DIGITEN

Thermostat Manual

DTC-102

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Manual Index

The DTC-102 Thermostat is dual-stage, digital temperature controller. The large, lighted LCD screen display is easy to read. The case is designed with fireproof ABS material for human engineering. Temperature sensor is waterproof with high quality, high-accuracy.

Features

•Large LCD screen;

•Dual relay output, be able to control heating and refrigeration equipment at the same time;

•Support reading with Centigrade or Fahrenheit unit;

•Maximum output load: 1100W@110V,2200W@220V;

•Easy to use and program, plug and play device;

•With a temperature correction function;

•Delay starting protection for refrigerating compressor;

•High and low temperature alarms are available；

•Over-temperature and sensor fault alarm

•Heating/Cooling return difference could be set separately for refrigeration and heating to protect temperature controller from violent change;

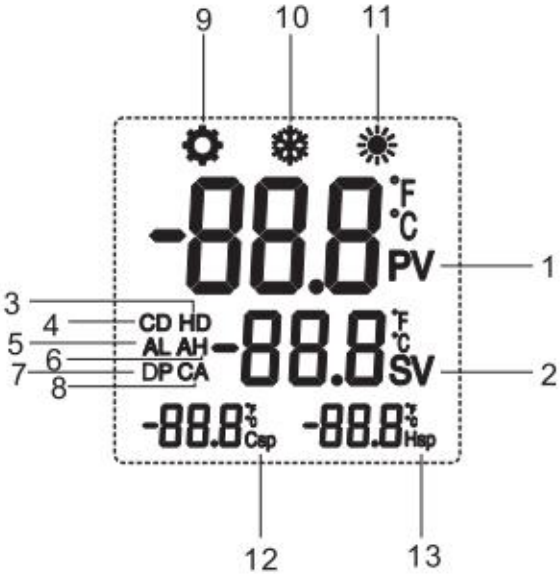
•Could use heating or cooling function separately.

Technical specifications

Temperature Control Range	-40-120°C, -40-248°F
Temperature Resolution	0.1°C,0.1°F
Temperature Accuracy	± 1°C, 1°F
Temperature Control Mode	Heating and Cooling
Input Power	100-240VAC, 50/60HZ
Temperature Control Output	Max.10A, 100-240VAC
Buzzer Alarm	High and Low Temperature Alarm
Sensor Type	Waterproof NTC sensor (Including)
Sensor Length	2m, 6ft
Relay Contact Capacity	Heating (10A, 100-240VAC)
	Cooling (10A, 100-240WC)
Input Power Cable Length	120 cm/4ft
Output Power Cable Length	30cm/6.5"

Note: The waterproof temperature sensor works with water, saltwater, weak acid or weak base liquid.

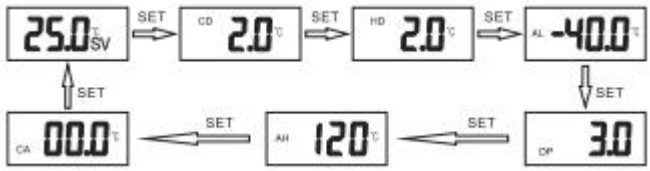
Panel instructions



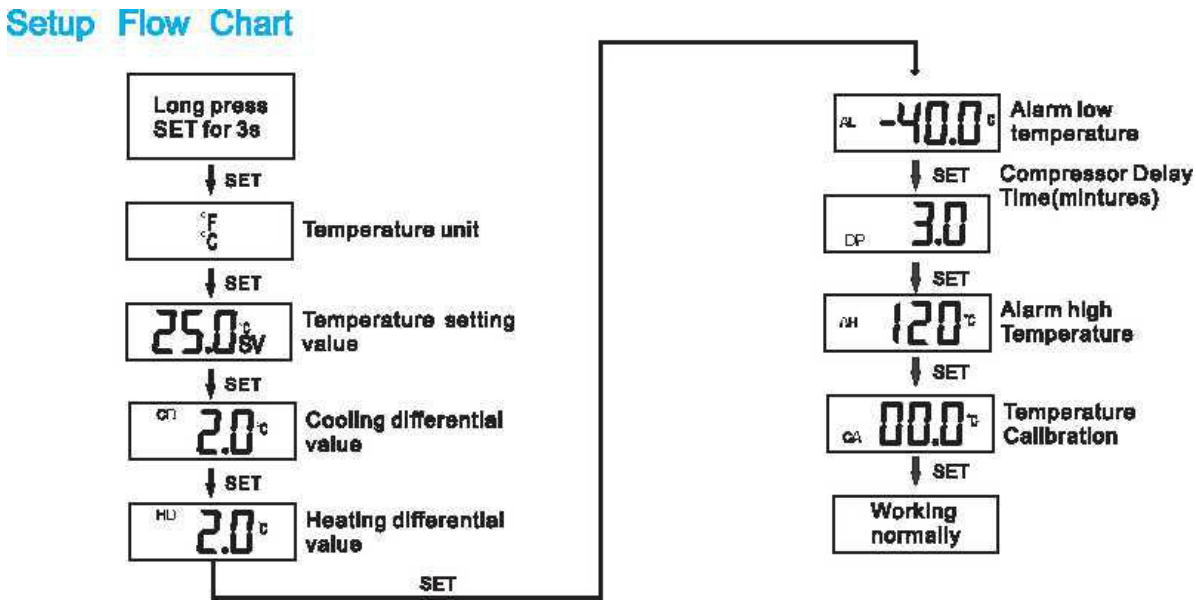
1. PV: Current temperature.
2. SV: Set Temperature
3. HD: Heating Differential
4. CD: Cooling Differential
5. AL: Low Temperature Alarm
6. AH: High Temperature Alarm
7. DP: Time of Compressor Delay Starting
8. CA: Temperature Calibration
9. : Setting Mode
10. : Cooling Mode
11. : Heating Mode
12. Csp: Cooling Start Point, Csp=SV+CD
13. Hsp: Heating Start Point, Hsp=SV-HD

