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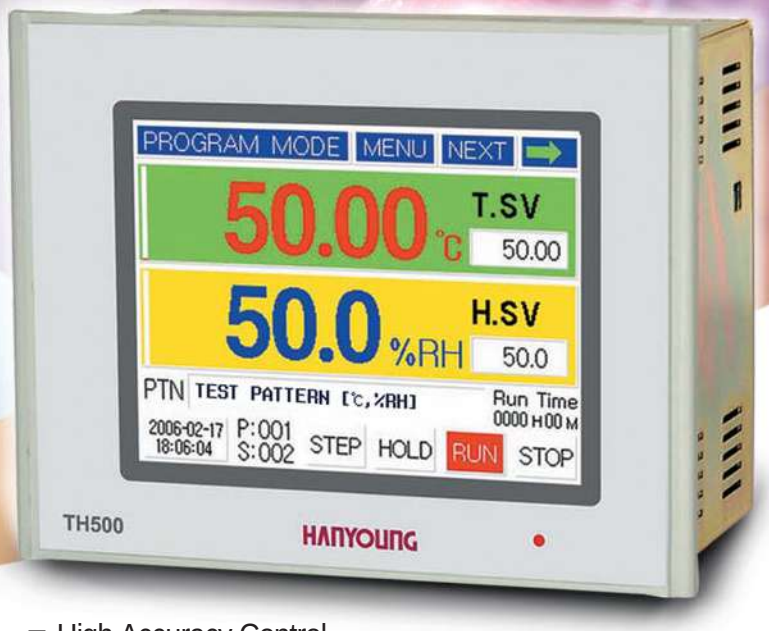
Programmable
Temperature & Humidity Controller
TH500



- High Accuracy Control
- History management
- 300 pattern setting
- Temperature & Humidity PID group
- Convenient communication data management
- Various output type

HANYOUNG NUX

Programmable
Temperature & Humidity Controller

CONVENIENT SETTING BY TOUCH PANEL TYPE

FEATURES

- ■ High Accuracy Control
- ■ History management
- ■ 300 pattern setting
- ■ Temperature & Humidity PID group
- ■ Convenient communication data management
- ■ Various output type(20 points)

Input

Input signal	Temperature	R.T.D=100 Ω, DIN43760
	Humidity	4 – 20 mA dc(1 – 5 V dc)
	Sampling time	500 ms
Measuring range	Temp. range	-100.00 ~ 200.00 ℃
	Humi. Range	0.0 ~ 100.0 %RH
Accuracy	Temp. side	±0.1 % (Max. range)
	Humi. side	±1 % (Max. range)
Contact input(D/I)		8 points(4 points×2), 8V dc 10 mA Max
Allowable line resistance	R.T.D	10 Ω max/1 line
Input resistance	DV voltage input Approx.	1Mω(1 V dc)
Allowable signal impedance	DV voltage input Approx.	2kΩ max

Communication

Interface Standard	EIA-RS232, 485, USB V1.1	
Max. connection lines	RS232	1:1
	RS485	1:32(Address 1~999)
Communication type	RS232	Full Duplex
	RS485	4 lines: Full Duplex / 2lines: Half Duplex
Synchronization	RS232/485	Synchronous mode
Communication distance	USB V1.1	Approx. 10 m
	RS232	Approx. 10 m
	RS485	Approx. 1.2 km
Communication speed (Kbps)	USB V1.1	Approx. 12 Mbps
	RS232/485	9.6 / 19.2 / 38.4 / 57.6 / 115
Data Length	RS232/485	7/8 Bits
Parity Bit	RS232/485	NONE / EVEN / ODD
Stop Bit	RS232/485	1 / 2 Bits
Protocol	USB V1.1	Bulk Mode
	RS232/485	ECLINK / ECLINK+CRC
Response Time	RS232/485	0~9999 (×10.0μs)

