# DIN300A-2 www.thermomart.com

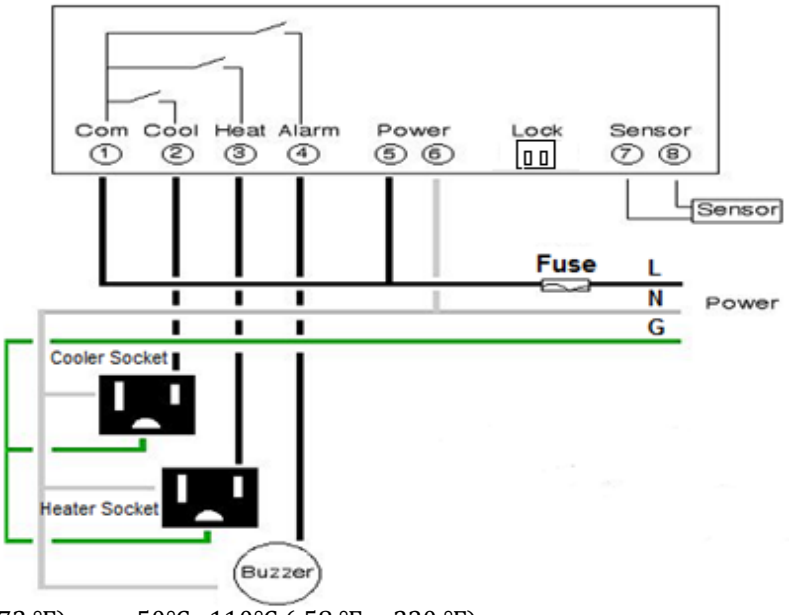
Please check your controller label. Depends on your order the power supply (operating voltage) could be either 110V, 220V or 12V (12v controller does not need ground wire)

**① Specification and size:**

Product size: 75L x 34.5W x 85D (mm)
Mounting size: 71L x 29W (mm)

**② wiring diagram:**

Terminals 1 & 2: Cooling output - Relay contact switch (normally open).
Terminals 1 & 3: Heating output - Relay contact switch (normally open).
Terminals 1 & 4: Alarm output - Relay contact switch (normally open).
Terminals 5 & 6: Power supply connection
Lock switch : Locking the controller parameter setting
Terminals 7 & 8: Temp sensor connection (NTC Probe)




| Com | Switch | Cooling | Heating | Alarm | Power | | Lock | Probe | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | Switch | 7 | 8 |

**③ Technical Parameters:**

- Temperature measurement range: -30℃~300℃ (-22 ℉ ~ 572 ℉) or -50℃~110℃ (-58 ℉ ~ 230 ℉)
- Temperature measurement error: ± 0.5 ℃
- Control accuracy: 0.1 ℃
- Maximum power consumption: 2W
- Resolution: 0.1 ℃
- Sensor Type: NTC (100K/3950) or NTC (10K/3435)
- Relay contact current (Output 1,2 – Cooling): Max10A/110Vor12V 5A/220V
- Relay contact current (Output 1,3 – Heating): Max10A/110Vor12V 5A/220V
- Relay contact current (Output 1,4 – Alarm): Max10A/110Vor12V 5A/220V

**Primary Parameter Setting**

For Changing primary parameter setting, press and hold the SET key and ▲ key for more than 3 seconds at the same time and the controller will go to the " primary parameter setting menu". When press Rst will exit from primary settting.

| Symbol | Details | Setting range | Factory settings |
|---|---|---|---|
| CF | Fahrenheit/Celsius | F / C | C |
| ST | Controlling Temperature to 1 or 0.1 | 10 / 01 | 10 |
| HL | Sensor type **H: NTC-100K** (300℃ / 572℉) or **L: NTC-10K** ( 110℃ / 230 ℉) | H / L | H |

HL=H: Temperature controller works with NTC 100K sensor / HL=L: Temperature controller works with NTC 10K sensor

**④ Button Description:**

1. RST: A) To turn the controller On and Off: To turn the controller ON press the RST key. To turn the controller OFF press and hold the RST key for 3 seconds.

   B) **To set the Heating Temperature (lower set point):** Press the RST key once and the controller will go to the "heating temperature setting or lower set point setting" mode. By pressing ▲ or ▼ keys you can adjust the temperature to your required set point. When the lower set point is adjusted you can exit the "heating temperature setting" mode by pressing the RST key again (or wait for about 15 seconds and the controller automatically exit this mode).

2. SET: A) **To set the Cooling Temperature (higher set point):** Press the SET key once and the controller will go to the "cooling temperature setting or higher set point setting" mode. By pressing ▲ or ▼ keys you can adjust the temperature to your required set point. When the higher set point is adjusted you can exit the "cooling temperature setting" mode by pressing the SET key again (or wait for about 15 seconds and the controller automatically exit this mode).

   B) To set the controller parameters: Press and hold the SET key for more than 3 seconds and the controller will go to the "parameter setting menu". By pressing ▲ or▼ keys you can select the required parameter from the menu. When the required parameter is found, press the SET key once and the controller will go to the required parameter setting mode. By pressing ▲ or ▼ keys, you can adjust the parameter that you need. When the parameter is set, you can exit the "parameter setting mode" by pressing the RST key (or wait for about 15 seconds and the controller automatically exit this mode).

