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ISO 9001
BUREAU VERITAS
Certification

Certificate No. IND86208

T + RH Controller for HVAC and AHU
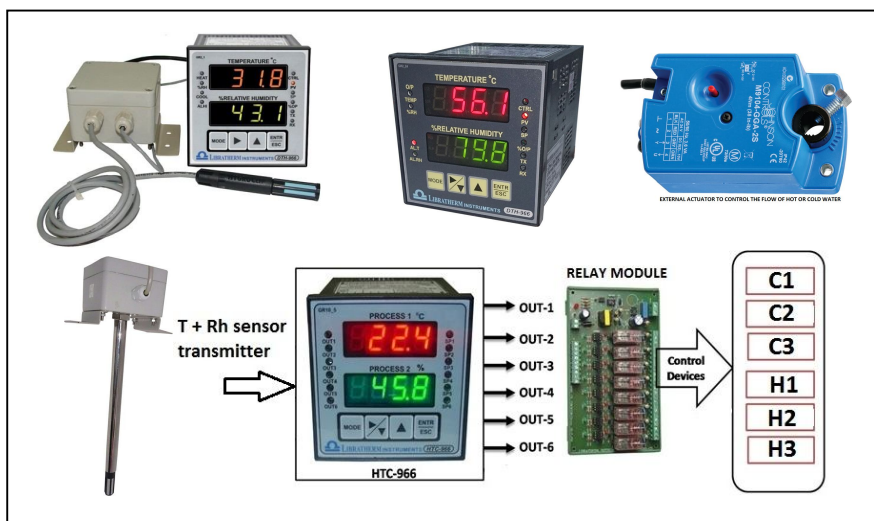
Model Wise Description:

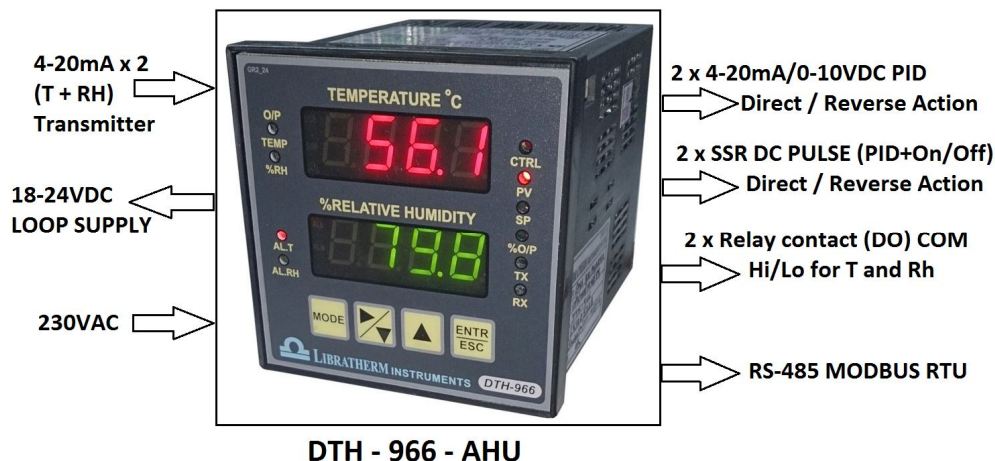| Model	Product Description
DTH-966-AHU	Micro controller based PID / On-OFF Temperature & %Rh controller. Two input and two control outputs with alarms. (see block diagram below)
HTC-966-AHU	Micro controller based On-OFF Temperature & %Rh controller, Two input and two to six control outputs to control Condensers and Heater Banks.

Description:

Libratherm offers PID controller model DTH-966-AHU for controlling temperature (T) and relative humidity (Rh) for the AHU and other similar HVAC applications. For the proper functioning of the Air Handling unit, it is required to monitor the T and Rh of the Air being supplied to the room or the hall. The T and Rh values are to be compared with the desired set values and based on the error between the process values and set values the operation of the hot/cold water valves/damper Actuators, heaters, are controlled to maintain the T and Rh in the Air flow.

This model DTH-966-AHU accepts inputs from standard T + RH sensor or transmitter (as given in the table below). The instrument simultaneously displays the temperature in the range -40.0 to 60.0^{o}C and relative humidity in the range of 0.0 to 100.0% RH. The PID outputs are available for controlling temperature and %RH in the form of 4-20mA and /or in the form of DC pulses. Common or individual High and Low alarm output for Temperature and humidity can be provided as per user's requirement. To meet specific AHU control application, the 3 way valve can be operated by 4-20mA proportional PID in direct action to control the temperature and for controlling RH, the DC pulse output is available, which can be used to control AC or DC operated solenoid valves or to control the heating for evaporation of moisture using Libratherm make - single or three phase thyristor control. RS485 serial port is available for interfacing to DCS or PLC.

