

(H3) MICROPROCESSOR BASED TEMPERATURE / HUMIDITY CONTROLLER



MODEL WISE DESCRIPTIONS :

SR.NO.	MODEL	DESCRIPTION
9.7	HTC - 3000	Microprocessor based Temperature & %RH PID+On/Off controller (2 inputs and 4 outputs) with RTC, Printer port, RS-485/RS-232 Serial port and Extra 128KB memory bank for HVAC application (Scan Display)
9.8	HTC - 3002	Microprocessor based Temperature & %RH PID + On/Off with 10 steps cyclic controller (2 inputs and 4 outputs) with RTC, Printer port, RS-485/RS-232 Serial port and Extra 128KB memory bank for cyclic control in HVAC application (Scan Display)

DESCRIPTION :

Libratherm offers Microprocessor based Humidity and Temperature Controller Model HTC-3000 and HTC-3002. The later model offers cyclic control application, where temperature and humidity levels can be programmed with respect to the time in a cyclic manner. Two programs each of 10 steps can be provided each for temperature and humidity control. The control logic and hold back feature ensures synchronized control of both the parameters.

The controller accepts input from the standard (Pt-100) temperature sensor and from the capacitive type RH sensor or temperature/humidity transmitter. The readings are displayed in the range 0.0-100.0°C and 0.0 - 100.0% RH respectively on common 4 digit 7-segment Red LED display, which toggle between the two process values at the regular programmed interval of time. The unit of oC or rH is simultaneously indicated on two digit display.

Since the controllers are basically designed for the stability chambers, the accurate control of temperature and humidity is achieved by operating the air heater and the boiler heater in the PID control action. and the compressor is operated in ON/OFF action with time delay facility. Since the compressors are not required to be ON at certain level of temperature, the user selectable mode is provided to program the compressor operation in

AUTO, Continuous ON or Continuous OFF mode. To de-humidify the system, an extra ON/OFF output can also be optionally provided. The control output are in the form of SSR drivers of (0 10) VDC pulse to control the Air heater, boiler heater and compressor, dehumidifier.

In addition to this the instrument has many other useful features such as Separate display to indicate Real time clock / calendar. In-built storage facility, which can be retrieved on demand or can be down loaded on to a computer or on a printer for hard copy via the provided printer port. The storage capacity depends on the logging time. MAX. 480 records can be stored which can be printed in OFF line mode. For larger storage, additional memory card increases the capacity up to 3000 records.

The controllers are ready with the serial communication port RS 232 / RS 485 for interfacing to the computer for data logging and storage.

Specially designed window based **E-Chamber Software** does the on line data logging and plot the online / offline graph on the PC and also allows user to enter the set points and control parameters through PC and the controller. (i.e. bi-directional communication). Two level Pass Word protected (operator & supervisory) for unauthorized alteration of the set parameters and stored data is also provided.

FEATURES :

- Microprocessor based design.
- Separate display for Temperature/RH, Set point and Channel name and real time clock.
- Easy front panel keyboard programmable.
- Independent 4 control outputs for Temperature/%RH control.
- Digital input for water level, door switch etc..
- PID or ON/OFF control action for Air heater, Boiler heater and ON/OFF control action for Compressor with programmable time delay.
- Direct dot matrix parallel / centronics printer output for EPSON printer model LX-300 and LX-300+ or Equivalent.
- RS-485 or RS-232 PC computer interface.