Output

Contact output (D/O)	Relay contact 12 points	N.O. : 30 V dc 5 A Max. 250 V ac 5 A Max.
		N.C. : 30 V dc 1 A Max. 250 V ac 2 A Max.
	Open collector 8 points	24 V dc 300 mA Max.
Control output	S.S.R	ON : 24 V dc Pulse voltage(Resistive load Min. 800 Ω)
		OFF : 0.1 V dc Max. Cycle time : 1 ~ 10.00 sec
		Output limit : 0.0 ~ 100.0 %
		Resolution : 0.1 % or 10 ms whichever is smaller
	Current output	4 – 20 mA dc (3.2 – 20.8 mA dc)
		Renewal time : 500 ms
		Resistive load : 600 Ω max.
		Output limit : -5.0 ~ 105.0 %
Retransmission output	Current output	4.0 – 20.0 mA dc
	Renewal time	500 ms
	Resistive load	600 Ω max.
	Output limit	-5.0~105.0 %
	Output type	Process value(PV), Set value(SV), Output volume(MV) selectable
	Accuracy	S.S.R control output : ±0.1% of F.S
		Resolution : Approx.1,000
		Current control output : ±0.025 % of F.S
		Resolution : Approx. 4,000

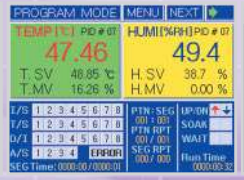
Operation Environment

Ambient temperature	0 ~ 50 ℃
Ambient humidity	20 ~ 90 %RH (No condensation)
Storage temperature	-25 ℃ ~ 70 ℃
Storage humidity	5 ~ 95 %RH (No condensation)
Insulation resistance	20 MΩ Min.(Beween 1st – 2nd – Ground, 500 V dc)
Dielectric strength	2500 V ac(Between 1st – 2nd – Ground), 1 minute
Vibration resistance	10 – 55 Hz, Width 0.75 mm, 3 directions 4 times, 5 minute/cycle
Shock resistance	147 m/s², 3 directions 3 times
Dimensions	183(W)×144(H)×94(D)
Weight	Approx. 2.35 kg(in packing condition)

Operation screen

After you finish to connect & turn on the power, The operating screen will be shown as below. Select a proper screen among 3 types.

The 1st Operation screen

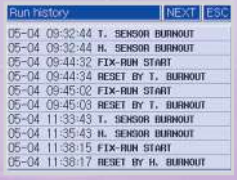


The 2nd Operation screen

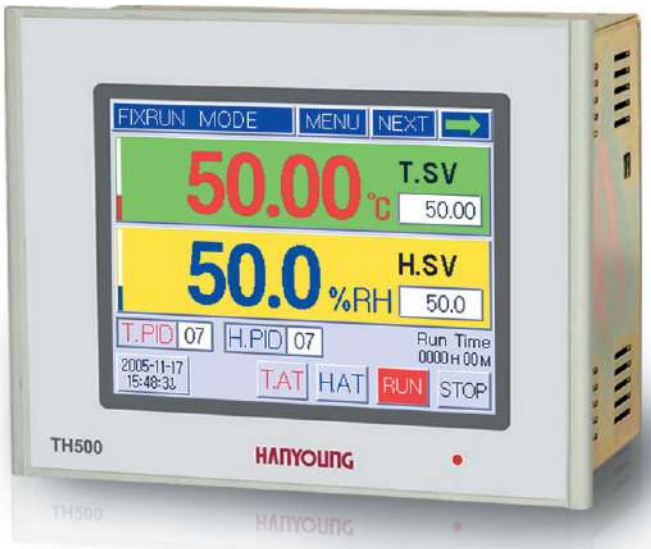
Graph display screen

Error Display screen

The indication of errors through sensor disconnection and external D/I is displayed in the operating record indication screen.