View setting value

When the controller is working normally, short press SET and you can look at the parameter values in order.



Setting Instruction



How to change temperature unit

1. Long press SET button until °F and °C flash
2. Press ▲ or ▼ to switch the desired temperature unit
3. Long press SET button for 3S again to save and exit

Notice: When temperature unit value has been changed, all the setting value will be recovered to factory settings.

Set the SV value

1. Press and hold SET button until the ⚙ icon appears on the LCD, this will take over 3 seconds.
2. Short press SET button again until 25.0 flashing.
3. Press the ▲ and ▼ button to adjust the current SV value.
4. Press Set button to save and exit

Note: If no entries are made for 30 seconds while programming is in progress, the control reverts to the normal temperature display.

Set Other Functions

1. Long press the SET button about 3 seconds until LCD display ⚙
2. Press ▲ and ▼ to adjust the temperature
3. Short press SET button to set next function.
4. Long press SET button to save and exit.

After setting, Csp value and Hsp value will show the result that it could confirm whether you have set up correctly.
Csp(Cooling start point) =SV(set value) +CD (cooling differential)
Hsp(Heating start point)=SV(set value)-HD(heating differential)

Note: Please do not connect any load (heating or cooling equipment) before you set parameters.

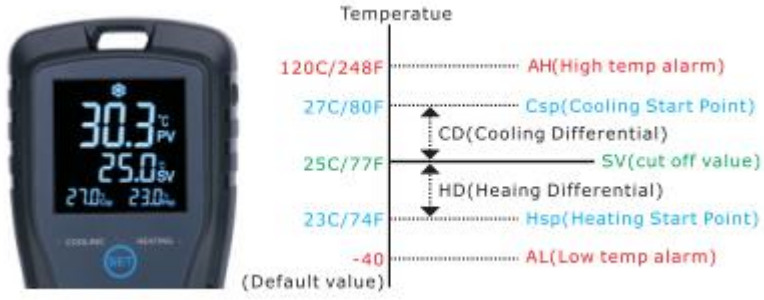
How to restore default settings

Keep pressing SET key until connect the power to this device, controller will restore factory setting after BI-BI-BI sound.

Function range and setting

CODE	Function	Setting Range	Default Setting
SV	Temperature Setting value	-40-120 °C	25 °C
		-40-248 °F	77 °F
HD	Heating Differential	0.3-15 °C	2.0 °C
		1-30 °F	3.0 °F
CD	Cooling Differential	0.3-15 °C	2.0 °C
		1-30 °F	3.0 °F
AH	High Temperature Alarm	-40-120 °C	120 °C
		-40-248 °F	248 °F
AL	Low Temperature Alarm	-40-120 °C	-40 °C
		-40-248 °F	-40 °F
DP	Time of Compressor Delay Starting	0~10minutes	3minutes
CA	Temperature Calibration	-15-15 °C	0 °C
		-15-15 °F	0 °F
CF	Temperature Unit	℃/℉	℃

Function Introduction



1. Cooling Mode

When PV(Current Temperature) ≥ Csp(Cooling Start Point), the temperature controller enter cooling mode. The LCD will show ❄,the cooling LED is light on the panel, the cooling relay is closed, then the cooling socket will output voltage, and the cooling equipment start working. When LED and ❄ flash, it means the cooling equipment enter compressor delay protection status. When PV≤SP,❄ on LCD will disappear, the cooling LED lights out, the cooling relay is opened, and the cooling equipment stop working.

Eg: Setting SV=25°C, CD=2°C, HD=30 so Csp=SV+CD=27r, Hsp=SV-HD=22-C. When current temperature PVS≥27℃ (Csp), the temperature controller enter cooling mode, and the cooling equipment start working. When the temperature is less than 25℃ (SV) , it stops cooling. In addition, when current temperature PV≤22℃(Hsp) , it enters heating mode. When the temperature is more than 25℃ (SV) , it stops heating.