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1

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Features:

- ❖ Microcontroller based design.
- ❖ Elegant appearance, easy to operate and compact in size.
- ❖ Highly accurate and sturdy in operation.
- ❖ User programmable settings
- ❖ Dual display for simultaneous indication of T and RH.
- ❖ Field proven Algorithm, tested successfully for various AHU / HVAC control applications.

4-20mA x 2 (T + RH) Transmitter

18-24VDC LOOP SUPPLY

230VAC

2 x 4-20mA/0-10VDC PID Direct / Reverse Action

2 x SSR DC PULSE (PID+On/Off) Direct / Reverse Action

2 x Relay contact (DO) COM Hi/Lo for T and Rh

RS-485 MODBUS RTU

DTH - 966 - AHU

Technical Specifications:

Model	DTH- 966-AHU
Input	4-20 mA from T + Rh transmitter (both the inputs can be derived from Libratherm make (T + Rh) transmitter model HYGROTX-3000 /HTX-3000 / HTX-220 or from any other 3rd party similar transmitter
Range	-40.0°C to 60.0°C or 0.0°C to 60.0°C for temp. & 0.0 to 100.0 % for RH. (Programmable Span Hi and Span Lo)
Resolution	0.1°C for Temp. and 0.1 % for RH
Accuracy	+/- 0.1°C for Temp. and + / - 0.1% for RH.
Display	4-digit 0.5″ Red 7-segment display for Temp. in °C. 4-digit 0.5″ green 7-segment display for RH in %. Front Panel LED indications for Control outputs and alarms.
Control Action (Direct/Reverse)	PID - User selectable direct and reverse action. (In direct action the control output increases as the process value increases towards the set value and In reverse action the control output decreases as the process value increases towards the set value)
Control Output	a) Dual 4-20 mA or 0-10VDC for T and RH control b) Dual DC pulse (0 to 12)VDC - for T and RH (PID + On-Off)
Control settings	Set points PID and On-Off hysteresis values for T and Rh are individually programmable.
Alarm settings	High and Low settable for each T and RH with programmable Hysteresis.

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2

Alarm Outputs	2 sets of relay changeover contacts – one each for T and RH
Tuning	Manual tuning of PID values.
Memory Backup	Retention of PID and Set values in the built in non-volatile memory in case of power failure and automatic re-execution of control on power resumption.
Serial Interface (Optional feature)	Two wire RS485 on Modbus RTU Protocol for PC/DCS/PLC interface (in slave mode with user programmable ID).
Supply	230VAC +/- 20%, 50/60Hz.
Size	96 x 96 x 110 mm.
Panel Cutout	92 x 92 mm. +/- 0.5 mm.
Enclosure	ABS plastic with polycarbonate front graphic.

| Model	HTC - 966-AHU
Input	4-20 mA from T + Rh transmitter (both the inputs can be derived from Libratherm make (T + Rh) transmitter model HYGROTX-3000 /HTX-3000 / HTX-220 or from any other 3rd party similar transmitter
Range	-40.0^{o}C to 60.0^{o}C or 0.0^{o}C to 60.0^{o}C for temp. & 0.0 to 100.0 % for RH.
Resolution	0.1^{o}C for Temp. and 0.1 % for RH
Accuracy	+/- 0.1^{o}C for Temp. and + / - 0.1% for RH.
Display	4-digit 0.5″ Red 7-segment display for Temp. in ^{o}C. 4-digit 0.5″ green 7-segment display for RH in %. Front Panel LED indications for Control outputs and alarms.
Control Action	On-Off with programmable Hysterisis
Control Output	2 to 6 DC pulse to drive external relay card.
Control settings	Set points and On-Off hysteresis values for T and Rh are individually programmable.
Output / Set point Indication	Front panel LED indication (C1,C2,C3 for condenser and T1,T2,T3 for Heaters and Set point indication SP1 to SP6)
Memory Backup	Retention Set values in the built in non-volatile memory in case of power failure and automatic re-execution of control on power resumption.
Serial Interface (Optional feature)	Two wire RS485 on Modbus RTU Protocol for PC/DCS/PLC interface (in slave mode with user programmable ID).
Loop Supply	24VDC +/-10% for external T + RH transmitter
Supply	230VAC +/- 20%, 50/60Hz.
Size	96 x 96 x 110 mm.
Panel Cutout	92 x 92 mm. +/- 0.5 mm.
Enclosure	ABS plastic with polycarbonate front graphic.

