**Models:**
IPH401d: 1 stage of Humidification and
1 to 4 stages of Dehumidification

# IPH
# Package Humidity Controller

## Specifications

### Power Supply:
- Voltage: 24VAC ±10% @ 50/60Hz
- Power Consumption: 2VA Max

### Inputs:
- 0-10VDC from Humidity Detector
- Reset (0-10VDC)

### Outputs:
- Humidity Out 0-10VDC = 0-100%
- Set Point Out 0-10VDC = 0-100%
- 0-10VDC humidification control output
- 0-10VDC dehumidification control output
- One 12VDC 10mA supply
- One stage of humidification
- Up to four stages of dehumidification
- One N/O voltage free contact per stage (2A max.)

### Terminal Identification:

| | |
|---|---|
| 1 | 24VDC supply |
| 2 | Detector Input |
| 3 | Humidity Out |
| 4 | Reset (0-10VDC) |
| 5 | 12VDC auxiliary supply |
| 6 | Set Point out |
| 7 | 0-10VDC dehumidification output |
| 8 | 0-10VDC humidification output |
| 9 | Common and 0VAC supply |
| 10 | 24VAC supply |

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

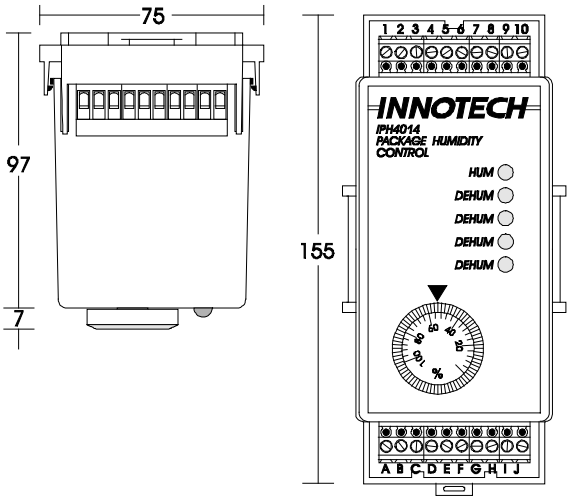
### Temperature Ratings:
Storage: 0-50°C non-condensing
Operating: 0-40°C non-condensing

### 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 humidity controller is designed for use with a humidity detector which has a 0-10VDC output to produce two 0-10VDC outputs and one humidification and up to four dehumidification relay outputs to control humidity in single and multizone air conditioning systems.

The controller's output can be coupled to auxiliary units such as humidifiers, chilled water valves, damper motors, staging relays and signal selectors.

### Features:
- Interface to Building Automation Systems
- Time integrated proportional control action for optimum system performance
- Separate 0-10V DC outputs for humidification and dehumidification
- Separate proportional band adjustment for humidification and dehumidification
- Humidity easily read at controller
- Set Point easily read at controller
- One relay stage of humidification and one to four stages of dehumidification.
- Factory set for most applications resulting in reduced commissioning time
- The INNOTECH enclosure saves space and reduces installation time.
- Wide range of applications.

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**Set Point:**
The Set Point is adjustable over a range of 0-100% via the Set Point pot.

The IPH can be factory modified for external Set Point input via terminal 4. In this mode, an external 0 to 10VDC signal provides a 0 to 100% Set Point.

**Proportional Band:**
The humidification and dehumidification proportional bands are separately adjustable over two ranges:

| | |
|---|---|
| Narrow | 0.2 to 2.0% PB WIDE Link Open |
| Wide | 1.0 to 11% PB WIDE Link Closed (Factory Setting) |

**Ramp:**
The ramping rate of the humidification and dehumidification 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 when the operating point is within the proportional bands.

**Reset**
The Set Point can be reset UP or DOWN by a maximum of 10% by a 10VDC external signal applied to terminal 4. The effect of the Reset input is adjustable from 0 to 10% by varying the RESET pot.

The amount of Reset can be determined by measuring terminal 6 as the RESET pot is adjusted.

