down)
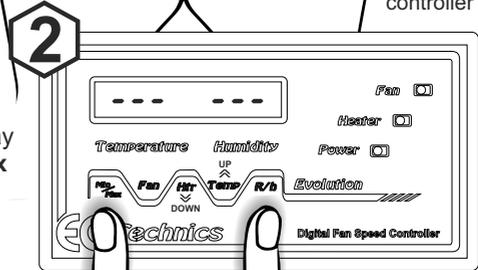Then plug in and turn the power **on** to power up the Evolution Fan Speed controller.

**hold down** min/max & htr button power on your controller



2.Once powered up, the controller will display - - - - - - you may now release the **Min/Max and R/H** buttons at this point.

3.The Humidity display on the right LED window will now constantly flash on/off every second or so to show that humidity control has now been disabled and will only show live readings and will no longer control the fans.
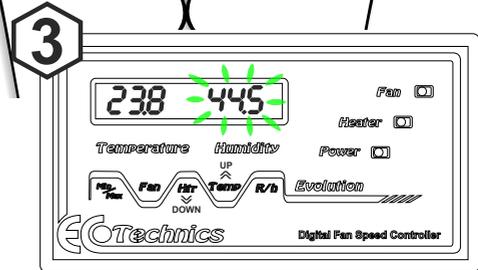
**release** once the display shows - - - - - -

*To revert the current setting simply repeat this procedure, each time it will swap from one mode to the other*



Humidity LED will flash every second to show it is now set to "humidity ignore" mode.

# Advanced Settings & Calibration modes

## Temperature Calibration Mode

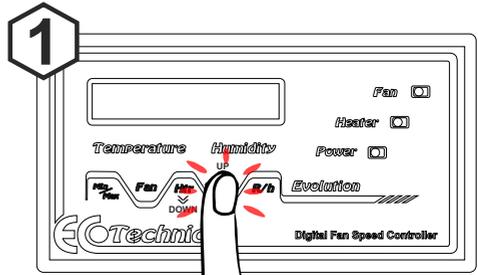1. Make sure the Evolution Fan speed controller is **OFF** before you start (no electrical power)

Press and hold **Temp** button down (keep it held down)
Then plug in and turn the power **on** to power up the Evolution Fan Speed controller.

2. Once powered up the controller will display - - - - - -  release the **Temp** button at this point
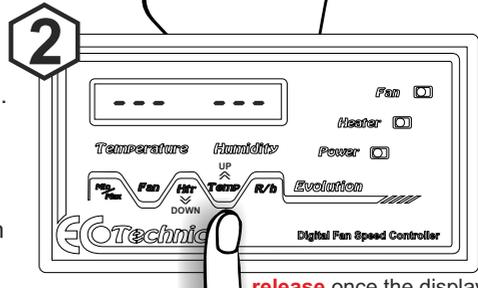
3. The display will show  - - - in the right LED and the current temperature reading in the left LED .Using the up and down buttons (**Htr** and **Temp**) you can calibrate the temperature by lowering or raising the setting.

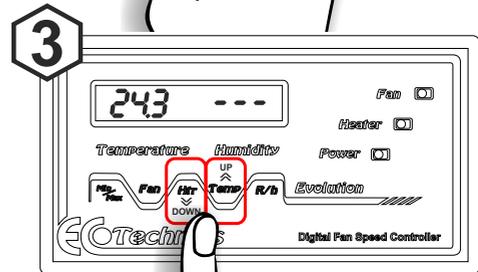4. To store the new setting simply press the **min/max** button.

