

Models:

IMC5311: Economy Cycle plus 1 Stage COOL and 1 Stage HEAT

IMC5322: Economy Cycle plus 2 Stage COOL and 2 Stage HEAT

IMC53xx

Modular Controller With External Set Point and Economy Cycle

Specifications

Power Supply

Voltage: 24VAC $\pm 10\%$ @ 50/60Hz

Power Consumption: 6VA Max.

 Requires factory modification for DC voltage power supply.

Input

Two wire current loop air detector for temperature monitoring (One Indoor and one Outdoor)

Outputs

Temperature Out 0.1VDC per °C

Set Point Out 0.1VDC per °C - for measurement only

0-10VDC Heating Control Output

0-10VDC Cooling Control Output

0-10VDC Economy Cycle Output

One SPDT voltage free contact per stage (2A max.)

Terminal Identification

1 & 2	Indoor Detector connection
3	Indoor Temperature Out
TAG	Set Point measurement point
4 & 5	Economy Cycle Connections
6	0-10VDC Economy Cycle output
7	0-10VDC Cool output
8	0-10VDC Heat output
9	Common / 0V supply (MUST BE EARTHED)
10	24VAC supply or 24VDC supply

Relay Terminal Identification

A, B	N/O: N/C Stage 2 Cool
C	Common for Cool relays
D, E	N/O: N/C Stage 1 Cool
F, G	N/O: N/C Stage 1 Heat
H	Common for Heat relays
I:J	N/O: N/C Stage 2 Heat

Temperature Ratings

Storage: 0-50°C non-condensing

Operating: 0-40°C non-condensing

Enclosure

The IMC53xx product is housed in a rectangular case suitable for DIN rail mounting.

The housing is moulded from flame retardant plastics recognised by UL as UL94-V0.

Colour: Grey

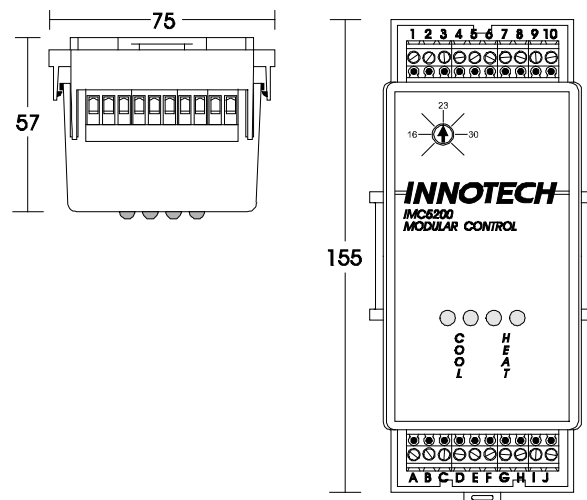
Dimensions: 155mm x 75mm x 57mm

Installation

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

Wiring


1. Earth one side of the 24VAC at the transformer.
2. Connect the EARTHED side of the 24VAC to terminal 9.
3. DO NOT connect 24VAC to terminals 1 through 4 and 6 through 8.



Application

The INNOTECH IMC53xx range of modular controls are designed to provide a modulating economy cycle output and regulate the stage of cooling and heating on air conditioning systems.

The economy cycle output can be enabled by an outside air sensor used to measure the difference between outside and indoor temperature. Alternatively, a contact input can enable the economy output. The controls are suitable for use in single or multizone temperature applications. Multiple controllers can be grouped to a common enthalpy control or outside air thermostat.

 Limited Set Point Adjusters cannot be used with this product. (EG: IRA4002)

Features

- Interface to Building Automation Systems
- Time integrated proportional control action for optimum system performance
- Separate 0-10VDC outputs for heating, cooling and economy cycle
- Separate proportional band adjustment for heating and cooling
- Two detector averaging of indoor temperature is available
- Indoor detector temperature easily read at controller
- Economy cycle proportional band set to 0.5°C
- LED indication of relay status
- Factory set for most applications resulting in reduced commissioning time
- The INNOTECH enclosure saves space and reduces installation time
- Wide range of applications

Approved

The IMC53xx conforms to the requirements for RCM labelling.

