Models:
IPC40hc: Package Controller
h = number of HEAT stages
c = number of COOL stages

IPC
Package Controller

Specifications

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

Inputs:
- Two wire current loop temperature detector
- Reset 0-10VDC
- Standby mode via contact closure
- Remote set point

Outputs:
- Temperature Out 0.1VDC per °C
- Set Point Out 0.1VDC per °C
- Two 0-10VDC control outputs Heat and Cool
- Up to five stages in any combination
- One N/O voltage free contact per stage (2A max.)

Terminal Identification:

1 & 2	Detector connection
3	Temperature Out
4	Reset or External Set Point
5	Standby or 12VDC aux. supply
6	Set Point out
7	0-10VDC cool output
8	0-10VDC heat output
9	Common and 0VAC supply
10	24VAC supply

Relay Terminal Identification:
A to J One N/O voltage free contact per stage.

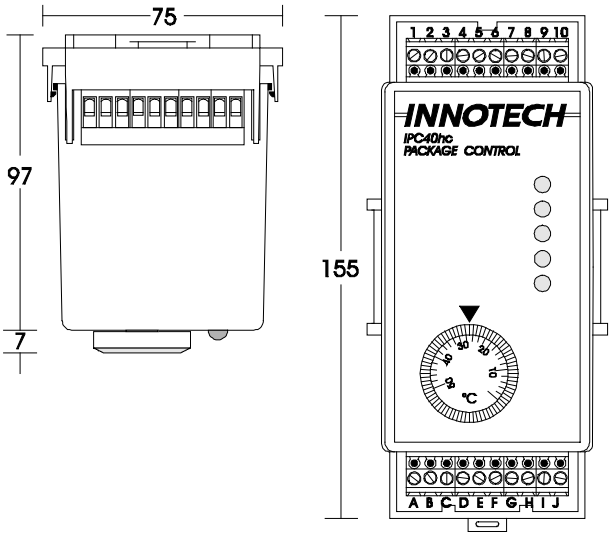
Temperature Ratings:
Storage: 0-50°C non-condensing
Operating: 0-40°C non-condensing

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.

DO NOT interchange Set Point knobs on the controller as they are factory calibrated.



Application
The INNOTECH package controller is designed for use with a two wire current loop temperature detector to produce two 0-10VDC outputs and up to five relay outputs.

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

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

Features:
- Up to five stages of heating and/or cooling in any combination.
- LED indication of relay status.
- Interface to Building Automation Systems
- Dual range 0-50°C or 0-100°C
- 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
- Multiple detector averaging
- Reset up or down of Set Point adjustable from 0-10°C
- Standby mode enabled by voltage free contact
- Detector temperature easily read at controller
- Set Point easily read at controller
- Factory set for most applications resulting in reduced commissioning time
- The INNOTECH enclosure saves space and reduces installation time.
- Wide range of applications.

Set Point:
The Set Point is adjustable via the internal Set Point pot over two ranges.
The range is selected by the "HIGH RANGE" solder link.
0-50°C Link Open (Factor Setting)
0-100°C Link Closed
The IPC can be factory modified for set point.

Proportional Band:
The heating and cooling proportional bands (PB) are separately adjustable over two ranges selected by the PB WIDE links adjacent to the respective PB pot:

Narrow	0.2 to 2.0°C PB WIDE Link Open
Wide	1.0 to 11°C PB WIDE Link Closed (Factory Setting)

Ramp:
The ramping rate of both the heat and cool outputs are separately adjustable over a range of 25 to 250 seconds. This is the time taken for the output voltage to change from 0 to 10VDC or 10 to 0VDC.

Dead Zone:
The Dead Zone is variable from 0°C to 5°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 standard model is set up for one detector. The IPC can be modified during manufacture to accept the input from 2 to 4 detectors connected in parallel. The output at terminal 3 is the average of the temperatures sensed.

Reset:
The Set Point can be reset Up or Down 10°C by a 10VDC external signal applied to terminal 4. The effect of the Reset input can be adjusted from 0-100% by the RESET pot.

The amount of Reset can be read as the variation at terminal 6 as the RESET pot is adjusted.

This function requires a factory link change to be enabled.

Standby:
When enabled, the standby feature increases the Dead Zone by 2°C. The Dead Zone remains centred on the Set Point. Standby can be controlled by a voltage free contact connected between terminals 5 & 9. Standby is enabled when this contact is open.

The standby feature cannot be used in some cases with external Set Point.

Output Kill:
The Cool and Heat outputs are forced off when power is lost for one second or more. The Cool output is forced off when the temperature falls below the Set Point. The Heat output is forced off when the temperature rises above the Set Point.

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 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.

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 IPC controller is a proportional controller with its Heat and Cool outputs time integrated. The rate of change of the output voltages is derived from the difference between the measured and Set Point temperatures.

The steady state magnitude 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 and Cool outputs to change at a rate proportional to the difference between the measured temperature and Set Point temperature. Thusly a large disturbance will cause the output voltage to change at a faster rate than a small disturbance.