5. To exit advanced mode power simply down and then power back up the controller again to resume the normal mode of the controller.
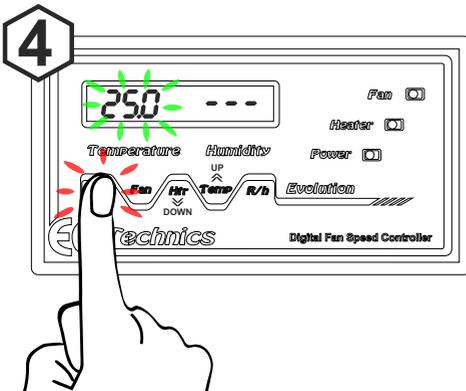


**hold down** temp button then power on the controller



**release** once the display shows  - - - - - -



you can now adjust the temperature using the htr button to lower and temp button to raise the temperature setting



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# Advanced Settings & Calibration modes

## Humidity Calibration Mode

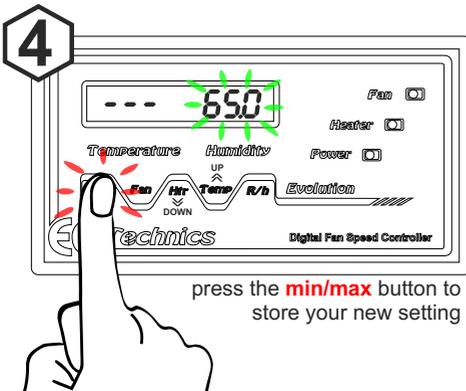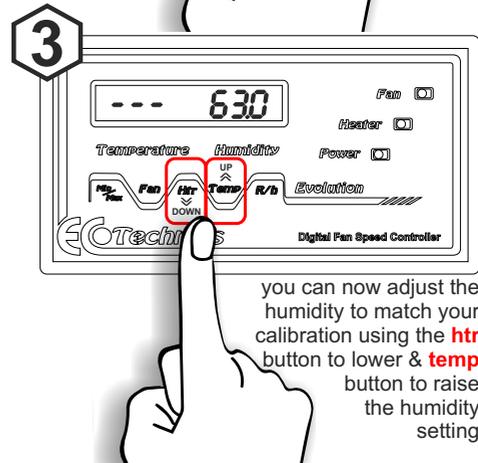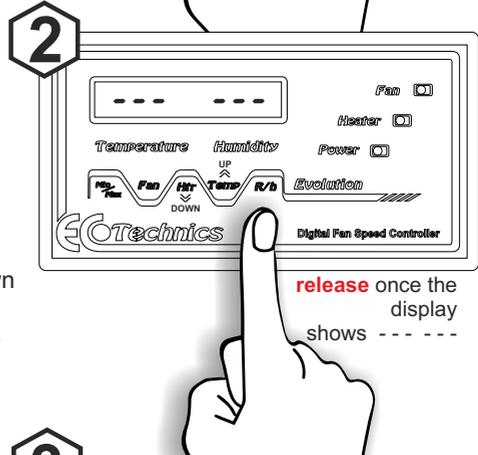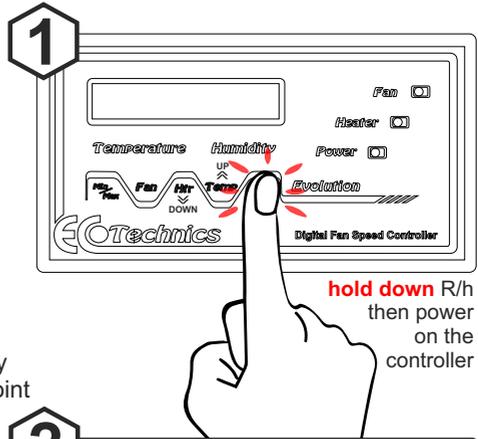1. Make sure the Evolution Fan speed controller is **OFF** before you start (no electrical power)

Press and hold **R/h** button down (keep it held down)
Then plug in and turn the power **on** to power up the Evolution Fan Speed controller



**hold down** R/h then power on the controller

2. Once powered up the controller will display - - - - - - release the **"R/h"** button at this point

3. The display will show - - - in the left LED and the current humidity reading in the right LED .Using the up and down buttons (**htr** and **temp**) you can calibrate the humidity by lowering or raising the setting.