2. Heating Mode

When PV(Current Temperature) ≤ Hsp(Heating Start Point), the temperature controller enter heating mode. The LCD will show ☀,the heating LED is light on the panel, the heating relay is dosed, then the heating socket will output voltage, and the heating equipment start working. When PV≥SP,☀ on LCD will disappear, the heating LED lights out, the heating relay is opened, and the heating equipment stop working.

3. High /Low temperature Alarm (AH/AL)

When current temperature PV ≥high temperature alarm value AH, high temperature alarm will be triggered, buzzer will alarm with tone" Bi-Bi-Bi", press any key to cancel the alarm until the temperature is lower than AH value. At the same time, cooling and heating function stops.

When current temperature PV ≤ low temperature alarm value AL, low temperature alarm will be triggered, buzzer will alarm with tone" Bi-Bi-Bi", press any key to cancel the alarm until the temperature is higher than AL value. At the same time, cooling and heating function stops.

4. Time of Compressor Delay Starting (DP)

Under refrigeration mode, after power on, if the current temperature PV is higher or equal to Temperature Setting Value (SV) plus Cooling Differential (CD), the equipment won't start refrigeration immediately, but it will wait for a delay time to work.

When the time interval between two refrigeration operations is larger than preset delay time, the equipment will start refrigeration immediately; when the time interval between two refrigeration operations is less than preset delay lime, the equipment won't start refrigeration until achieve the preset delay time.

Delay time will be recorded at the moment that refrigeration stops.

5. temperature Calibration (CA)

When there is deviation between current temperature and actual temperature, use temperature calibration function to correct the current temperature and actual temperature. Corrected Temperature = Temperature before Calibration +Corrected Value(corrected value could be positive value, 0 or negative value).

6. Display in Fahrenheit or Centigrade unit (CF)

Users can select display with Fahrenheit or Centigrade temperature value according to their own habit. Default setting is display with Centigrade temperature value.

7. LCD Backlight Control

Press ▲ and SET buttons simultaneously about 3 seconds until the LCD appears  , the LCD will be stay on.

Press ▲ and SET buttons simultaneously about 3 seconds until the symbol disappears  , the LCD light will shut off automatically after 30 seconds.

8. Unconventional Setting

When SV, CD, HD setting values exceed the setting range, or Csp and Hsp values exceed the measuring temperature range, buzzer will alarm with 2 beeps "bi-bi-bi", and all the setting value will be recovered to factory settings.

Application

The DTC-102 thermostat can be used to control a wide variety of dual-stage refrigeration and heating, or HVAC equipment, Typical applications include：

- Retail store display freezers and coolers
- Supermarket display cases for product/meats
- Retail store walk-in freeze and coolers
- Boiler operating control
- Condenser fen cycling or staging
- Cooling tower pump and fan control
- Space and return air temperature control
- Aquarium water temperature
- BBQ
- Over temperature control/protection

Troubleshooting

If you have a problem with thermostat, there’s usually a quick and simple solution.

Green LED flash when power on

It is a normal phenomenon, Delay Starting Protection function for Refrigerating Compressor is working. Now PV(current temperature) is higher or equal to Csp(Cooling Start Point), you could enter Setup Mode directly, or wait 3 minutes until it doesn't flash green light before setting the temperature controller.

Err Alarm

When temperature sensor is in short-circuited or open-circuited, the controller will prompt sensor fault mode, and cancel all the actions. The buzzer will alarm, and LCD displays Err. Buzzer alarm could be dismissed by pressing any key. After faults solved, the system will return to normal working mode.

HL Alarm

When current temperature exceeds the measuring range (less than -40 ˚C /-40 ˚F or higher than 120 ˚C/248 ˚F), the controller will prompt over-temperature alarm mode, and cancel all the actions. The buzzer will alarm, LCD displays HL. Buzzer alarm could be dismissed by pressing any key. When temperature returns to measuring range, the system will return to normal working status.

Heating and refrigeration equipment don't work

1, Please make sure the setting value is correct. If thermostat works fine, the working mode  or  appear on the LCD.

2, Please check if the loading is contacted reversely to heating or cooling outlet If your DTC-102 does not operate properly after trying the troubleshooting steps, please send your questions to our email: service@digit-en.com.

WARRANTY

The DIGITEN products are guaranteed to the original owner for one year against defects in workmanship and materials. Please contact us:

service@digit-en.com

www.digit-en.com/support

WARNING

Do Not Overload

This unit works with load up to 10A. If load is larger than 10A, it would become very hot even burn the thermostat. That is very dangerous. It is best that the load is less than or equal to 7A if you require the temperature controller to work stably for a long term.

The probe is waterproof, but controller is not waterproof, so don’t get water into the controller and outlet.