Digital temperature controller

HD6

INSTRUCTION MANUAL

Thank you for purchasing Hanyoung Nux products. Please read the instruction manual carefully before using this product, and use the product correctly.
Also, please keep this instruction manual where you can view it any time.

HANYOUNGNUX CO.,LTD
28, Gilpa-ro 71beon-gil, Michuhol-gu,
Incheon, Korea TEL : +82-32-876-4697
http://www.hanyoungnux.com

MA0608KE210429

Safety information

Please read the safety information carefully before the use, and use the product correctly.
The alerts declared in the manual are classified into '**DANGER**', '**WARNING**' and '**CAUTION**' based on its importance

⚠ **DANGER**	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
⚠ **WARNING**	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
⚠ **CAUTION**	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or properties damage

⚠ DANGER

- The electric shock may occur in the input/output terminal so please never let your body and/or conductive substance to be contacted by the input/output terminal.

⚠ WARNING

- Failure or abnormality of this product may lead to a serious accident. In this case, install an appropriate protection circuit outside.
- In case of use other than the method specified by the manufacturer, loss may occur.
- To prevent damage and breakdown of this device, supply the power voltage appropriate to the rating.
- There is a risk of electric shock, so use this product while it is installed on the panel while it is energized.

⚠ CAUTION

- The contents of this manual are subject to change without prior notice or notice.
- Check whether there is any damage or abnormality in the product during transportation.
- Use in a place where vibration or impact is not applied directly to the body.
- Use in a place free from water, oil, chemicals, steam, dust, salt, iron, etc.
- Avoid places where inductive obstacles are large and static electricity and magnetic noise are generated.
- The characters on the display may not be visible in outdoor sunlight or in a brightly lit indoor environment.
- For thermocouple input, use a prescribed compensation wire. (In case of using general conductor, temperature error occurs.)
- In the case of RTD input, use one with a small lead wire resistance and no difference in resistance between three wires.
- Separate the input signal line and the output signal line from each other. If separation is not possible, use a shielded line for the input signal line.
- Use a non-grounded sensor for thermocouples. (If a ground sensor is used, the device may malfunction due to a short circuit.)
- If there is a lot of noise from the power, it is recommended to use an insulation transformer and a noise filter. The noise filter must be attached to a grounded panel, etc., and the wiring between the noise filter output side and the power supply terminal of the instrument must be short.
- When mounting this device to a panel, use a switch or circuit breaker approved by IEC60947—1 or IEC60947—3.
- The warranty organization for this device including accessories is 1 year under normal use.
- When the power is turned on, a preparation period for contact output is required. When used as a signal for an external interlock circuit, etc., use a delay relay together.
- Before using the temperature controller, there may be a deviation from the measured value (PV) of the temperature controller and the actual temperature, so please use it after correcting the temperature deviation.

Suffix code

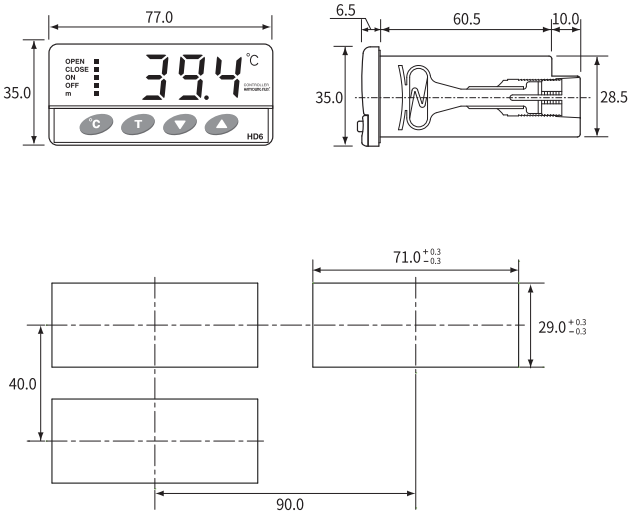
Model	Code					Description
HD6-	□	□	□	□–	□	Green house open / close motor control only
Control type	F					ON / OFF Control
Input		N				TH-540N(103ET)
Control output			M			Relay
Power supply voltage				P4		100 - 240 V a.c.
Option					0	None sensor
					2	2 m Incloud sensor
					3	3 m Incloud sensor
					5	5 m Incloud sensor
					10	10 m Incloud sensor
					15	15 m Incloud sensor
					20	20 m Incloud sensor