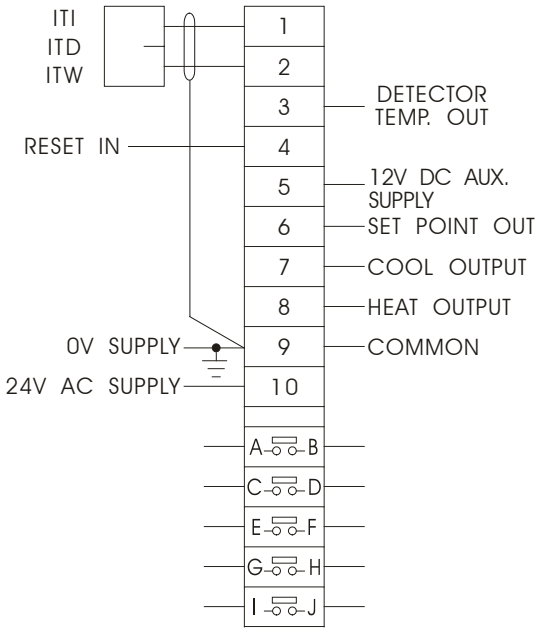
As the system recovers from a disturbance, the difference between the measured and Set Point temperatures will decrease and thus reduce the rate of change of the output voltage. This occurs when the difference between the measured and Set Point temperatures is 50% of the PB setting (eg. with PB set at 2%, the rate of approach will start backing off at 1%).

Relay Terminal Connections

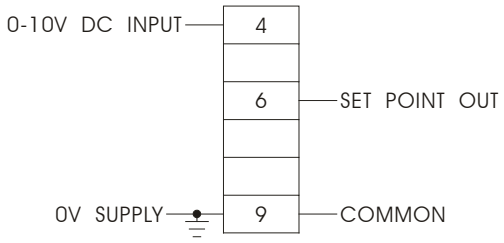
Model	Terminal Identification				
	A-B	C-D	E-F	G-H	I-J
4005	COOL 1	COOL 2	COOL 3	COOL 4	COOL 5
4011	HEAT 1	COOL 1			
4014	HEAT 1	COOL 1	COOL 2	COOL 3	COOL 4
4022	HEAT 2	HEAT 1	COOL 1	COOL 2	
4023	HEAT 2	HEAT 1	COOL 1	COOL 2	COOL 3
4032	HEAT 3	HEAT 2	HEAT 1	COOL 1	COOL 2
4041	HEAT 4	HEAT 3	HEAT 2	HEAT 1	COOL 1
4050	HEAT 5	HEAT 4	HEAT 3	HEAT 2	HEAT 1

STANDARD CONNECTION

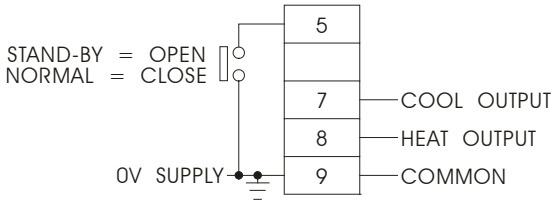
IPC40xx



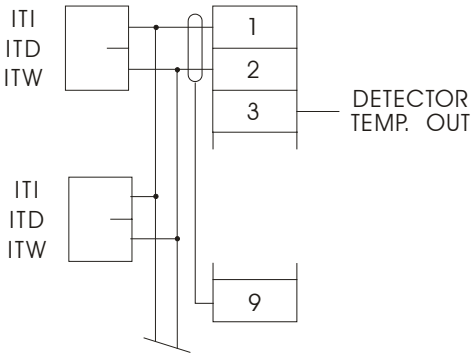
* EXTERNAL RESET AND SET POINT



* STAND-BY



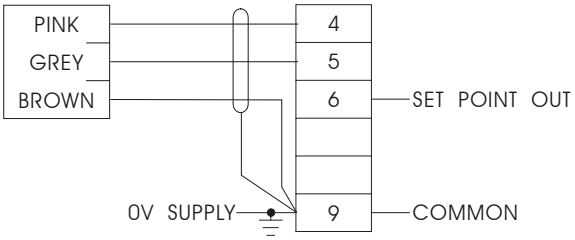
* DETECTOR AVERAGING



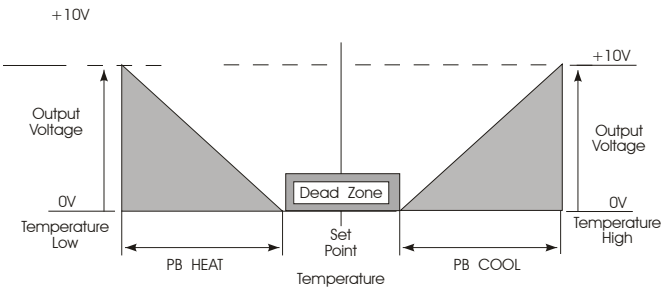
UP TO A MAXIMUM OF 4 DETECTORS

* RESET AND SET POINT FROM INTERNAL SUPPLY

IRA4001



Screened Cable should be used to reduce EMI.



Operation & Control Function

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

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