4. To store the new setting simply press the **min/max** button.

5. To exit advanced mode power simply down and then power back up the controller again to resume the normal mode of the controller.



**release** once the display shows - - - - - -



you can now adjust the humidity to match your calibration using the **htr** button to lower & **temp** button to raise the humidity setting



press the **min/max** button to store your new setting

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# Advanced Settings & Calibration modes

## LED lights OFF/On (Fan Heater)

You may wish turn off the **Red** and **Blue** LED lights for the Heater/Fan on the controller, if your controller is within the grow room so that the plants are not being illuminated by these Red and Blue coloured LED's.
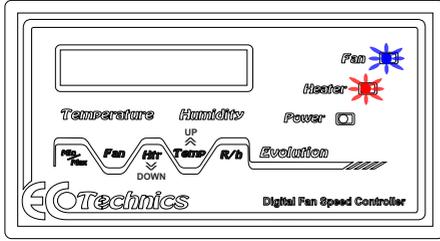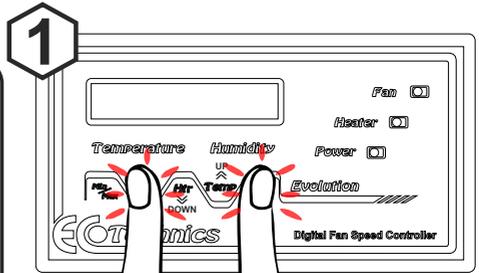
**1**

**hold down**
Fan & R/h button when power on your controller

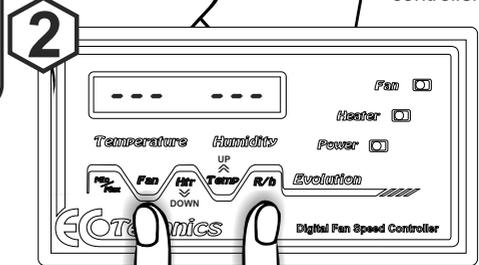1.Make sure the Evolution Fan speed controller is **OFF** before you start (no electrical power)

Press and hold **Fan and R/H** buttons down (keep them held down)
Then plug in and turn the power **on** to power up the Evolution Fan Speed controller

**2**

**release** once the display shows
- - - - - -

2.Once powered up and displaying
 - - -  - - -  you may release the **Fan** and **R/h** buttons.
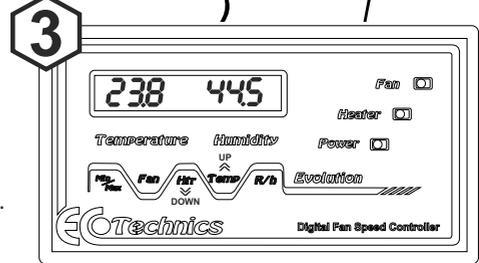
3.The lights on the controller for the heater (red) and Fan (blue) will be turned off. To turn them back on simply repeat this procedure.

**3**

Fan and Heater Lights will be set to OFF if you require them back ON simply repeat this procedure.

# Advanced Settings & Calibration modes

## Restore Default settings

You may wish turn to restore the unit to default settings as listed in the back of the user guide:

