**Models:**
IMC5011: 1 Stage HEAT and COOL
IMC5022: 2 Stage HEAT and COOL

**IMC50xx**

**Modular Controller**

**With External Set Point**

## Specifications

### Power Supply
Voltage: 24VAC ±10% @ 50/60Hz
Power Consumption: 6VA Max

ℹ️ Requires factory modification for DC voltage power supply.

### Input
Two wire current loop temperature detector

### Outputs
Temperature Out      0.1VDC per °C
Set Point Out        0.1VDC per °C
0-10VDC Heating Control Output
0-10VDC Cooling Control Output
One SPDT voltage free contact per stage (3A max.)
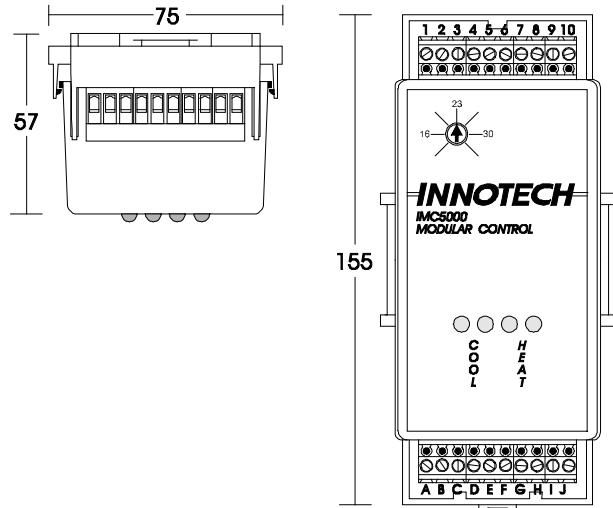
### Terminal Identification
| | |
|---|---|
| 1 & 2 | Detector connection |
| 3 | Temperature Out |
| 4 | [Not Used] |
| 5 | Limited adjustment Set Point Connection |
| 6 | Set Point out |
| 7 | 0-10VDC cool output |
| 8 | 0-10VDC heat output |
| 9 | Common / 0V supply (MUST BE EARTHED) |
| 10 | 24VAC supply or 24VDC supply |

### Temperature Ratings
Storage:        0-50°C non-condensing
Operating:      0-40°C non-condensing

### Enclosure
The IMCxx 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 76mm x 57mm

## Installation
1. Mount controller in a dry and reasonably clean location free of 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 8.



## Application

The INNOTECH IMC50xx range of modular controls are designed to regulate heating and cooling on air conditioning systems. They are suitable for use in single and multizone temperature applications.

The controller can be standalone or connected to auxiliary units such as chilled water valves, damper motors, staging relays and signal selectors for use in multizone air conditioning systems.

The INNOTECH ITD, ITI and ITW series of two wire current loop temperature detectors are designed to operate with the IMC modular controller.

## Features
- Interface to Building Automation Systems
- Time integrated proportional control action for optimum system performance
- Separate 0-10VDC outputs for heating and cooling
- Separate proportional band adjustment for heating and cooling
- Two detector averaging
- Detector temperature easily read at controller
- Set Point easily read at controller
- 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 IMC50xx conforms to the requirements for RCM labelling.

## Set Point

The Set Point is adjustable via the internal Set Point pot over a range of 14°C to 32°C.

The IMC can be factory modified to allow a limited external Set Point adjustment range of approximately 6°C.

## Proportional Band

The heating and cooling proportional bands (PB) are separately adjustable over a range of 1 to 10°C via their PB pots.

## 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.

## 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 |
| 5011 | | | C-D | C-E | H-F | H-G | | |
| 5022 | C-A | C-B | C-D | C-E | H-F | H-G | H-I | H-J |

## STANDARD CONNECTION IMC50xx

ITD
ITW
ITI

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | DETECTOR TEMP. OUT |
| 4 | |
| 5 | SETPOINT AUX. |
| 6 | SETPOINT OUT |
| 7 | COOL OUTPUT |
| 8 | HEAT OUTPUT |
| 9 | COMMON — 0V SUPPLY |
| 10 | 24V AC SUPPLY |

A — STAGE 2
B — COOL
C — COOL COMMON
D — STAGE 1
E — COOL
F — STAGE 1
G — HEAT
H — HEAT COMMON
I — STAGE 2
J — HEAT

## * DETECTOR AVERAGING

ITD
ITW

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | DETECTOR TEMP. OUT |

ITD
ITW

| | |
|---|---|
| 9 | |

UP TO A MAXIMUM OF 2 DETECTORS
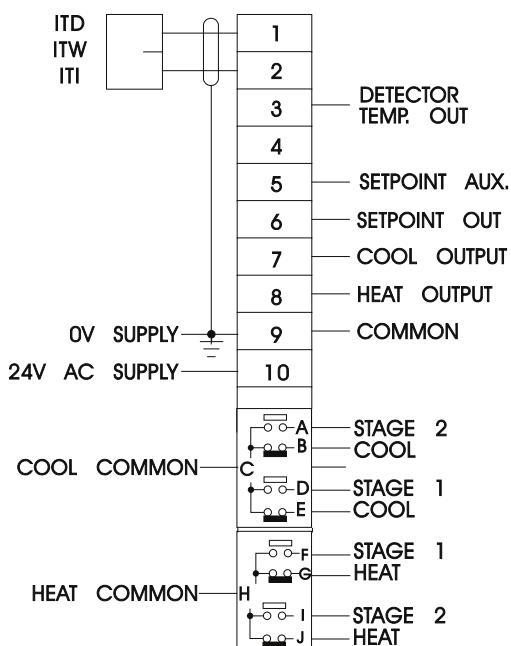
## * LIMITED SET POINT ADJUSTMENT 5°C

### IRA4002

BLACK
BLACK

| | |
|---|---|
| 5 | |
| 6 | SET POINT OUT |
| 9 | COMMON — 0V SUPPLY |
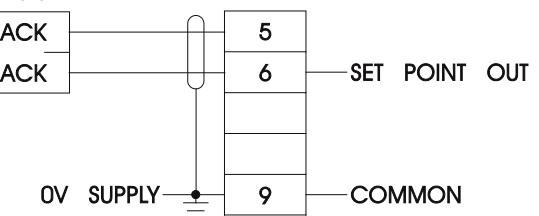
Screened Cable should be used to reduce EMI.

+10V
Output Voltage
0V
Temperature Low

PB HEAT

Dead Zone
Set Point

PB COOL

+10V
Output Voltage
0V
Temperature High
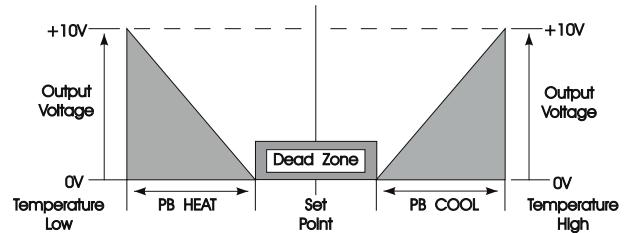
**Operation & Control Function**

## * Requires link changes before this option is used.

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