Operating record screen



Supply voltage

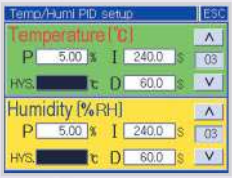
Power supply : 100 ~ 240 V a.c.
Frequency : 50 ~ 60 Hz
Power consumption : 20 VA

Display

Screen standard : Color STN LCD : 115.17 × 86.37 mm
Number of Pixels : 320*240 Pixel, 256 Colors
Back light : CCFL
Life of back light : Approx. 20,000hrs.
Touch type : 4 wire resistive touch screen
Language : English

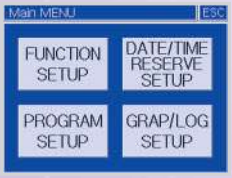
PID setting group

The TH500 is equipped with the total 16 PID ZONEs. As shown in the chart below, the four temperature zones and four humidity zones are combined with each other.



Manu screen

Menu screen is consist of function setting menu, system setting menu, program setting menu and convenient to set.



Function setting menu

System setting menu

Program setting menu

Contact input(D/I) & Contact output(D/O)

Contact input is consist of 8 points and indicated in English. Also, contact output is consist of 20 points (Relay 12 points / Open collector 8 points).
The contact output can appoint an inner signal output, time signal, alarm output, output by basic operating, increase, maintenance or decrease of temp. and humi and output of each section.

Function

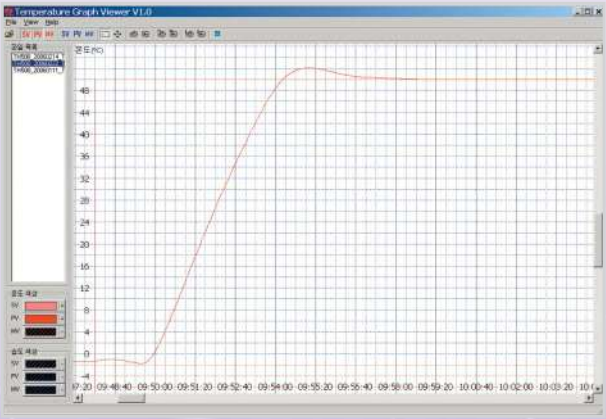
Measuring input	Bias	Temperature 1 point : -100.00 ~ 100.00 ℃ Humidity 1 point : -100.0 ~ 100.0 %RH
	Scaling	DC voltage(V dc) : According to convert range
	Input filter(LPF)	2 ~ 180 second
Control action	Pattern	300 Pattern
	Segment	6,000 Segment(100 segment / 1 pattern)
	P.I.D Group	16 group(Temp. 4 zone × Humi. 4 zone)
	Auto tuning	According to set value, auto tuning is operating
	Proportional band	0.00 ~ 100.00 % (In case of 0.00 %, ON/OFF control)
	Integral time	0.0 ~ 6,000 sec(0 sec. = OFF condition)
	Derivative time	0.0 ~ 6,000 sec(0 sec. = OFF condition)
	ON/OFF control	Proportional Band (P) is 0
	Direct/Reverse action	Select Direct or Reverse action in control output
	ON/OFF Hysteresis	0.1 ~ 300.0 (℃) (In case of Humidity, Temperature or Humidity or conversion value)
	Fuzzy	Select ON/OFF
Retransmission output	Signal	Process value(PV), Set value(SV), Manipulated Value(MV) selectable
	Scaling	Auto scaling : 4 ~ 20 mA (dc)
Alarm	Setting alarm	System alarm : 4 points, *Setting range : -0.1 ~ 100.0 % 4 points * pattern, ON/OFF selectable for each segment
	Type of alarm	High / Low deviation alarm etc. 20 types of alarms
	Process alarm	Temperature : -100.00 ~ 200.00 ℃ Humidity : 0.0 ~ 100.0 % RH
	Deviation alarm	Temperature : -300.00 ~ 300.00 ℃ Humidity : -100.0 ~ 100.0 % RH

Pattern setting

Set a segment for each pattern as below.