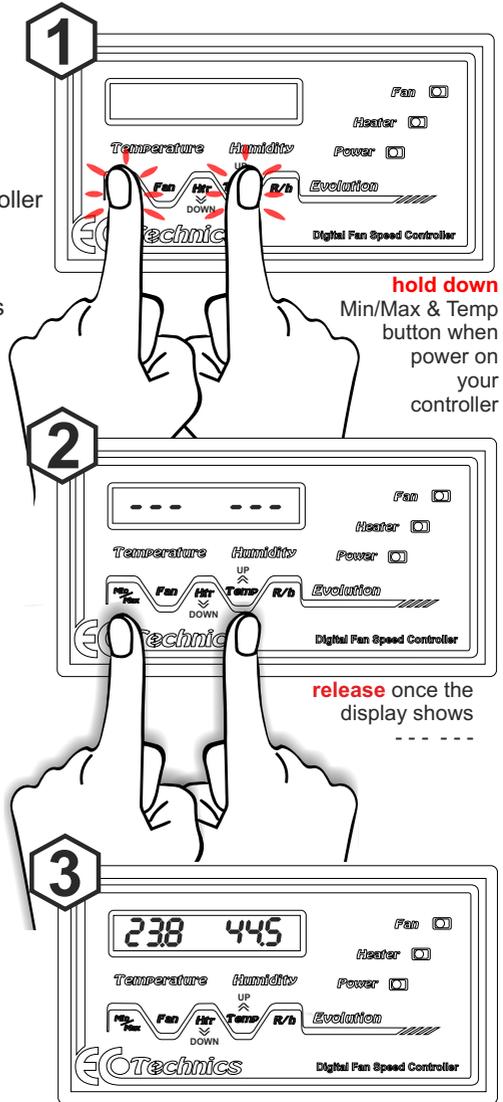1. Make sure the Evolution Fan speed controller is **OFF** before you start
(no electrical power)

Press and hold **Min/Max and Temp** buttons down (keep them held down)

Then plug in and turn the power **on** to power up the Evolution Fan Speed controller

2. Once powered up and displaying
 - - - - - - you may release the **Min/Max** and **Temp** buttons.

3. This will restore factory defaults as listed in the back of this user guide.



**hold down**
Min/Max & Temp button when power on your controller

**release** once the display shows
- - - - - -

Factory settings for the controller are now restored.