Specification

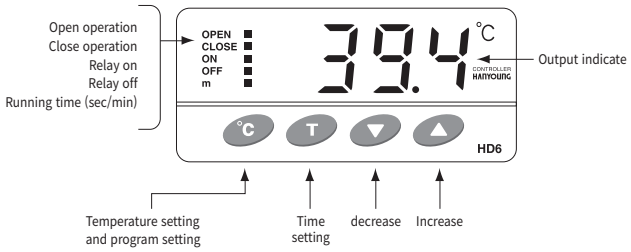
Power supply voltage	100 - 240 V a.c. 50 - 60 Hz
Power consumption	2 VA max.
Input	TH-540N (103ET : -40.0 ~ 90.0 °C, 2 m ~ 20 m)
Indicate accuracy	±1 % of FS +1 Digit
Control output (Relay)	OPEN OUT : 250 V a.c. 5 A , CLOSE OUT : 250 V a.c. 5 A
Control operation	ON/OFF control (Control by temperature and time)
Setting method	Digital method by FND and button
Ambient Temperature	0 ~ 50 °C
Ambient Humidity	85 % R.H. max.
Weight	116 g

Dimension and panel cutout

[Unit : mm]



Part name

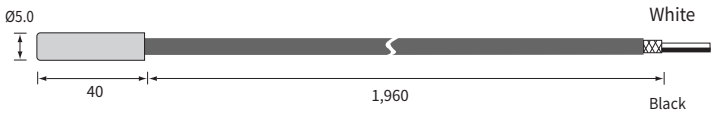


Sensor (NTC)

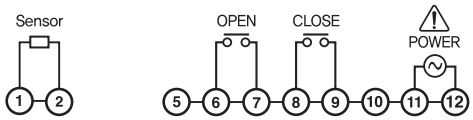
- HD6 uses only this sensor.

Name	Sensory type	Range(℃)	Accuracy	Remark
TH540N	Thermistor	-40.0 ~ 90.0	±1.5 ℃	Max ± 3.5 ℃ temperature deviation may be happen (± 1.5 ℃ sensor deviation & ± 2 ℃ controller deviation)

※ Caution : Extension of sensor length or modification will cause malfunction.
※ When sensor length is based on 2m



Connection diagram



Custom Mode

Key operation function description

°C : Keys for temperature setting and program setting

T : KEY for time setting

▼ , ▲ Increase/decrease key setting for setting value change

Press °C , T for 3 seconds to save the changed data.

If there is no key input, the mode automatically exits after 10 seconds.

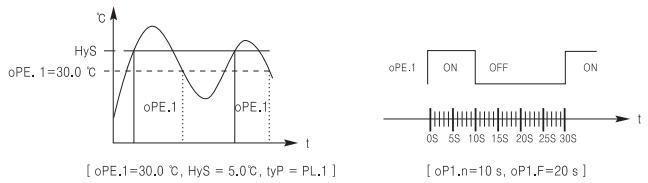
Control method for temperature

Key operation function description

[2.tyP] ┬ "PL.2": 1, 2nd stage setting and 1, 2nd stage control (control 2nd stage priority)
└ "PL.1" : 1st stage setup and 1st stage control only.

● 2.tyP = PL.1(Stage 1 control operation)

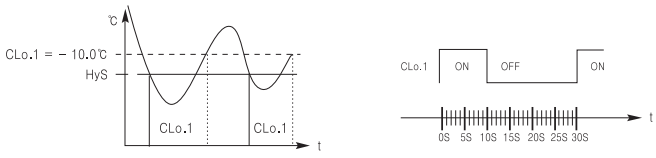
•Open 1 operation
When the current temperature is higher than the set temperature (OPE.1), the OPEN output relay is operated.
The output relay is "ON/OFF" according to the ON/OFF time (oP1.n/oP1.F) setting of Open1 operation.