Graphic screen display

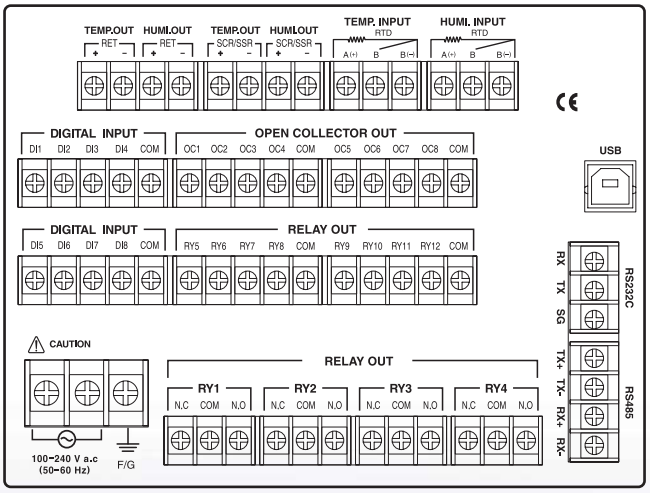
Because all saved Data file is in text mode, you can see the content of saved data file with any editor, word-processor or Excel.



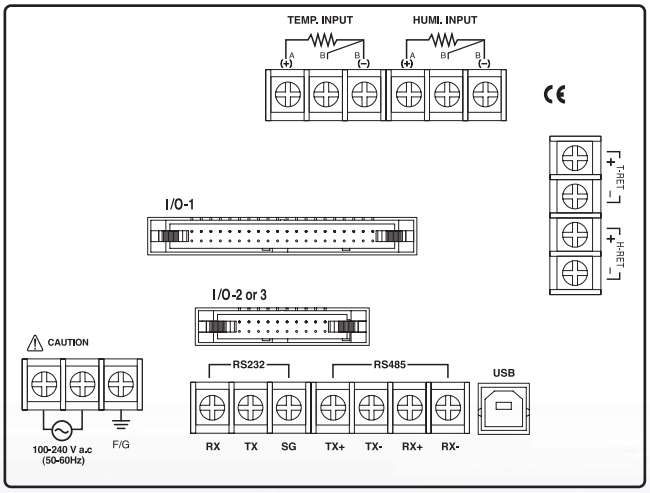
Graphic display screen

● Connection Diagram

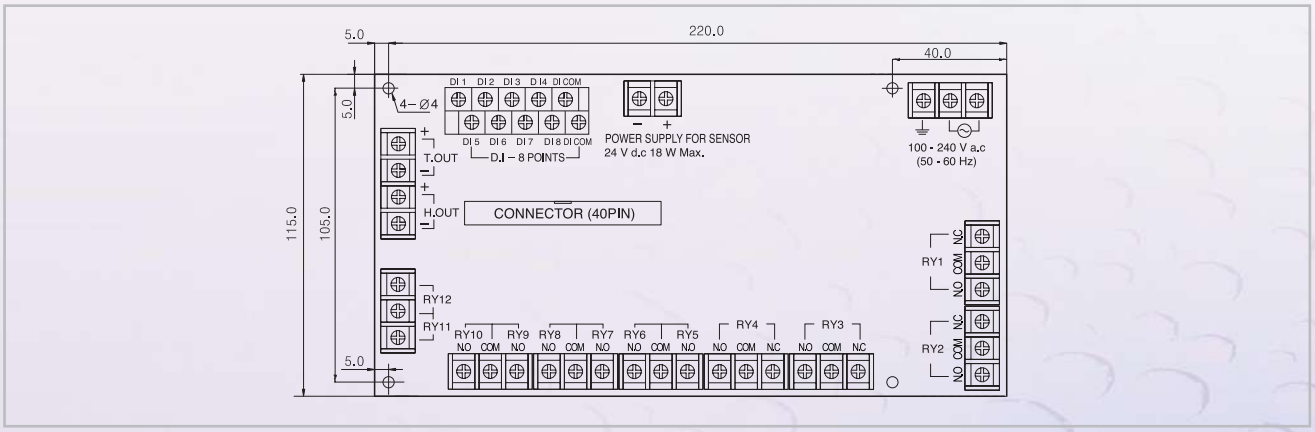
• UNIT BODY



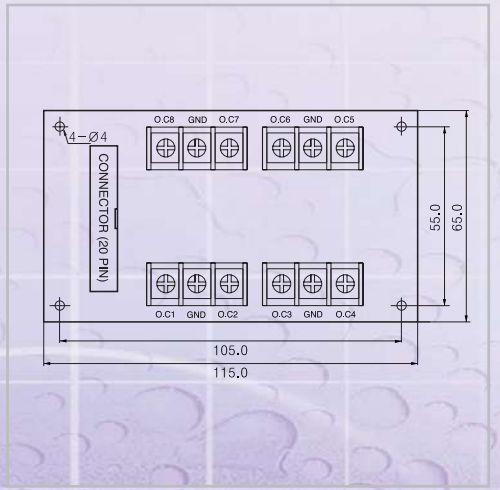
• SEPARATE BODY



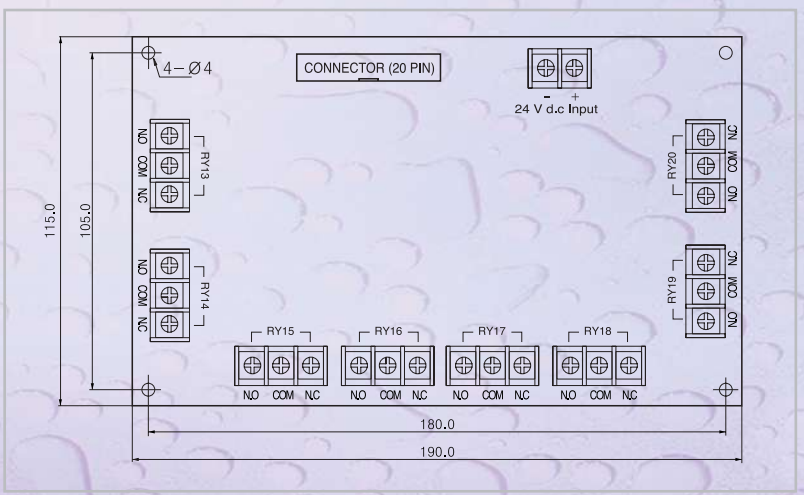
• SEPARATE BODY I/O BOARD 1

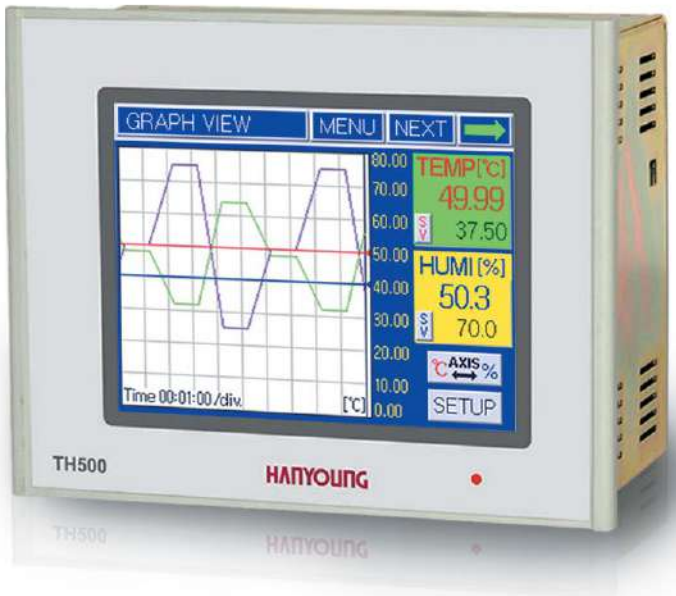


• SEPARATE BODY I/O BOARD 2



• SEPARATE BODY I/O BOARD 3





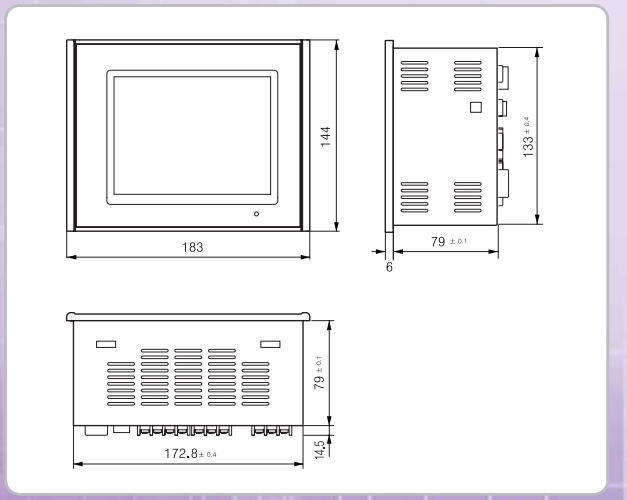
● Approval Standards

Safety : UL61010 (Under process)
CE : EN61010-1 (Under process)

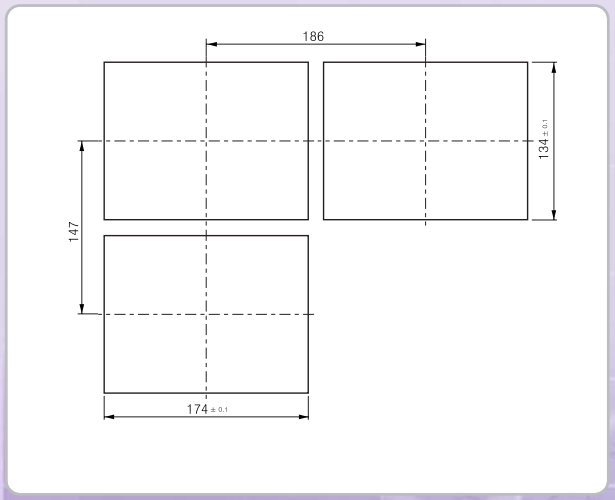
● Model and Suffix code

