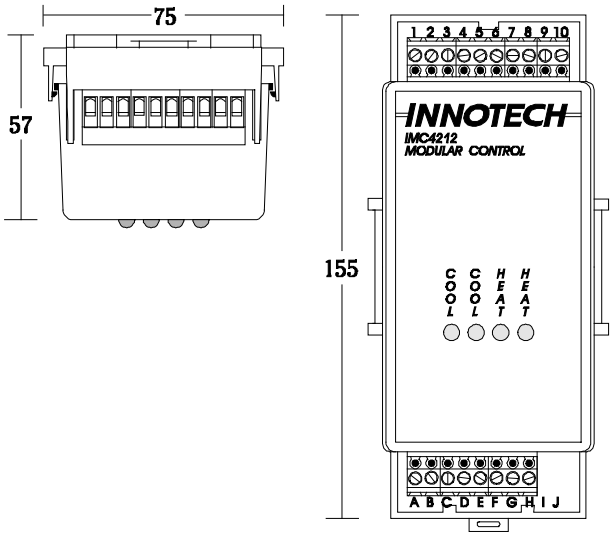
INNOTECH®

DS 2.62
August 2013

Models:
IMC4200: COOL and HEAT Valve Output
IMC4201: 1 Stage COOL and HEAT Valve Output
IMC4202: 2 Stage COOL and HEAT Valve Output
IMC4211: 1 Stage COOL and 1 Stage HEAT with HEAT Valve Output
IMC4212: 1 Stage HEAT and 2 Stage COOL with HEAT Valve Output

IMC42xx
Modular Controller
With Heat Valve Output



Specifications

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

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.)
Heat Valve output to drive solid state relays

Terminal Identification

1 & 2	Detector connection
3	Temperature Out
4	Heat valve / solid state relay output
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

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

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

Enclosure:
Manufactured from an ignition resistant grade of ABS which meets the requirements of AS2420.
Colour: Grey
DIN rail mounted.

Installation
1. Mount controller is 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 8.

Application
The INNOTECH IMC42xx 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 0-10V DC 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.
- LED indication of Control Signal value for Heat Valve output
- 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 IMC42xx conforms to the Australia/New Zealand requirements for standard AS/NZS1044:1995 including Amendment 1:1997 for C-Tick.

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

The IMC can be factory modified to allow a limited external Set Point adjustment range of approximately 5°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, but to ensure proper operation of the units connected to the outputs, the output voltage goes 0.3VDC negative to ensure the OFF condition and 10.5VDC to ensure the ON condition.

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.

Heat Valve / Solid State Relay Output
The output on terminal 4 switches between 0 volts and 11VDC and can be used to drive up to three solid state contactors with a 3 to 30VDC input. The inputs to the solid state relays MUST be connected in series.

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.

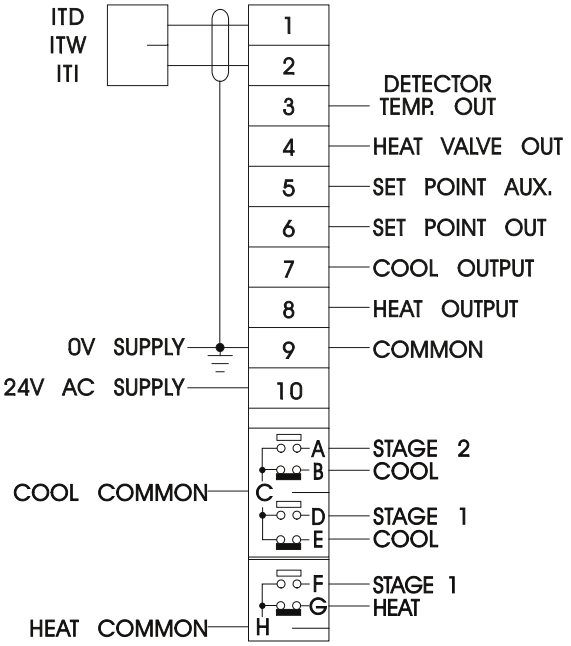
A large disturbance will cause the output voltage to change at a faster rate than a small disturbance. As the system recovers from a disturbance, the difference between the measured and Set Point temperatures will decrease and thus reduce the rate of change of the output voltage.