# Power Up Test Sequence - LED test and chip revision

whenever you power up the controller it will run through it's display test sequence
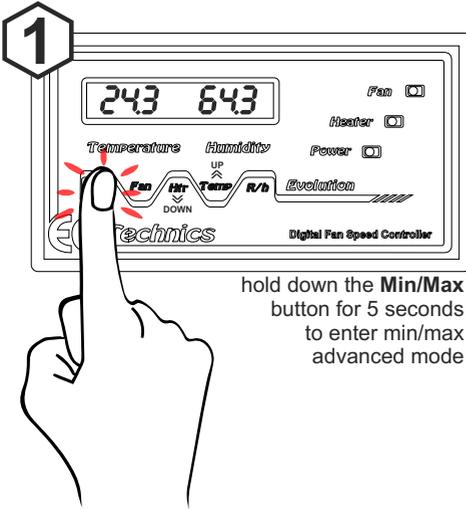before displaying the current temperature and humidity
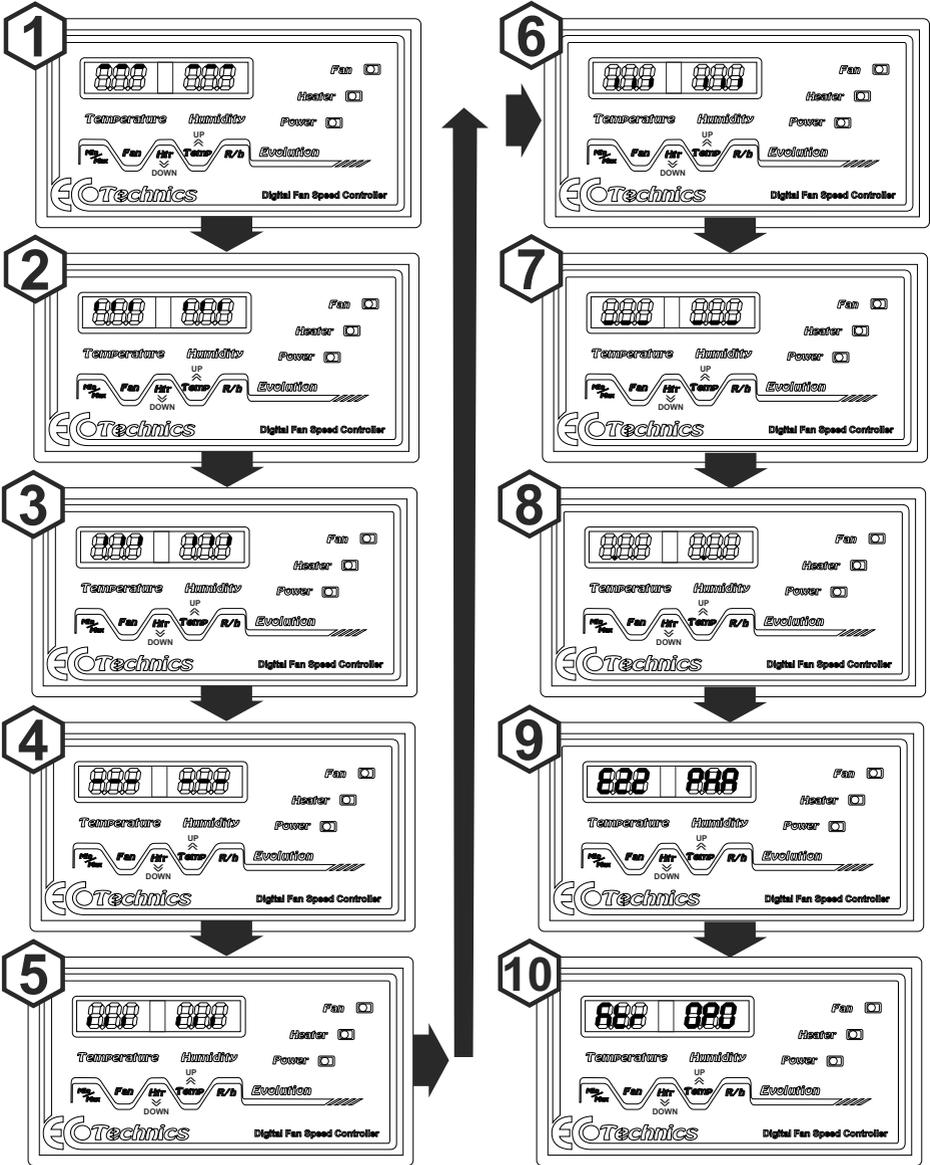


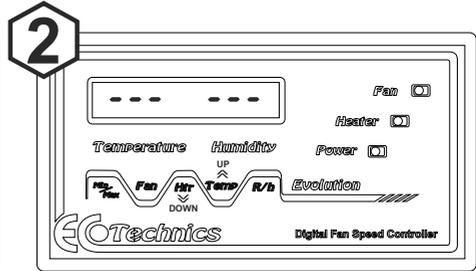step 1 to 8 is to test the LED display to make sure all segments illuminate.
step 9 shows the chip revision number in the left display and the fan mode in the right display PHA or CON
step 10 shows that the htr function is enabled in the left window, in the right window the fan mode:
OPO - heater on fans off or OP1 heater on fans on.

# Advanced Settings: Min/Max mode

**1** hold down the **Min/Max** button for 5 seconds to enter min/max advanced mode

Display shows: `24.3  64.3`

Fan ▢  Heater ▢  Power ▢
Temperature  Humidity
Fan  Htr  Temp  R/h  Evolution
UP  DOWN
EcoTechnics  Digital Fan Speed Controller

**2** the display will show as above to indicate you have now entered **Min/Max** advanced mode you can now <u>release</u> the **min/max** button

Display shows: `---  ---`

Fan ▢  Heater ▢  Power ▢
Temperature  Humidity
Min/Max  Fan  Htr  Temp  R/h  Evolution
UP  DOWN
EcoTechnics  Digital Fan Speed Controller

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**MIN/MAX MODE**　　**MIN/MAX  Button  Advanced functions:**

**To enter min max mode:**.
Press and hold the min/max button down for **5 seconds** , both displays will go blank to confirm. Release the min/max button

① **FIRST PRESS**
Displays the actual room temperature on the left display and the current run speed of the fans on the right display in %.