[oPE.1=30.0 ℃, HyS = 5.0℃, tyP = PL.1] [oP1.n=10 s, oP1.F=20 s]

[OPEN Output Relay]

•Closed 1 operation
If the current temperature is lower than the set temperature (CLo.1), the CLOSE output relay is operated,
and the output relay is "ON / OFF" according to the ON/OFF time (CL1.n / CL1.F) of the close 1 operation.

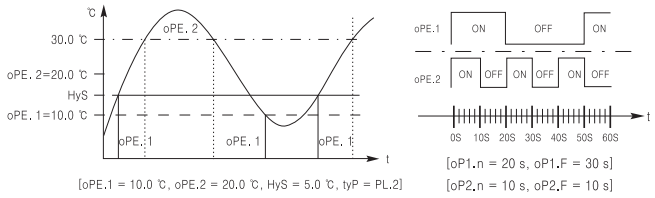


[CLo.1 = −10.0 ℃, HyS = 5.0 ℃, tyP = PL.1] [CL1.n = 10 s, CL1.F = 20 s]

[CLOSE Output Relay]

● 2.tyP = PL.2(Stage 2 control operation)

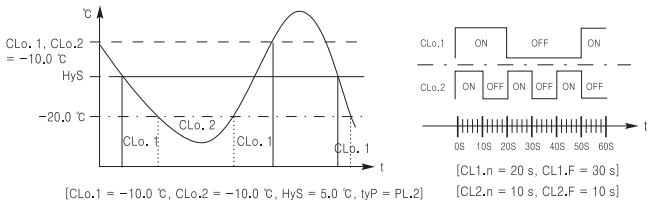
• Open 2 operation (However, the operation priority is higher than Open 2 operation.)
If the current temperature is higher than the set temperature (oPE.1 + oPE.2), the OPEN output relay operates.
The output relay is "ON / OFF" according to the ON / OFF time (oP2.n / oP2.F) of open 2 operation.



[oPE.1 = 10.0 ℃, oPE.2 = 20.0 ℃, HyS = 5.0 ℃, tyP = PL.2] [oP1.n = 20 s, oP1.F = 30 s]
[oP2.n = 10 s, oP2.F = 10 s]

[OPEN Output Relay]

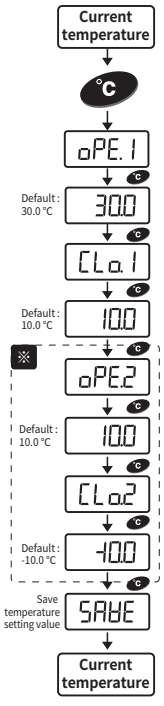
•Close 2 operation (However, the operation priority is higher than the closed 2 action.)
If the current temperature is lower than the set temperature (CLo.1 + CLo2), the CLOSE output relay operates.
The output relay turns "ON / OFF" according to the ON/OFF time (CL2.n/CL2.F) of the closed 2 operation.



[CLo.1 = −10.0 ℃, CLo.2 = −10.0 ℃, HyS = 5.0 ℃, tyP = PL.2] [CL1.n = 20 s, CL1.F = 30 s]
[CL2.n = 10 s, CL2.F = 10 s]

[CLOSE Output Relay]

Temperature setting



※ When setting "2.tyP = PL.2" in program setting mode
The priority of the task is "2 tasks (2 open, 2 closed)".