**Dead Zone:**
The Dead Zone is variable from 0% to 10% by adjusting the Dead Zone pot. The Dead Zone is centred on the Set Point. A setting of 2% gives a Dead Zone of 1% above and below the Set Point.

**Output Kill:**
The humidification and dehumidification outputs are forced off when power is lost for one second or more. The humidification output is forced off when the humidity is above the Set Point. The dehumidification output is forced off when the humidity is below 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 humidify relay on voltage is approximately 9.5VDC and its off voltage is approximately 0.6VDC. The on and off voltages for the dehumidify relays are spread evenly across the 0 to 10VDC of the dehumidify output. For example, the approximate on and off voltages for two stages are:

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 IPH controller is a proportional controller with its Humidification and Dehumidification outputs time integrated. The rate of change of the output voltages is derived from the difference between the measured and Set Point humidity.

The steady state magnitude of the 0-10VDC Humidification and Dehumidification outputs are proportional to the difference between the measured humidity and the Set Point humidity. When a disturbance occurs in the system, time integration causes the Humidification or Dehumidification output to change at a rate proportional to the difference between the measured humidity and Set Point humidity. 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 humidities will decrease and thus reduce the rate of change of the output voltage. This occurs when the difference between the measured and Set Point humidities is half 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 | | | | |
|---|---|---|---|---|---|
| | Hum 1 | Dehum 1 | Dehum 2 | Dehum 3 | Dehum 4 |
| 4011 | A-B | C-D | | | |
| 4012 | A-B | C-D | E-F | | |
| 4013 | A-B | C-D | E-F | G-H | |
| 4014 | A-B | C-D | E-F | G-H | I-J |

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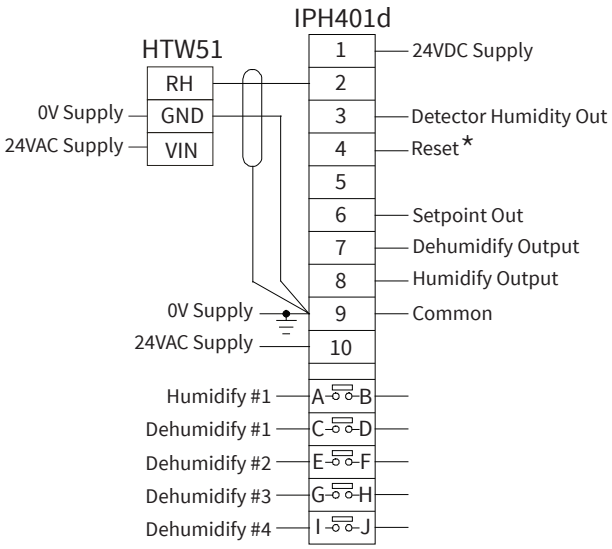
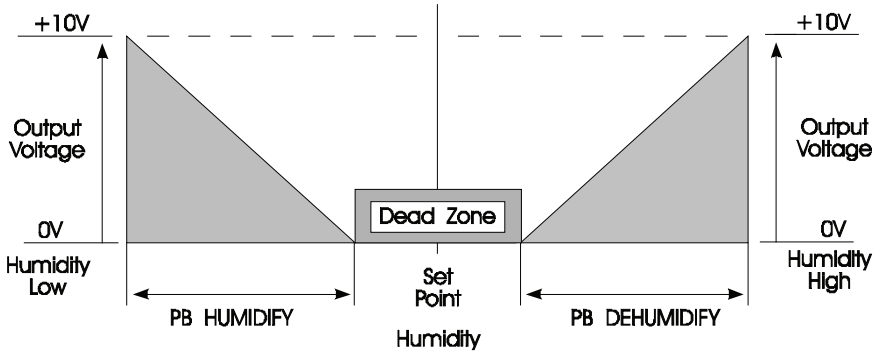
## Standard Connection




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




**Operation & Control Function**

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INNOTECH®

Australian Owned, Designed & Manufactured
by Mass Electronics Brisbane

**Phone:** +61 7 3421 9100 **Fax:** +61 7 3421 9101
**Email:** sales@innotech.com.au www.innotech.com.au

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