3. ▲: Increasing key
4. ▼: Decreasing key

**⑤Operating Instructions:**

**LED Status (light) (light display):**

- When the red light beside the "Work" is ON it shows that the output (heating or cooling) is working.
- If the light beside the "Work" flashes, it shows that the controller is on delay.
- If the light beside the "Set" is ON, it shows that the controller is on setting mode.

◆Parameters setting and definition:

| Symbol | Details | Setting range | Factory settings |
|---|---|---|---|
| Hd | Heating Hysteresis or Differential Set Value(temperature band) | 0.1 to 25 | 1.0 |
| Cd | Cooling Hysteresis or Differential Set Value(temperature band) | 0.1 to 25 | 1.0 |
| LS | Lower temperature setting | 0 ~ HS | -30 ℃ / -22 °F |
| HS | Higher temperature setting | LS ~ 300 | 300 ℃ / 572 °F |
| CA | Temperature Calibration | -9.0 To +9.0 | 0 |
| PT | Delay Protection time | 0 ~ 30 | 1 Minutes |
| AH | High temperature alarm setting | 0.0 ~ 25.0 | 1.0 |
| AL | Low temperature alarm setting | 0.0 ~ 25.0 | 1.0 |

◆Hysteresis or Differential Set Value (Temperature Band) function:

To prevent the frequent ON/OFF action of the output, a temperature band (called hysteresis or differential set value) is created between the ON and OFF operations. The controller will use a range (a maximum and minimum) for process control action, which is between 1.0℃ to 25.0℃. For example when the cooling hysteresis (Cd) is set on 5 and the higher set point is on 50℃, the cooling temperature would be ON when the temperature goes higher than 55℃.And for example when the heating hysteresis (Hd) is set on 3 and the lower set point is on 20℃, the ON/OFF action of heating output would be when the temperature goes lower than 17℃.

◆ Hysteresis (heating and cooling hysteresis) settings (“Hd” and “Cd” parameters):

Press and hold the “SET” key for more than 3 seconds to enter the “parameter setting menu”. Find the “Hd” or “Cd” parameters by pressing "▲" or "▼" keys. Press the “SET” key when you find “Hd” or “Cd” and then by pressing "▲" or "▼" adjust them to any number from 1 to 15. “Hd” parameter is for heating hysteresis and “Cd” is for cooling hysteresis.

◆Temperature calibration: setting (“CA” parameter):

You can calibrate the temperature reading with this function. Correction value can be positive, negative or 0. .
Press and hold the “SET” key for more than 3 seconds to enter the “parameter setting menu”. Find the “CA” parameter by pressing "▲" or " ▼" keys. Press the “SET” key when you find “CA” and then by pressing "▲" or "▼" adjust this parameter.

◆Delay Protection (“PT” parameter):

In the cooling mode, you can use this parameter to set the controller on the state of compressor boot delay protection. It prevents breaking the compressor as a result of frequent boot . It also protects the compressor in the state of power cut and then power on. You can define the delay time for starting of your cooling machine.
Press and hold the “SET” key for more than 3 seconds to enter the “parameter setting menu”. Find the “PT” parameter by pressing "▲" or "▼" keys. Press the “SET” key when you find “PT” and then by pressing "▲" or "▼" adjust this parameter.

◆Higher and lower temperature functions (“HS” and “LS” parameters):

By adjusting the higher and lower temperatures you will define the display range of your controller. Narrowing this range will add to the accuracy of the controller.
Press and hold the “SET” key for more than 3 seconds to enter the “parameter setting menu”. Find the “HS” or “LS” parameters by pressing "▲" or "▼" keys. Press the “SET” key when you find “HS” or “LS” and then by pressing "▲" or "▼" adjust this parameter. Please note that your set point has to be always in between the HS and LS values.

◆High and low temperature alarm Hysteresis functions (“AH” and “AL” parameters):

- If the temperature exceeds the higher alarm temperature “set point temperature + AH” the alarm output relay will be opened and the controller makes beeping sound and the display will alternately flash between ”H” and the current temperature. By pressing any key the buzzer alarm will stop.
- If the temperature drops to lower than the lower alarm temperature “set point temperature - AL” the alarm output relay will be opened and the controller makes beeping sound and the display will alternately flash between ”L” and the current temperature. By pressing any key the buzzer alarm will stop and. Setting AL and AH parameters on zero will turn the alarm function off.

Press and hold the “SET” key for more than 3 seconds to enter the “parameter setting menu”. Find the “AL” or “AH” parameters by pressing "▲" or "▼" keys. Press the “SET” key when you find “AL” or “AH” and then by pressing "▲" or "▼" adjust the temperature. “Set point temperature - AL” is for lower temperature alarm and “Set point temperature + AH” is for higher temperature alarm. Setting AL and AH parameters on zero will turn the alarm function off.

⑥Error messages and troubleshooting:

1) When the controller displays --- it shows that the sensor is disconnected. The controller will make beeping sound and the heating output relay will be closed (so the heater is off) .
2) When the controller displays LLL it shows that the measured temperature by sensor is lower than 0 °C.
3) When the controller displays HHH it shows that the measured temperature by sensor is higher than 300 °C.

⑦ Caution :

◆ The maximum current load of the heating or cooling source must not exceed the output relay contact capacity. It will damage the unit and may cause fire.
◆ Check the wiring diagram before wiring the unit. Wrong wiring will damage the controller and may cause fire.
◆ Applying extra force on the screws of controller terminals will break the base. Please tighten the screws gently.
◆ Turn the power supply off when you are wiring relays, sensors, ..Otherwise it will damage the unit and may cause fire.