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.

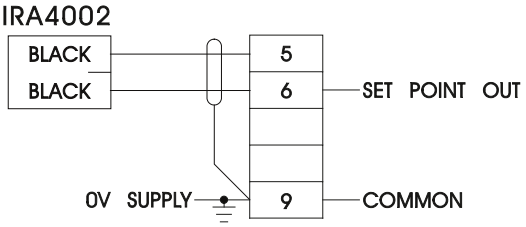
Relay Terminal Connections

Model	Terminal Identification					
	COOL 2		COOL 1		HEAT 1 D / E-C	
	N/O	N/C	N/O	N/C	N/O	N/C
4200						
4201			C-D	C-E		
4202	C-A	C-D	C-D	C-E		
4211			C-D	C-E	H-F	H-G
4212	C-A	C-B	C-D	C-E	H-F	H-G

STANDARD CONNECTION IMC42xx

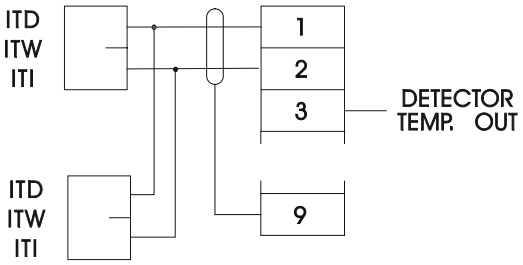


* LIMITED SET POINT ADJUSTMENT 5°C

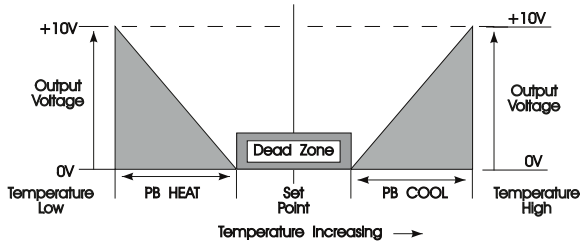


Screened Cable should be used to reduce EMI.

* DETECTOR AVERAGING

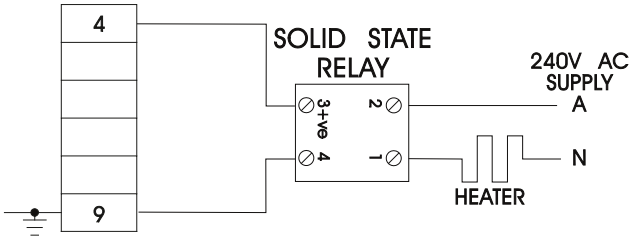


UP TO A MAXIMUM OF 2 DETECTORS

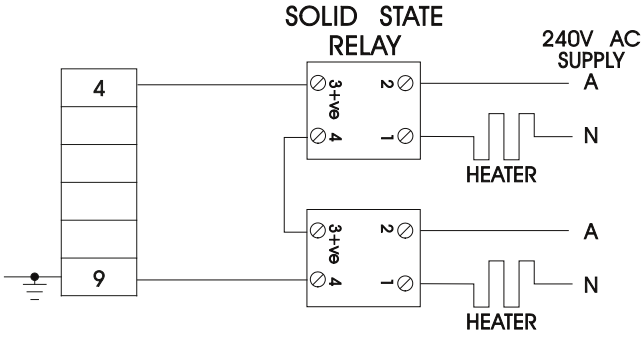


Operation & Control Function

CONNECTION TO DRIVE A SINGLE SOLID STATE RELAY



CONNECTION TO DRIVE MULTIPLE SOLID STATE RELAYS



A MAXIMUM OF THREE (3) SOLID STATE RELAYS CAN BE CONNECTED IN SERIES

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

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