② **SECOND PRESS**
Displays  speed of the fans on the left display in %. The actual room Humidity is displayed on the right.

③ **THIRD PRESS**
Displays the MINIMUM temperature & humidity since last reset.

④ **FOURTH PRESS**
Displays the MAXIMUM temperature & humidity since last reset.

⑤ **FIFTH PRESS**
Displays firmware version and Fan Output Mode (PHA or CON)

*note*　*SIXTH PRESS*
Displays to show ACTUAL temperature and humidity levels... but advanced mode is still active.

**To Erase previous readings of min/max levels for temperature and humidity**
When in Min/Max mode: Press and hold down the min/max button for 5 seconds the screen will display
　— — —　— — —　　once the recent history is erased you will see current live readings from the controller for temperature and humidity, new Min/Max readings will now be stored during use. **To exit min/max mode simply power down the unit then reboot the Evolution Digital Fan Speed Controller.**

# Default settings and example set-up.
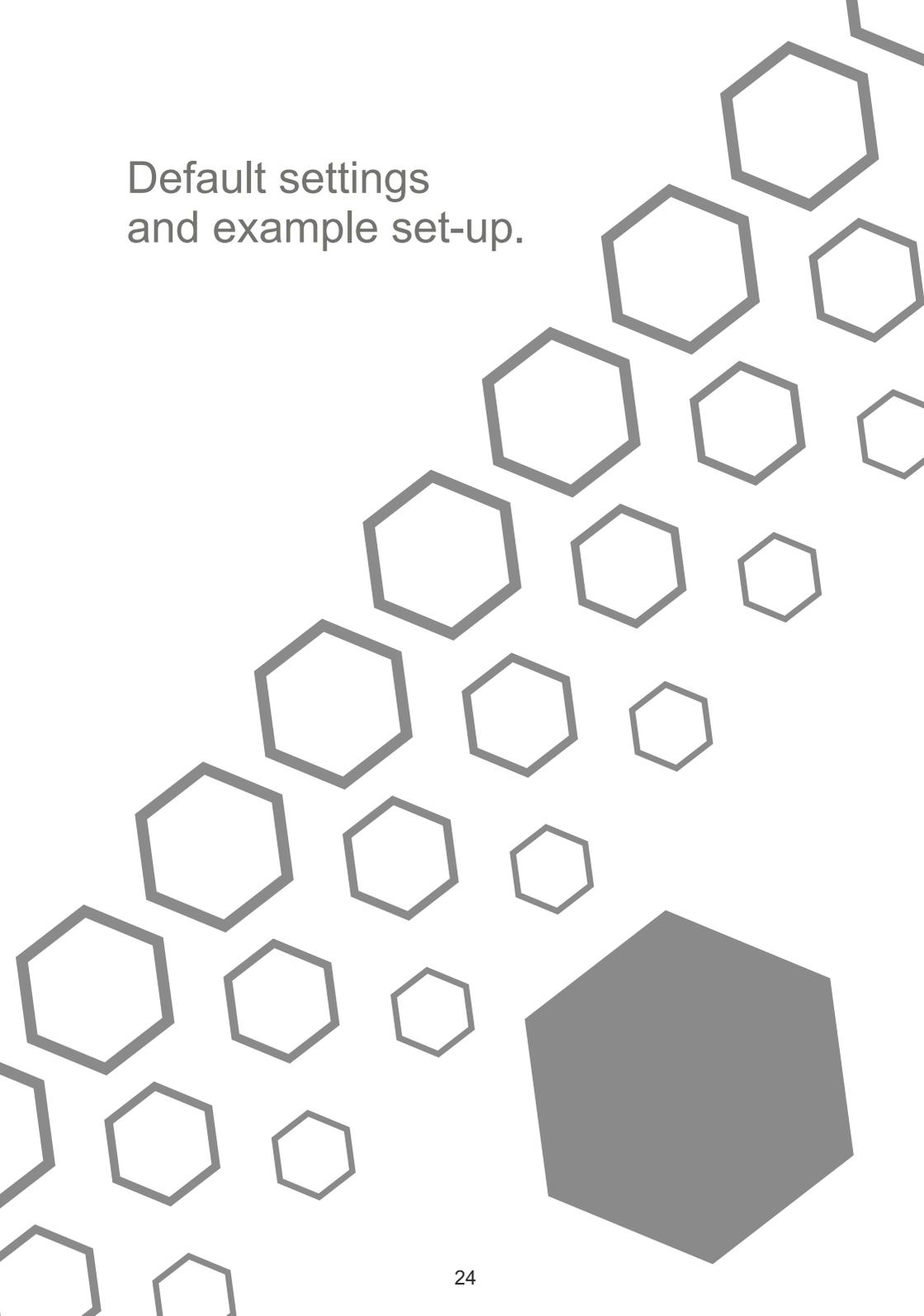
# Default Settings and Specifications

## Settings

| Controller Setting | Default Setting | Range |
|---|---|---|
| Min Fan run speed | 26% | 0/25-100% |
| Max Fan run speed | 80% | 0-100% |
| Heater | 11 C | 0 C - 25 C |
| Temperature | 26 C | 10 C - 35 C |
| Humidity | 60% | 40% - 80% |
