

# HumiTherm-c

Composite 'Temperature + Humidity' Controller

Version : RTD Pt100, 3-wire for Temperature  
DC Linear (Voltage) for Humidity



# Operation Manual

This brief manual is primarily meant for quick reference to wiring connections and parameter searching. For more details on operation and application; please log on to [www.ppiindia.net](http://www.ppiindia.net)

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UTILITY PARAMETERS : PAGE-33	
Parameters	Settings (Default Value)
Compressor Control Strategy <b>CPSt</b>	Dry Bulb SP <b>dbSP</b> Dry Bulb PV <b>dbPV</b> (Default : Dry Bulb SP)
Zero Offset for Temperature Value <b>PCOF</b>	-25.0 to +25.0°C (Default : 0.0)
Zero Offset for RH Value <b>rhOF</b>	-25.0 to +25.0% (Default : 0.0)
Range Low <b>rhLo</b>	-199.9 to 999.9 (Refer Table 1) (Default : 0.0)
Range High <b>rhHi</b>	-199.9 to 999.9 (Refer Table 1) (Default : 151.5)

TEMPERATURE PARAMETERS : PAGE-10	
Parameters	Settings (Default Value)
Alarm-1 Band <b>PCAL</b>	0.3 to 25.0°C (Default : 0.5)
Alarm-1 Hysteresis <b>PCHY</b>	0.2 to 10.0°C (Default : 0.2)
Proportional Band <b>PCPB</b>	0.1 to 999.9°C (Default : 5.0)
Integral Time <b>PCIT</b>	0 to 1000 Seconds (Default : 100)
Derivative Time <b>PCdT</b>	0 to 250 Seconds (Default : 25)
Cycle Time <b>PCCT</b>	0.5 to 25.0 Seconds (in steps of 0.5 secs.) (Default : 1.0)

RELATIVE HUMIDITY (% RH) PARAMETERS : PAGE-11	
Parameters	Settings (Default Value)
Alarm-2 Band <b>rhAL</b>	0.3 to 25.0% (Default : 2.0)
Alarm-2 Hysteresis <b>rhHY</b>	0.2 to 10.0% (Default : 2.0)

Parameters	Settings (Default Value)
Proportional Band <b>rhPB</b>	0.1 to 999.9% (Default : 10.0)
Integral Time <b>rhIT</b>	0 to 1000 Seconds (Default : 100)
Derivative Time <b>rhdt</b>	0 to 250 Seconds (Default : 25)
Cycle Time <b>rhCT</b>	0.5 to 25.0 Seconds (in steps of 0.5 secs.) (Default : 1.0)

OP3 FUNCTION PARAMETERS : PAGE-13	
Parameters	Settings (Default Value)
Output-3 Function Selection <b>OP3F</b>	Alarm <b>AL</b> Compressor <b>CP</b> (Default : Alarm)
Compressor Setpoint <b>CPSP</b>	0.0 to 50.0°C or 0.0 to 25.0°C (Default : 45.0 or 0.2)
Compressor Hysteresis <b>CPHY</b>	0.1 to 25.0°C (Default : 0.2)
Compressor Time Delay <b>CDLY</b>	0.00 to 10.00 Min. Sec (in steps of 5 Seconds) (Default : 00.00)

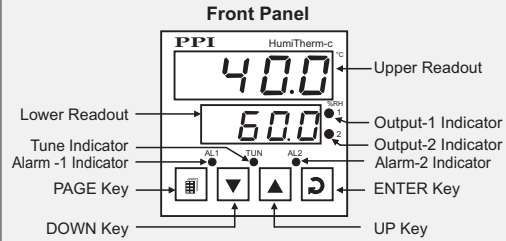
SUPERVISORY PARAMETERS : PAGE-12	
Parameters	Settings (Default Value)
SP Adjustment on PAGE-0 <b>SP</b>	Enable <b>EnbL</b> Disable <b>d5bL</b> (Default : Enable)
Self-Tune Command <b>tUnE</b>	No <b>no</b> Yes <b>YES</b> (Default : No)
Baud Rate <b>bAUd</b>	1200 2400 4800 9600 (Default : 4800)

Parameters	Settings (Default Value)
ID for Temperature Loop <b>PCId</b>	1 to 8 (Default : 1)
ID for %RH Loop <b>rhId</b>	1 to 8 (Default : 2)

COMPRESSOR OPERATION & POWER INDICATION : PAGE-1	
Parameters	Settings (Default Value)
Compressor Operation Mode <b>CPOP</b>	Automatic <b>AUTO</b> Off <b>OFF</b> On <b>On</b> (Default : Auto)
Output Power for Temperature Loop <b>OUT.1</b>	0 to 100.0% (View Only - Non editable)
Output Power for %RH Loop <b>OUT.2</b>	0 to 100.0% (View Only - Non editable)