Note : Technical specifications are subject to change due to continuous product upgradation. For any special requirement please contact us.

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3

T + RH Sensor / Transmitter and Range Selection Table:

(These can be used with the above controllers)

Sensor / Transmitter	A1	A2	A3
Model	HYGROTX-3000	HTX-3000	HYGRO CLIP
Type	Transmitter	Transmitter	Sensor
Make	Libratherm	Libratherm	Rotronic – Swiss make
Local Display	Not available	Available	Not available
Temp. Sensor	Rotronic /IST make	Rotronic / IST make	In-built
Supply	18-24VDC	18-24VDC	(5-24) VDC
%Rh O/P	4-20mA	4-20mA	0 TO 1 VDC
% Rh Range	0 to 100%	0 to 100%	0 to 100%RH
Accuracy	+/-1.5% @ 23°C	+/-1.5% @ 23°C	+/- 1.5 %RH @23 ^{o}C
Temp. O/P	4-20mA	4-20mA	0 to 1 VDC
Temperature	-40 to 60°C	-40 to 60°C	-40 to 60°C
Accuracy	+/- 0.5%	+/- 0.5%	+/- 0.5%
Std. Cable Length	1 meter with sensor	1 meter with sensor	2 meter
Transmitter Enclosure	ABS IP 65	ABS IP 65	--
Transmitter Size	85 x 85 x 55 mm.	85 x 85 x 55 mm.	--
Sensor Size	15 x 140 mm.	15 x 140 mm.	15 x 140 mm.

Heater power controller for Air Heating system (suitable for 3KW to 300KW heater bank)
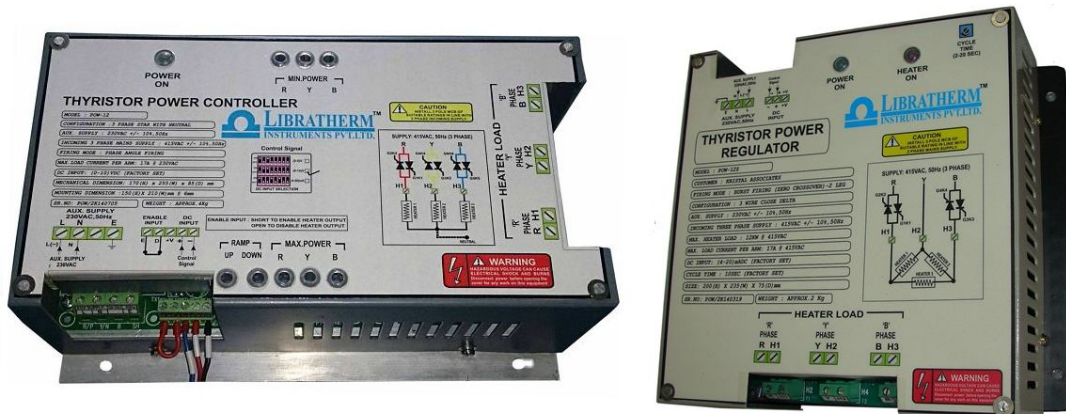
THREE PHASE HEATER POWER CONTROLLER (PHASE ANGLE CONTROL AND ZERO CROSS OVER CONTROL
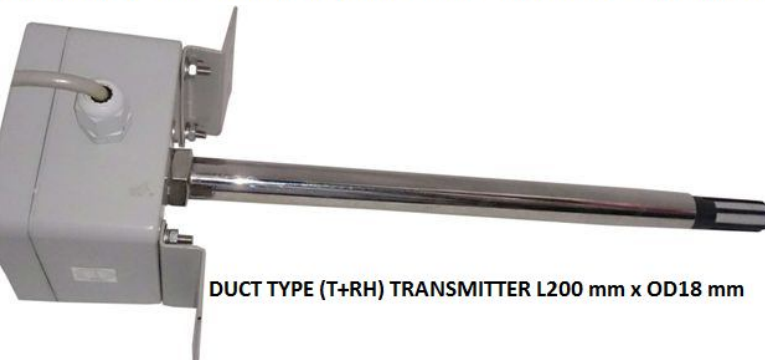
DUCT TYPE (T+RH) TRANSMITTER L200 mm x OD18 mm

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4