| Fan/Heater mode | 0P0 | 0P0 or 0P1 |
| Fan Output mode | PHA | PHA or CON |
| Heater Hysteresis | 3.0 C | 1.0 C to 5.0C |
| Temp Hysteresis | 0.2 C | 0.2 C to 5 C |
| Humidity Hysteresis | 0.2 % | 0.2% to 5% |

## Specifications

| | |
|---|---|
| Power Supply | 220 - 240 Vac Single Phase |
| Power Consumption | 20 Watts Max |
| Maximum Total Fan Load | 1.5 Kw |
| Maximum Total Load | 3.0 Kw |
| Temperature Probe cable length | 5m |
| Fan IN          - maximum load | 6 Amps |
| Fan OUT        - maximum load | 6 Amps |
| Heater          - maximum load | 3Kw |

# Diagnostics

## Diagnostic Advice and Service/Error Codes

**Unplugged Temperature & Humidity Sensor or failed/broken Sensor:**
Will display the following in the LED display:

After the LED test sequence, chip revision number and PHA and OPO settings are displayed the main screen will show the following for a short period of time (approximately 15 seconds)

99.9 in the left window (temperature) and 0.0 right window (humidity)

The display will then change to the following and stay on this display:
- - -   - - -   and will continue to display this.

**Error Code 1:**
Error 1 is a corruption of the internal memory.

**Error Code 2:**
Error 2 is missed mains zero-crossing pulses.

This could be low mains voltage or a component error when the controller was assembled.