TABLE-1 RH INPUT CONFIGURATION	
The controller is calibrated for 0 to 5 VDC input for % RH. The transmitter output signal, however, may be any voltage between 0 to 5 VDC (For e.g. 0 to 1 VDC, 1 to 3.6 VDC, 0 to 3.3 VDC etc.). The value for 'Range Low' and 'Range High' parameters must be corresponding to 0 and 5 VDC only. For this, use the following formulae for computing the 'Range Low' and 'Range High' values.	
$\text{Range Low} = \frac{100}{\text{Span}} \times (0 - \text{Signal Low})$	$\text{Range High} = \frac{100.0}{\text{Span}} \times (5 - \text{Signal Low})$
(where; Span = Signal High - Signal Low)	
<b>Example 1</b> Signal Low = 0 VDC, signal High = 1.0 Vdc  $\text{Range Low} = \frac{100.0}{1.0} \times (0 - 0) = \mathbf{0.0}$	<b>Example 3</b> Signal Low = 1.0 VDC, signal High = 3.6 VDC Here, Span = 3.6 - 1.0 = 2.6 VDC  $\text{Range Low} = \frac{100.0}{2.6} \times (0 - 1.0) = \mathbf{-38.5}$
<b>Example 2</b> Signal Low = 0 VDC, signal High = 3.3 VDC Here, Span = 3.3 - 0 = 3.3 VDC  $\text{Range Low} = \frac{100.0}{3.3} \times (0 - 0) = \mathbf{0.0}$	$\text{Range High} = \frac{100.0}{2.6} \times (5 - 1.0) = \mathbf{153.8}$
$\text{Range High} = \frac{100.0}{3.3} \times (5 - 0) = \mathbf{151.5}$	

## FRONT PANEL LAYOUT



### Keys Operation

Symbol	Key	Function
	PAGE	Press to enter or exit set-up mode.
	DOWN	Press to decrease the parameter value. Pressing once decreases the value by one count; keeping pressed speeds up the change.
	UP	Press to increase the parameter value. Pressing once increases the value by one count; keeping pressed speeds up the change.
	ENTER	Press to store the set parameter value and to scroll to the next parameter on the PAGE.

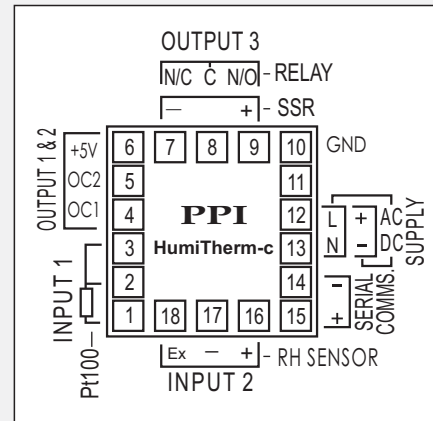
### PV Error Indications For Dry Bulb Temperature (Upper Readout)

Message	PV Error Type
	Over-range (Dry-Bulb Temp. above Max. Range)
	Under-range (Dry-Bulb Temp. below Min. Range)
	Open (Sensor open / broken)

### PV Error Indications For Relative Humidity (RH) (Lower Readout)

Message	PV Error Type
	Over-range (Wet-Bulb Temp. above Max. Range)
	Under-range (Wet-Bulb Temp. below Min. Range)
	Open (Sensor open / broken)
	Either Dry Bulb Temp. is below -20.0°C or above 162.0°C. The error may also occur if Wet Bulb depression is more than 60.0°C.

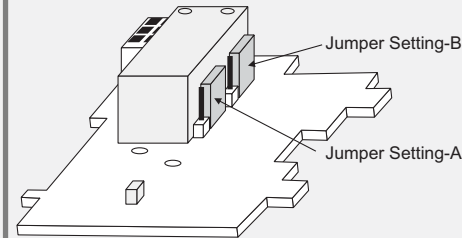
## ELECTRICAL CONNECTIONS



## JUMPER SETTINGS

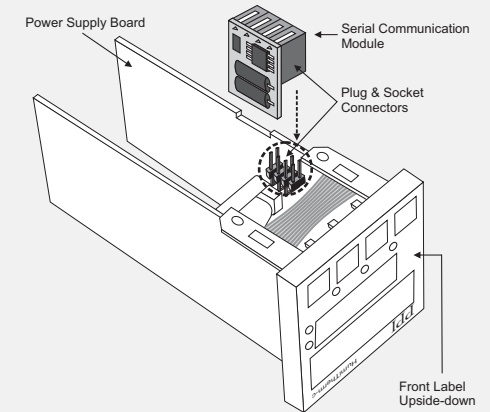
### OUTPUT-3

Output Type	Jumper Setting - A	Jumper Setting - B
Relay		
SSR Voltage Pulses		

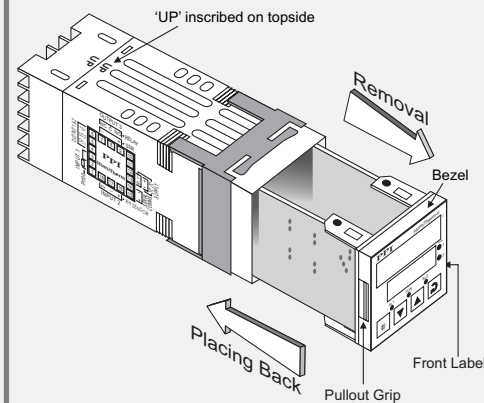


## MOUNTING DETAILS

### SERIAL COMM. MODULE

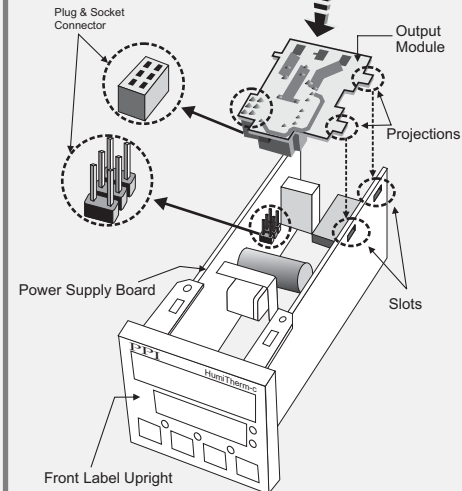


## ENCLOSURE ASSEMBLY



## MOUNTING DETAILS

### OUTPUT-3 MODULE



## WIRING CONNECTION

### RH SENSORS