Open 1 operation temperature setting
(Set temperature (oPE.1) <present temperature (PV))
· Operation: Operates when the current temperature is higher than the set temperature (oPE.1)
· Setting value change(▼), (▲) : -40.0 ~ 90.0 ℃

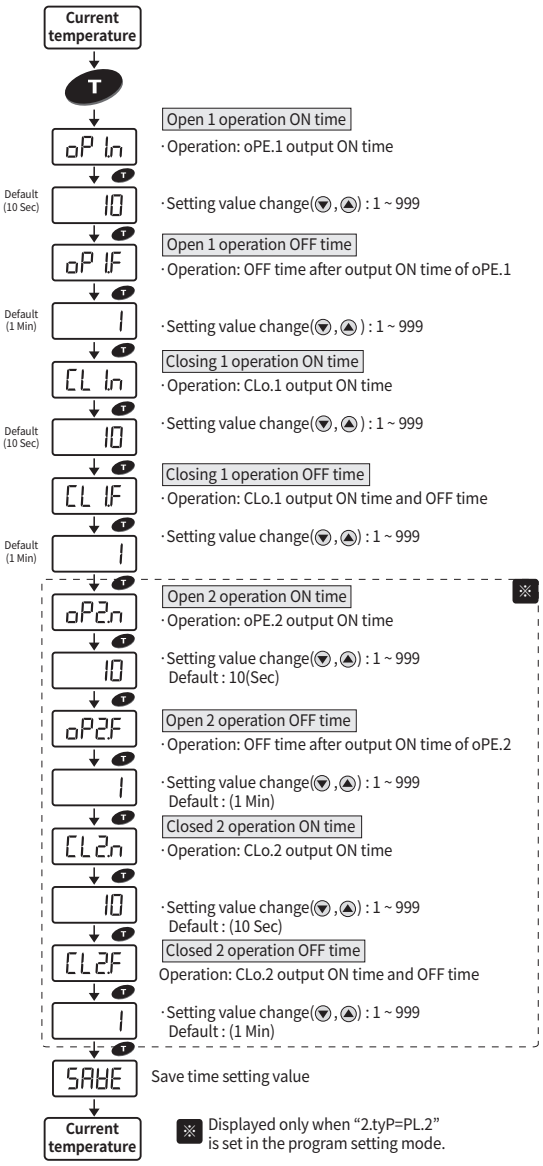
Closed 1 operating temperature setting
(Set temperature (CLo.1) <present temperature (PV))
· Operation: Operates when the current temperature is lower than the set temperature (CLo.1)
· Setting value change(▼) , (▲) : -40.0 ~ 90.0 ℃

Open 2 operation temperature setting
(Set temperature (oPE.1+oPE.2) <present temperature (PV))
· Operation: Operates when the current temperature is higher than the set temperature (oPE.1 + oPE2)
· Setting value change(▼), (▲) : 1.0 ~ 130.0 ℃

Closed 2 operating temperature setting
(Set temperature (CLo.1 + CLo.2)> Current temperature (PV))
· Operation: Operates when the current temperature is lower than the set temperature (CLo.1 + CLo.2)
· Setting value change(▼), (▲) : -1.0 ~ -99.0 ℃

※ In the program setting mode, "2. Displayed only when tyP = PL.2" is set.

Time setting



Open 1 operation ON time
· Operation: oPE.1 output ON time
· Setting value change(▼, ▲) : 1 ~ 999
Open 1 operation OFF time
· Operation: OFF time after output ON time of oPE.1
· Setting value change(▼, ▲) : 1 ~ 999
Closing 1 operation ON time
· Operation: CLo.1 output ON time
· Setting value change(▼, ▲) : 1 ~ 999
Closing 1 operation OFF time
· Operation: CLo.1 output ON time and OFF time
· Setting value change(▼, ▲) : 1 ~ 999
※
Open 2 operation ON time
· Operation: oPE.2 output ON time
· Setting value change(▼, ▲) : 1 ~ 999
Default : 10(Sec)
Open 2 operation OFF time
· Operation: OFF time after output ON time of oPE.2
· Setting value change(▼, ▲) : 1 ~ 999
Default : (1 Min)
Closed 2 operation ON time
· Operation: CLo.2 output ON time
· Setting value change(▼, ▲) : 1 ~ 999
Default : (10 Sec)
Closed 2 operation OFF time
Operation: CLo.2 output ON time and OFF time
· Setting value change(▼, ▲) : 1 ~ 999
Default : (1 Min)
Save time setting value

※ Displayed only when "2.tyP=PL.2" is set in the program setting mode.

Program setting