INNOTECH®

DS 2.91
August 2013

**Models:**
ES3-1 3 Speed Fan, 1 Cool & 1 Heat Controller

# ES3-1
# Ecostat 3 Controller

## Specifications

### Power Supply
Voltage: 240VAC ±10% @ 50/60Hz
Power Consumption: 3VA Max.

### Input
10kΩ Thermistor temperature sensor
Switched Contact for Standby Select
Switched Contact for Remote Disable

### Outputs
Relay 1 to 3 Voltage free relay contacts
SPDT 8A Resistive
3A Inductive

Relay 4 & 5 Voltage free relay contacts
SPST 16A Resistive
6A Inductive

### Connection between Controller and Control Station
- 5 way connection via 4 core plus screen cable

### Controller Terminal Identification
SEN Temperature Sensor input (10kΩ thermistor)
COM Common for Sensor, Remote Disable and Standby Functions
DOR Remote Disable (Contact Open)
SBY Standby Disable (Contact Closed)

### Input Terminal Identification
240V power connection to Control Unit (right hand side)
E Earth
N Neutral Supply
L Mains 240VAC Supply

### Output Relays

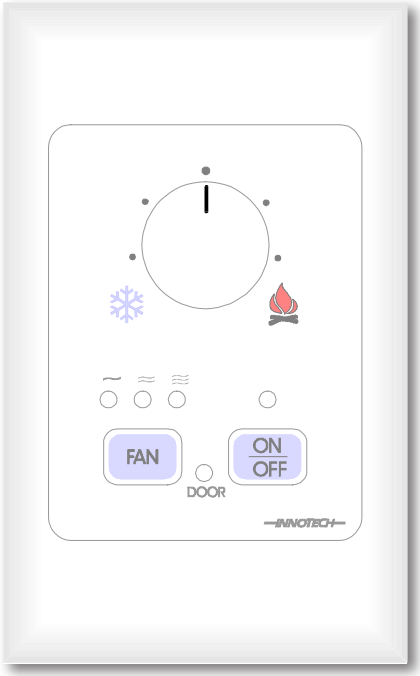
| | Terminals | | |
|---|---|---|---|
| **Relays** | **O** | **I** | **C** |
| 1 to 3 | Normally Open Contact | Normally Closed Contact | Common Contact |
| 4 & 5 | Normally Open Contact | No Connection | Common Contact |

### Enclosure
The control is provided in 3 parts. The wall mounted Control Station, Remote Controller and a bead type Return Air Detector.

*Control Station*
- Innotech Switchplate
- 115mm x 72mm x30mm

*Controller*
Plastic Enclosure manufactured from an ignition resistant grade of ABS which meets the requirements of AS2420.
Colour Grey
Dimensions (max.) 188mm x 163mm x 65mm

*Return Air Detector*
- Bead Type Thermistor
- 3mm Bead with 3 metre lead




## Approvals
The Innotech Ecostat 3 conforms to:
Electromagnetic emission and immunity requirements according to standards EN55011 (CISPR 11) and EN50082 for CE Marking and C-Tick labelling.

## Applications
The Innotech Ecostat 3 Controller is designed to be used in commercial applications to provide complete control for air conditioning systems.

## Features:
- Control Station fits standard electrical wall plates
- Four core screened cable simplifies connection between the controller and control station
- Adjustable Proportional Band, Dead Zone and Compressor Restart Time settings
- 8A relays for all fan speed and 16A cool and heat functions
- Able to operate as 1 cool, 1 electric heating or as reverse cycle heating.
- LED indication of relay status.
- Remote Disable and Standby Functions.

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## Installation

1. Mount controller is a dry and reasonably clean location free or excessive vibration.
2. Wire in accordance with INNOTECH connection diagrams and local bylaws or refer to your local distributor.

This product should only be installed by qualified personnel.

**Temperature Ratings:**

| | |
|---|---|
| Storage: | 0-50°C non-condensing |
| Operating: | 0-40°C non-condensing |

## Wiring

1. Connect the 240VAC supply to the correct terminals, observing the correct polarity of the connections.
2. Connect the EARTH to the correct terminals on all units.
3. DO NOT connect 240VAC to the control terminals on the left hand side.
4. Ensure that the wiring between the wall mounted Control Station and the remote control board is correctly connected. Failure to do so will result in malfunctioning and may damage either or both units.
5. The maximum wire length between the Control Station and the Controller should not exceed 15 metres. The wiring between these devices should not be run in parallel with conductors carrying high current.