Model	Suffix code			Description
TH500	□	□	□	TEMPERATURE-HUMIDITY PROGRAMMABLE CONTROLLER
Type	N			None
	1			UNIT BODY Sensor input : Temperature (Pt100Ω / 0 ~ 5 V dc) Humidity (Pt100Ω / 0 ~ 5 V dc) Digital input (DI) : 8 points Control output : Temperature (SCR/SSR 1 point), Humidity (SCR/SSR 1 point) Retransmission : Temperature (4 ~ 20 mA dc 1 point), Humidity (4 ~ 20 mA dc 1 point) Contact output : Relay (1a1b) 4 points, Relay (1a) 8 points Transistor output : Open Collector 8 points COMMUNICATION : RS232C, RS485, USB
	2			SEPARATE BODY Sensor input : Temperature (Pt100Ω / 0 ~ 5 V dc) Humidity (Pt100Ω / 0 ~ 5 V dc) Retransmission : Temperature (4 ~ 20 mA dc 1 point) Humidity (4 ~ 20 mA dc 1 point) Communication : RS232C, RS485, USB
Option		N		None
		1		I/O BOARD 1 SMPS (24 V dc, 18 W) + DI 8 points + RELAY (1a1b : 4 + 1a : 8) 12 points
		2		I/O BOARD 2 O.C 8 points
		3		I/O BOARD 3 Relay (1a1b) 8 points I/O BOARD 1 + I/O BOARD 2
		4		SMPS (24 V dc, 18 W) + DI 8 points + Relay (1a1b : 4+1a 8) 12 points + O.C 8 points I/O BOARD 1 + I/O BOARD 3
		5		SMPS (24 V dc, 18 W) + DI 8 points + Relay (1a1b 4+1a 8) 12 points 12 points + Relay (1a1b) 8 points
Communication			N	None
			1	ETHERNET (Preparing)

● Dimension (Unit : mm)



● Panel cutout (Unit : mm)



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All specifications are subject to change without prior notice, and when you place order, please consult HANYOUNG NUX CO., LTD.

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