Set Point

The Set Point is adjustable via the internal Set Point pot over a range of 13°C to 32°C.

Proportional Band

The heating and cooling proportional bands (PB) are separately adjustable over a range of 0.5 to 5°C via their PB pots. The economy cycle has a fixed PB of 0.5°C.

Ramp

Both the Heat and Cool outputs are time integrated. The ramping rate is not manually adjustable, but varies with the difference between the Set Point and the measured temperature.

Dead Zone

The Dead Zone is variable from 0 to 2°C by adjusting the Dead Zone pot. The Dead Zone is centred on the Set Point. A setting of 2°C gives a Dead Zone of 1°C above and below the Set Point.

Detector Averaging

The IMC controllers are factory supplied set for one detector. The IMC can be modified to average the input from 2 detectors connected in parallel. The output at terminal 3 is the average of the temperatures sensed.

Output Clamp

The 0-10VDC Cool and Heat outputs are clamped to 0V until the other output is at 0V.

Output Voltage Range

The controlled range is from 0 to 10VDC.

Economy Cycle Enable

When using an inside and outside air detector, the economy cycle is enabled when:

- the controller is calling for cooling and
- the outside air temperature is lower than the inside air temperature, less the setting of the "DIFF" potentiometer.

The "DIFF" potentiometer has a range of 0 to 5°C.

The economy cycle may also be enabled by using a relay contact between terminals 4 and 5. Economy cycle is enabled when this contact is open and disabled when the contact is closed.

A third method of economy cycle enable is to apply 24 volts to terminal 5. This method would be used in a multiple controller application.

Relay Outputs

Both the N/O and N/C contacts of all relays are available at the lower terminals. The common terminal of both cool relays is connected to terminal "C". The common terminal of both heat relays is connected to terminal "H".

Relay Span

The relay on and off voltages are spread evenly across the 0 to 10VDC of the heat and cool outputs. Example below:

Relay 1 on at 5VDC and off at 0V and
Relay 2 on at 10VDC and off at 5VDC.

The status of each relay is indicated by a red LED. The relay is energised when the LED is lit.

DIN Rail Mounted Enclosure

The INNOTECH enclosure is designed to provide tight positive locking to varying thicknesses of DIN rail. When fitting to thick DIN rail, it may be necessary to remove the packing tabs on the back of the base.

Lugs on each side of the base ensure that correct spacing is maintained between units on the same DIN rail.

Time Integrated Proportional Output

The IMC controller is a proportional controller with its 0-10VDC Heat and Cool outputs time integrated. The time integration is fixed and is not adjustable.

The steady state value of the 0-10VDC Heat and Cool outputs are proportional to the difference between the measured temperature and the Set Point temperature. When a disturbance occurs in the system, time integration causes the 0-10VDC Heat or Cool outputs to change at a rate proportional to the difference between the measured temperature and Set Point temperature.

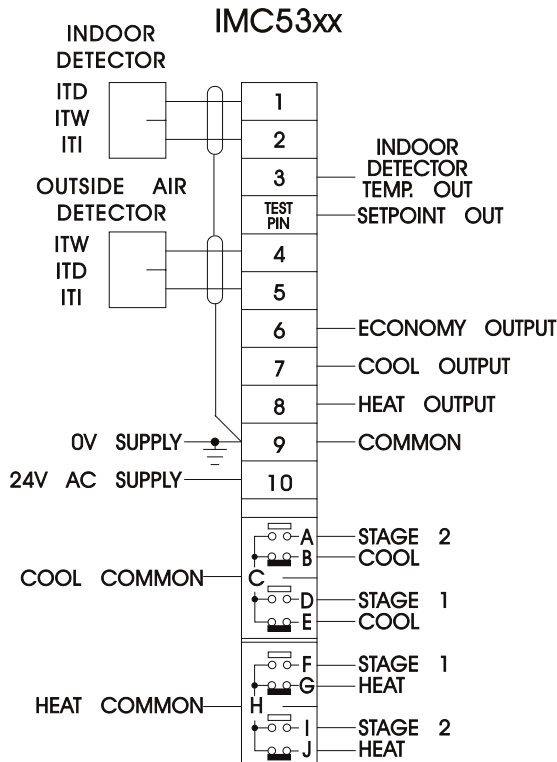
A large disturbance will cause the output voltage to change at a faster rate than a small disturbance. As the system recovers from a disturbance, the difference between the measured and Set Point temperatures will decrease and thus reduce the rate of change of the output voltage.