## Ecostat Setting and Information

### Set Point Adjustment Range

The Ecostat is calibrated to provide Control Station setpoint adjustment of 23°C +/- 3°C.

To alter the range, adjust the potentiometer "SSP" located on the Controller. When adjusted fully clockwise, the range is 23°C +/- 6°C. When adjusted fully counter-clockwise, the range is 23°C +/- 0.5°C.

To change the midpoint from 23°C, adjust the potentiometer "CAL" located on the Controller. As an example, if a midpoint of 21°C is required, set the Control Station setpoint adjuster to midpoint when the temperature at the temperature sensor equals 21°C. It may be necessary to heat or cool the room to the desired value. Adjust the "CAL" potentiometer until the control is neither heating or cooling.

### Reverse Cycle Units

The Ecostat has a link "REV" located on the controller.

When the link is open, the heat and cool relays operate independently of each other (factory setting).

When the link is closed, the cool relays control the compressor in both heating and cooling operations. The heat relays operate the reversing valves and as a result on heating operations, both the heat and cool relays will operate together.

### Supply Fan Run On

If the Ecostat is operating in heating mode and it is turned off at the Control Station, the supply fan will continue to run for 5 seconds in low speed but the fan speed LEDs will be off. The fan LED on the controller will remain on for the fan run period. This is to remove any residual heat when the electric heat elements are used.

The Supply Fan Run On time is not adjustable.

### Standby Function

The Ecostat is equipped with a standby function which when enabled will increase the Dead Zone to be 2 times the Proportional Band (PB) setting. For example, if the PB is 2°C, the Dead Zone will be 4°C when the unit is in Standby mode. To enable the function, remove link "S" from the Controller.

### Remote Disable

The Ecostat is equipped with a remote disable function. If the Remote Disable switch is open, the Ecostat will run for 30 seconds and shut down the Air Conditioning unit.

The Control Station has a door LED which illuminates when the On button is pressed to advise that the unit is disabled. When the Remote Disable switch is closed, the unit can be restarted by pressing the ON button. To enable this function remove link "D" from the Controller.

### Compressor Time Delay

The Ecostat has a compressor restart timer function. The factory setting is 180 seconds.

When the compressor cycles off, it must remain off for 120 seconds before it can attempt to restart.

To alter the restart time, adjust the "TIME" potentiometer located on the Controller. When adjusted fully clockwise, the delay is 4 minutes 15 seconds. When adjusted fully counter-clockwise, the delay is 1 second.

### Proportional Band

The Proportional Band (PB) factory setting is 2°C, this results in a differential of 1°C for heating and 1°C for cooling.

To alter the PB, adjust the "PB" potentiometer located on the Controller. When adjusted fully clockwise, the PB is 10°C. When adjusted fully counter-clockwise, the PB is 1°C.

### Dead Zone

The Dead Zone (DZ) is factory set to 50%. This represents 50% of the PB setting. If the PB is 2°C, the DZ will be 0.5°C.

To alter the DZ, adjust the "DZ" potentiometer located on the Controller. When adjusted fully clockwise, the Dead Zone is 60% of the Proportional Band. When adjusted fully counter-clockwise, the DZ is 10% of the PB.