If the user has a few kW of heaters on an extension lead then and this also powers the Evolution Fan Speed Controller on the same extension lead.
In this scenario when the heater turns on this could drop the mains voltage sufficient to cause this error.
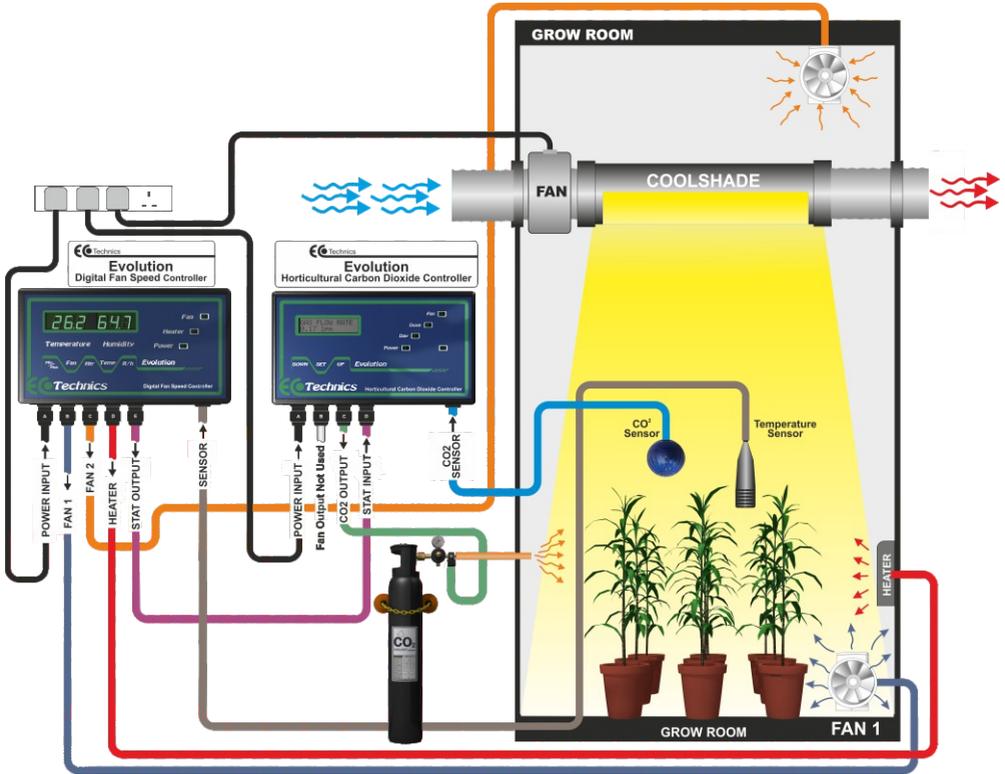
For more information on using the Evolution Digital Fan Speed Controller with the Evolution Carbon Dioxide Controller see our user guide for the Evolution Carbon Dioxide Controller:

**Section C** which starts on page 16 of the Evolution Carbon Dioxide Controller User Guide (pdf available on our website)

Please note you will find the latest revision of any of our User Guides on the Ecotechnics website located in the downloads area below:

http://www.ecotechnics.co.uk/downloads.htm

# ---- ALWAYS OBSERVE THE FOLLOWING ----

● When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.

● Do not excessively twist or bend the power cord, or place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!

● In households with small children, an adult should provide supervision which is essential for the safe operation of any electrical appliances in the home.
All cords and cables should be placed so they are out of the reach of children.

● Try to prevent cords and cables from becoming entangled.

● Before moving the unit, disconnect the power cable from the mains supply and any cords coming from external devices.

● Never handle an AC adaptor or electrical plugs with wet hands when plugging into, or unplugging from, an outlet or this unit.

● Before cleaning the unit, turn off the power and unplug the AC adaptor from the outlet.

● Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices.

● Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.

● Protect the unit from strong impact.(Do not drop it!)

● Before using the unit in a foreign country, consult with your retailer or an authorized distributor.

● Whenever you suspect the possibility of lightning in your area, disconnect the unit from the power outlet.

● Do not attempt to repair the unit, or replace parts within it. Refer all servicing to your retailer or an authorized distributor.

● When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.

**POWER CONSUMPTION       15  WATTS MAX**
**SUPPLY VOLTAGE     230-240V AC**
**TOTAL LOAD NOT TO EXCEED 3.0 Kw**

## *ECOTECHNICS PRODUCT GUARANTEE*

### Shop / Dealer

### Purchase Date

**D  D  M  M  Y  Y**

**Serial Number**   E  T  ●  □ □  ●  □ □

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