User Manual

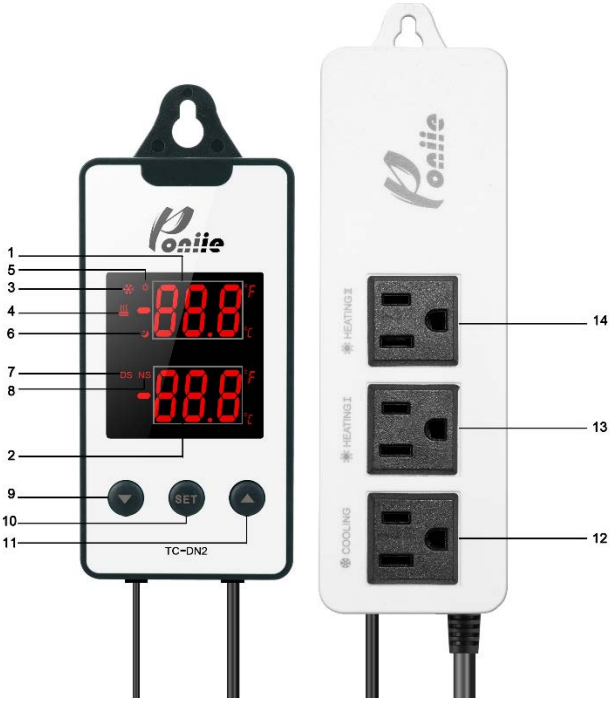
Model No: **TC-DN2**

Thank you for purchasing the **Thermostat Controller** by Poniie. Please read this manual carefully before using this product.

Safety Information

1. Be sure to read, understand and comply with all the instructions in this manual.
2. Before using this product, check to see if there is any crack or short of plastic parts on the shell, pay attention to the insulation around the connectors. Please do not use the product if it is damaged.
3. **DO NOT** use the device on anything that could possibly have a surge amp rating greater than 10 amp. The total loading power of two heating outlets combined should not exceed the rated power of this product (1100W at 110V).
4. DO NOT use the equipment in wet environments, keep your hands dry.
5. DO NOT operate the controller around explosive gas, vapor or dust.
6. DO NOT open the case of the controller or alter the internal circuit.
7. DO NOT allow children to operate this device, keep children stay away from the controller.
8. DO NOT use or store the device in an environment of high temperature, humidity, explosive or inflammable field. The performance of the controller may deteriorate after dampened.
9. **DO NOT** use in salt water or corrosive water, the metal NTC probe will be slowly damaged by salt water or acid-alkali liquid.
10. NOTE: If the relays are used over capability or their life expectancy, contact fusing or burning may occasionally occur. Please always consider your appliance's condition and use the relays within their rated load.

LCD Display & Keys



1. Real-time Temperature: under running mode, display current temperature; under setting mode, display start hour or menu code.

2. Setting Centering Temperature: under running mode, display setting temperature; under setting mode, display setting value.

3. Cooling Indicator: when the light is ON, start refrigeration; FLASHING, refrigeration is in compressor delay protection; OFF, not working.

4. Heating Indicator: when the light is ON, start heating; OFF, not working.

5. Day Time Indicator: when the light is ON, it is working in day time mode.

6. Night Time Indicator: when the light is ON, it is working in night time mode.

7. Daytime Temperature Setpoint (DS): Day time mode centering temperature setting value indicator.

8. Nighttime Temperature Setpoint (NS): Night time mode centering temperature setting value indicator.

9. Decrease Key: under running mode, press decrease key to view current time; under setting mode, to decrease value.

10. SET Key: press SET to enter basic setting, press SET and hold down 3 seconds to enter advanced setting; during setting process, short press SET to switch between different parameter settings and press SET 3 seconds to save and quit setting mode.

11. Increase Key: under running mode, press increase key to view current time; under setting mode, to increase value.

12. Cooling Device Socket: this outlet is for refrigeration output.

13. Heating Device Socket 1: this outlet is for heating device output.

14. Heating Device Socket 2: this outlet is for heating device output.

Program Setup Guide

1. Check and Set Your Time

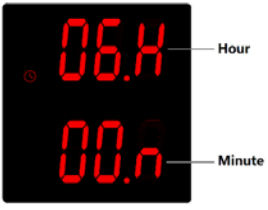


Figure 1

Plug the TC-DN2 into the power supply socket to start controller. Short press "▼" or "▲" key to view current time (as shown in Figure 1). The screen will return to normal display after 2 seconds.

To set time, please refer to **Advanced Setting Program 3.1**

2. Basic Setting Program (4 setting steps)

Note 1: You can only set the Basic Setting to run this temperature controller, if not necessary, please leave the advanced Setting unchanged.

Note 2: Short press "**SET**" can switch and cycle all parameter settings (**SET sequence: DT→NT→dS→nS**).

Note 3: Press & Hold "▼" or "▲" key can adjust value much more quickly.

Note 4: Press & Hold the "SET" button 3 seconds at any time to save and quit setting mode.

2.1-Set Day Time Start Hour (DT)

Press "SET" key-- to enter Basic Settings (as shown in Figure 2). The upper window number will flicker, press "▼" or "▲" key to adjust **DT** value (default 6 o'clock). From day time start hour to night time start hour, controller will working at **dS** centering temperature.

Figure 2

2.2-Set Night Time Start Hour (NT)

Press "SET" key-- to switch to **NT** Setting (as shown in Figure 3). The upper window number will flicker, press "▼" or "▲" key to adjust NT value (default 18 o'clock). From night time start hour to day time start hour, controller will working at **nS** centering temperature

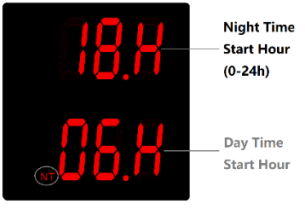


Figure 3

2.3-Set Daytime Temperature Setpoint (dS)

Press "SET" key-- to switch to **dS** Setting (as shown in Figure 4). The lower window number will flicker, press "▼" or "▲" key to adjust **dS** value (default 77°F). This temperature setpoint works during day time period.