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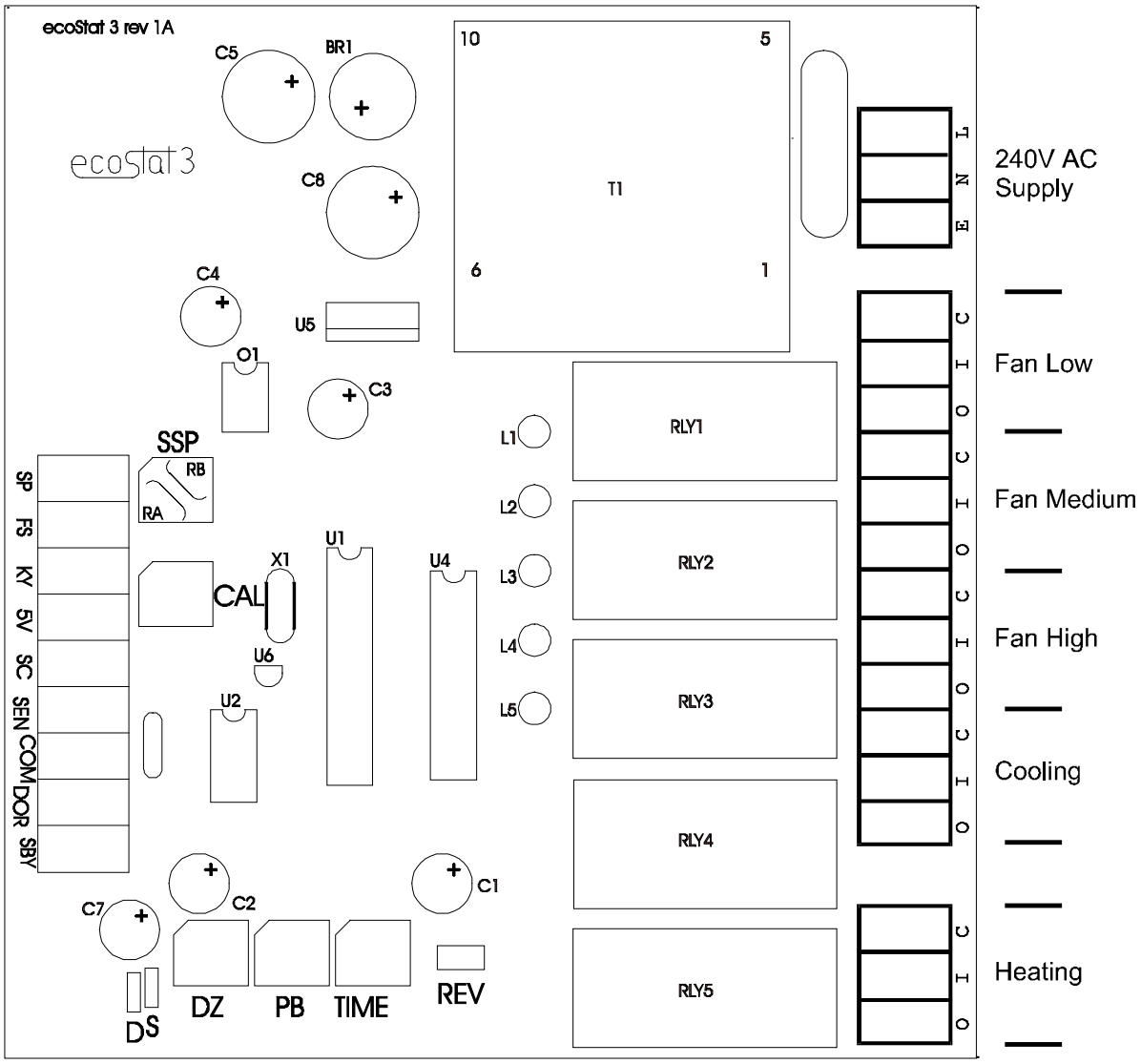
## Ecostat Relay Box




**DZ** = Dead Zone - Range 10 to 60%
**PB** = Proportional Band - Range 1°C to 10°C.
**TIME** = Compressor Restart Time - Range 1 sec to 4 min 15 sec.
**REV** = Reversing Valve Link.
**SSP** = Amount of Adjustment at the Control Station setpoint - Range 1°C to 12°C.
**CAL** = Use to calibrate the midpoint of the Control Station setpoint adjustment.
**D** = Remote Disable Link.
**S** = Standby Link.

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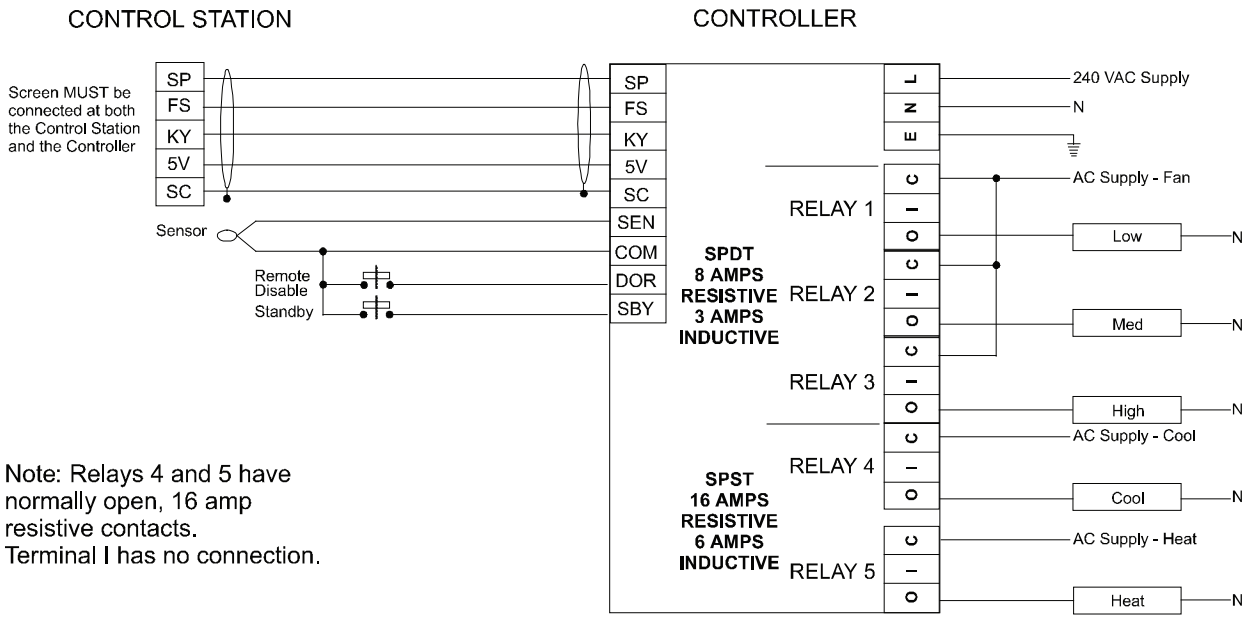
## STANDARD CONNECTION