APPLICATION :

- Environmental Test Chambers
- Walk In Chambers
- BOD Incubator etc

TECHNICAL SPECIFICATIONS:

No. of Inputs	2 (one each for Temperature and Humidity).
Input	Temperature and %RH sensor / Transmitter, (Pt-100 / Capacitance based).
Range	-80.0 to 100.0 °C /200.0 °C and 0.0 to 100.0 %RH.
Resolution	0.1 °C / %Rh
Accuracy	Better than $\pm 0.1\%$ for Temperature and $\pm 2\%$ for RH.
Display	2 digit 0.5" Red 7-segment LED display for unit °C or rH 4 digit 0.5" Red 7-segment LED display for process value. 4 digit 0.5" Red 7-segment LED display for set value. 6 digit 0.3" Red 7-segment LED display for RTC.
Tuning	Manual tuning of PID values.
Control Action	PID and / or On/Off for Heat, Cool, Humidity & De-humidity.
Open Sensor Indication	Display shows Flt-1 or Flt-2 and outputs will be turned OFF.
Settings	Using front panel membrane keyboard to set the various values.
No. Of Profile	Single Program for each °C and %RH (Model HTC-3002)
Ramp Soak Steps	1 to 10 for cyclic control (Model HTC-3002)
Time per Step	1 to 540 mins. (9 Hr. per step). Two or more steps can be combined for longer time duration. (Model HTC-3002)
Program Hold Facility	Manual Hold or Auto Hold (Hold back feature for guaranteed Ramp/Soak and to synchronize the temperature / humidity control). (Model HTC-3002)
Memory Backup	Retention of PID and set values in the non-volatile memory in the event of power failure.
Event Output	2 Extra Relay outputs can be used as High/Low Alarms or Day Light Effect (Relay changeover contacts rated for 5A @ 230VAC)
Control Output	DC pulses to drive external SSR for Air Heater, Boiler Heater, Compressor and High Alarm Buzzer.
External Input	Logic input for water level & door switch.
Data Logging	Real Time with programmable log and storage time.
Data Storage	2K to 128K memory bank
Interface	Serial (RS232/RS485) for PC interface with Window based software on Modbus ASCII Protocol
Supply	230VAC / 110 VAC $\pm 10\%$ (10VA), 50/60Hz or 24VDC @ 500mA.
Size	192 x 96 x 200 mm.
Panel cut out	188 x 92 mm +/- 0.5 mm.
Enclosure	Metal Powder coated.

ORDERING INFORMATION

MODEL	INPUT (°C) (A)	RANGE (°C) (B)	INPUT %RH (C)	RANGE %RH (D)
HTC-3000	(0-1)VDC (A1)	0.0 to 65.0 (B1)	(0-1)VDC (C1)	0.0 to 100.0 (D1)
HTC-3002	Pt-100 (A2)	0.0 to 199.9 (B2)	HS220(1-3)VDC (C2)	0.0 to 199.9 (D2)
	(4-20) mA (A3)	0.0 to 60.0 (B3)	(4-20) mA (C3)	Other (D3)
	Other (A4)	Other (B4)	(1-4)VDC (C4)	
			Other (C5)	

OUTPUT (DC PULSE) (E)	EVENT RELAY (F)	REMOTE INPUT (G)	COMM. PORT (H)	SUPPLY (I)
Air Heater (E1)	Day Light Effect (F1)	Water Level (G1)	RS 232 (H1)	230VAC (I1)
Boiler Heater (E2)	Other (F2)	Door Switch (G2)	RS 485 (H2)	110VAC (I2)
Compressor (E3)	None (F3)	Tune Lock (G3)	Printer (H3)	
Buzzer (E4)		Other (G4)	Extra storage (H4)	
Dehumidify (E5)			None (H5)	
Other (E6)				

EXAMPLE:

MODEL	A	B	C	D	E	F	G	H	I
HTC-3000	A 2	B 1	C 4	D 1	E1, E2, E3, E4	F1	G1, G2, G3	H 5	I 1

This is Temperature / Humidity controller Model HTC-3000 with Pt-100 sensor input for temperature having range (0.0-65.0)°C and Sensor input for humidity as (1-4)VDC having range (0.0-100.0)%RH with DC Pulse output for Air Heater, Boiler Heater, Compressor & Buzzer and Event output Relay for Day Light Effect and Remote input as Water Level, Door Switch & Tune Lock and Operating on 230VAC supply.

When cyclic control is desired please specify model as HTC-3002. For further details please contact us.