Figure 4

2.4-Set Nighttime Temperature Setpoint (nS)

Press "SET" key-- to switch to NS Setting (as shown in Figure 5). The lower window number will flicker, press "▼" or "▲" key to adjust NS value (default 77°F). This temperature setpoint works during night time period.

Figure 5

When all settings are complete, hold down "SET" button 3 seconds or leave controller with no operation 15 seconds, system will save setting changes and return to normal working mode.

Now the controller programming works as below:

Daytime Period: DT to NT, temperature controlled at (dS ±dF) °F

Nighttime Period: NT to DT, temperature controlled at (nS ±dF) °F

Note: The default **dF** (differential value) is 2.0°F, you can adjust the **dF** value in Advanced Setting.

3. Advanced Setting Program

SET sequence: Time Hour→Time Minute→dF→AL→AH→Pt→CA→CF

3.1 Set Current Time

Press & Hold "SET" key 3s-- to enter Advanced Setting (as shown in Figure 6). The upper window number will flicker, press "▼" or "▲" key to adjust **Time Hour** value. **Press "SET" again**, the lower window number will flicker, press "▼" or "▲" key to adjust **Time Minute** value.

Figure 6

3.2 Set Differential Value (dF)

Press "SET" key-- to switch to **dF** Setting (as shown in Figure 7). The lower window number will flicker, press "▼" or "▲" key to adjust **dF** value (default 2.0°F). Adjustable Range: 1.0-30.0°F. Differential value means how far from the setpoint temperature can drift before turning on heating or cooling.

Figure 7

3.3 Set Alarm Low Point (AL)

Press "SET" key-- to switch to **AL** Setting (as shown in Figure 8). The lower window number will flicker, press "▼" or "▲" key to adjust **AL** value (default -40°F).

Figure 8

3.4 Set Alarm High Point (AH)

Press "SET" key-- to switch to **AH** Setting (as shown in Figure 9). The lower window number will flicker, press "▼" or "▲" key to adjust **AH** value (default 212°F).

Figure 9

3.5 Set Compressor Delay/Protect Time (Pt)

Press "SET" key-- to switch to **Pt** Setting (as shown in Figure 10). The lower window number will flicker, press "▼" or "▲" key to adjust **Pt** value (default 0 minute). Adjustable Range: 0-10 minutes.

Figure 10

When cooling, compressor delay function can keep the refrigeration off between cycles to protect your compressor. That means compressor won't start refrigeration immediately, but waiting for a delay time if it falls into the Protection time frame. Delay time will be calculated right after the moment refrigeration stops.

3.6 Temperature Calibration (CA)

Press "SET" key-- to switch to **CA** Setting (as shown in Figure 11). The lower window number will flicker, press "▼" or "▲" key to adjust **CA** corrected value (default 0.0°F). Adjustable Range: -20-20°F.

Figure 11

Note: Do not recommand to calibrate temperature if the discrepancy is under 1.5°F, because it may affect the NTC sensor's overall range accuracy. The corrected temperature equals to temperature before calibration plus corrected value (corrected value can be positive, 0 or negative value)

3.7 Set ℃/℉ Unit(CF)

Press "SET" key-- to switch to **CF** Setting (as shown in Figure 12). The lower window number will flicker, press "▼" or "▲" key to adjust **CF** value.

Figure 12

When all settings are complete, hold down “SET” button 3 seconds or leave controller with no operation 15 seconds, system will save setting changes and return to normal working mode.

Menu Codes

Menu Code	Function	Setting Range	Default Setting
DT	Day Time Start Hour	0-24H	6H
NT	Night Time Start Hour	0-24H	18H
dS	Daytime Temperature Setpoint	-40.0~212℉	77.0°F
nS	Nighttime Temperature Setpoint	-40.0~212℉	77.0°F
dF	Differential value	1.0-30.0°F	2.0°F
AL	Low Alarm Point	-40~212°F	-40°F
AH	High Alarm Point	-40~212°F	212°F
Pt	Compressor Delay	0~10min	0min
CA	Temperature Calibration	-20.0~20.0℉	0℉
CF	℃/℉ Display	℃/℉	℉

General Specifications

Applicable Power Supply	100-125V 60Hz
Maximum Rated Current	10A
Maximum Total Output	1100W
Temperature Setpoint Range	-40~212°F
Temperature Resolution	0.1°F (-4.0~158°F)

Sensor Type	NTC Sensor (L=2.0cm φ=3.5mm)
Sensor Cable Length	2.0m/6.6ft.
Control Panel Cable Length	1.5m/4.9ft.
Input Power Cable Length	1.8m/5.9ft.
Ambient Temperature	-4.0 ~ 130°F
Ambient Humidity	20~85% (No Condensate)

Package Content

- 1 x TC-DN2 Thermostat
- 1 x User Manual

Q & A

1) *Testing temperature seems not very accurate.*

Please check whether the probe is completely placed in the same medium or not, contacting with different media at the same time may cause an inaccurate temperature reading.

2) *Alarm sound is on, what's happening?*

Check if the temperature is over the High or Low alarm limit. You can adjust the alarm trigger in advanced setting. Buzzer will keep sound until temperature falls into setting range or any key is pressed.

3) *Does this controller have a power off memory function?*

Yes, all settings will be maintained after power failure. Once powered on, it will run with your last setting. The internal clock will keep timing during the power failure. We still recommend to check the system time of each your experiment.