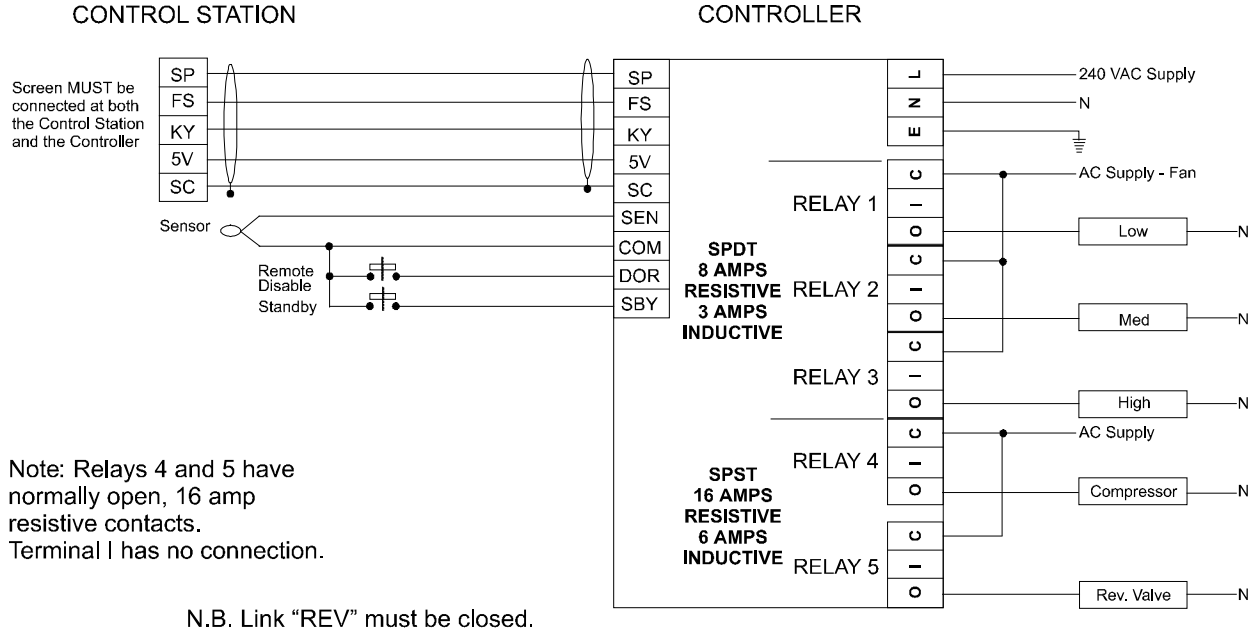



Note: Relays 4 and 5 have normally open, 16 amp resistive contacts.
Terminal I has no connection.

N.B. Link “REV” must be open.

* MAXIMUM CABLE LENGTH BETWEEN THE CONTROL STATION & CONTROLLER IS 15 METRES.

## REVERSING VALVE FOR HEAT CONNECTION




Note: Relays 4 and 5 have normally open, 16 amp resistive contacts.
Terminal I has no connection.

N.B. Link “REV” must be closed.

* MAXIMUM CABLE LENGTH BETWEEN THE CONTROL STATION & CONTROLLER IS 15 METRES.

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