The reducing "rate of approach" of the output voltage as the operating temperature approaches the Set Point, reduces any tendency to overshoot and thus adds to the overall stability of the system.

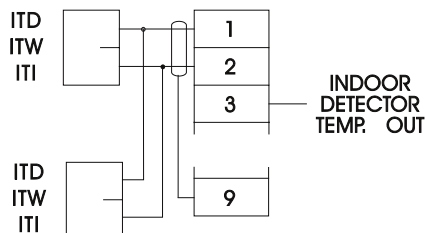
Relay Terminal Connections

Model	Terminal Identification							
	COOL 2		COOL 1		HEAT 1		HEAT 2	
	N/O	N/C	N/O	N/C	N/O	N/C	N/O	N/C
5311			C-D	C-E	H-F	H-G		
5322	C-A	C-B	C-D	C-E	H-F	H-G	H-I	H-J

STANDARD CONNECTION USING OUTSIDE AIR DETECTOR FOR ECONOMY ENABLE

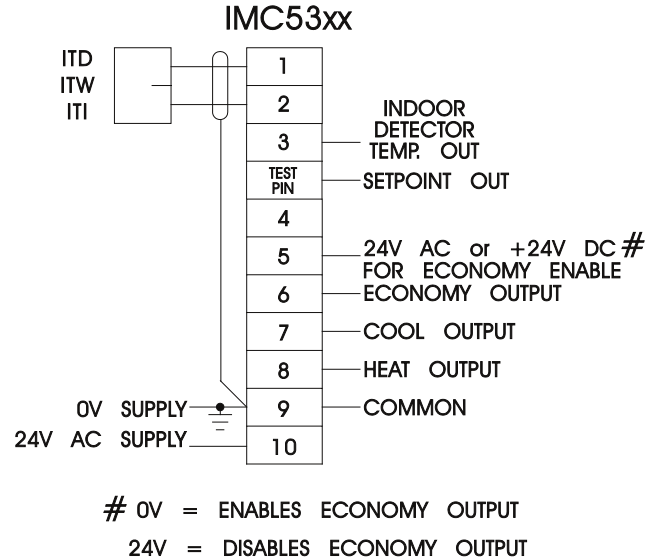


★ DETECTOR AVERAGING

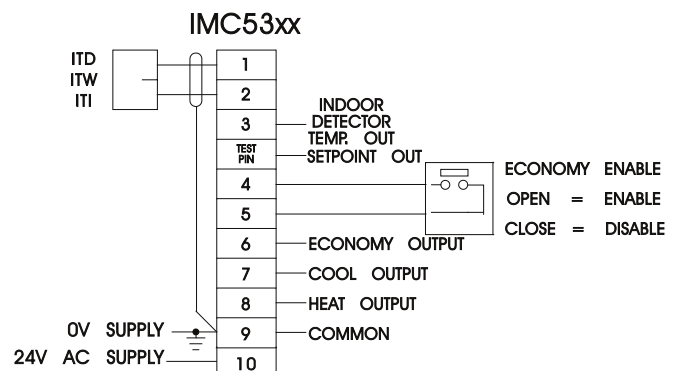


UP TO A MAXIMUM OF 2 DETECTORS

STANDARD CONNECTION USING 24VAC OR 24VDC FOR ECONOMY ENABLE



STANDARD CONNECTION USING VOLTAGE FREE RELAY FOR ECONOMY ENABLE



★ Requires link changes before this option is used.

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