

ITC-308

Plug and Play Temperature Controller

User Manual





Please keep this manual properly for reference. You can also scan the QR code to visit our official website for product usage videos. For any usage issues, please feel free to contact us at **support@inkbird.com.**

Wenn Sie eine Bedienungsanleitung in deutscher Sprache benötigen, scannen Sie bitte den QR-Code und besuchen Sie unsere Website, um sie zu erhalten und ein Video über die Verwendung des Produkts zu sehen.

Se avete bisogno di un manuale di istruzioni in italiano, scansionate il codice QR e visitate il nostro sito web per ottenerlo e vedere un video su come utilizzare il prodotto.

Si vous avez besoin d'un mode d'emploi en français, veuillez scanner le code QR pour visiter notre site officiel afin d'obtenir et de visionner la vidéo d'utilisation du produit !

Als je een Nederlandstalige handleiding nodig hebt, scan dan de QR-code om naar onze officiële website te gaan en bekijk de video over het gebruik van het product!

Si necesita el manual de instrucciones en español, escanee el código QR para ir a nuestro sitio web oficial y ver el vídeo sobre cómo utilizar el producto.



Warm tips

- To quickly jump to a specific chapter page, click on the relevant text on the contents page.
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1.Safety Precautions

- Please read specification carefully before using this product.
- Do not touch the terminals while plugged into an outlet. This could lead to electric shock.
- Do not allow pieces of metal, wire clippings, or fine metallic shavings to enter the product. Take care to prevent metal debris from getting in unit while drilling holes for mounting. These can all result in electric shock, fire, or malfunction.
- Keep the product away from heat sources such as fires, flammable or explosive gas, etc. This may lead to the generation of excessive heat, ignition, and explosion.
- Never disassemble, modify or repair the product or touch any of the internal parts. This can result in electric shock, fire, or malfunction.

2.Overview

What is ITC-308?

ITC-308 is an easy-to-use, safe and reliable dual relay output temperature controller. It can be used as an overtemperature protection and automatic temperature control system for various electric appliances such as homebrewing, reptile, pet breeding, incubation, BBQ, seedling heat mats, oven temperature control, terrestrial heat control, constant temperature cycle of heating pump, culture fermentation, accelerating germination, electric radiator, electric oven, etc.

This product has a plug-n-play design with dual relays, to be able to connect with refrigeration and heating equipment easily to achieve ideal temperature control. It's equipped with a dual LED display, and offers display options of Centigrade or Fahrenheit. With a high output power rating of 1200W (120V) / 2200W (220V), it's suitable for most applications.

Main features

- Plug and play design, easy to use;
- Dual relay output, to connect with refrigeration and heating equipment at the same time;
- Selectable display of Centigrade or Fahrenheit;
- Maximum output load: 1200W (120V) / 2200W (220V);
- Dual display window, to display measured temperature and set

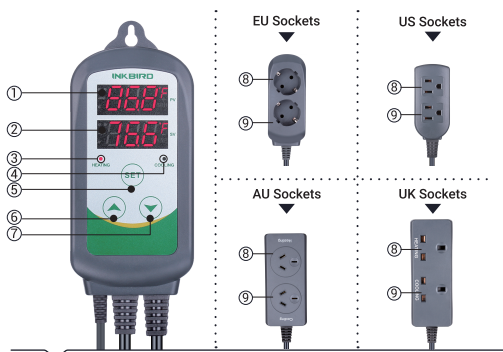
temperature at the same time;

- Temperature calibration adjustment (if needed);
- Compressor delay feature for protection of attached refrigeration hardware;
- High and low temperature alarms;
- Fault detection alarms for built-in temperature probe;
- Heating and cooling differential can be set independently to allow customization based on your heating and cooling hardware;

3.Specifications

Temperature Control Range	50 ~ 120 °C/-58 ~ 248 °F
Temperature Display Resolution	0.1°C/°F (<100) 1 °C/°F (≥100)
Temperature Accuracy	±1°C / ±2 °F
Temperature Control Mode	On/Off Control Heating and Cooling
Temperature Control Output	Max. 10A, 100V-240VAC
Buzzer Alarm	High and Low Temperature Alarms
Temperature Sensor Error Detection	Short Circuit, Open Circuit, Over Temperature
Sensor Type	NTC sensor (Attached)
Sensor Cable Length	2 m/6.56 ft
Relay Contact Capacity	Heating (10A, 100-240VAC)
	Cooling (10A, 100-240VAC)
Input Power Cable Length	1.5 m (5 ft)
Ambient Temperature	-30 ~ 75 °C/ -22 ~ 167 °F
Storage	Temperature: -20 ~ 60 °C / -4 ~ 140 °F
	Humidity: 20 ~ 85% (No Condensate)
Dimensions (Main Body)	140 x 68 x 33 mm (5.5 x 2.7 x 1.3 inches)
Warranty	1 Year
Input	120Vac 60Hz 10A/1200W MAX
Output	120Vac 60Hz 10A/1200W (total two receptacles) MAX
Disconnection means	Type 1B
Pollution degree	2
Rated impulse voltage	1500V
Automatic action	6000 cycles

4.Controls and Display Information



- ① **PV:** Process Value, in run mode, displays the current temperature; in setting mode, displays the selected menu function (see Section 6).
- ② **SV:** Set Value, in run mode, displays the set/target temperature; in setting mode, displays the value of the selected menu function.
- ③ **Heating Indicator Light:** when the light is **on**, power is being provided to the Heating outlet.
- ④ **Cooling Indicator Light:** when the light is **on**, power is being provided to the Cooling outlet; when the light is flickering, Compressor Delay is active and no power is being provided to the outlet.
- ⑤ **SET key:** press SET key for 3 seconds to enter settings menu. During the setting process, press SET key for 3 seconds to quit and save setting changes.
- ⑥ **INCREASE key:** in run mode, press INCREASE key to display HD value (see Sec 6.1); in setting mode, press INCREASE key to increase the value.
- ⑦ **DECREASE key:** in run mode, press DECREASE key to display CD value (see Sec 6.1); in setting mode, press DECREASE key to decrease the value.
- ⑧ **Heating Device Outlet:** for your device; active when controller in heating mode.
- ⑨ **Cooling Device Outlet:** for your device; active when controller in cooling mode.

5.Key Operation Instructions

When the controller is working normally, briefly press " \wedge " key and release, then the heating differential (HD) will be displayed; briefly press " \vee " key and release, then the cooling differential (CD) will be displayed. The screen will return to normal display mode after 2 seconds.

5.2 How to Set Parameters

Step 1: While controller is on, press "SET" key for over 3 seconds. The indicator light will turn on.

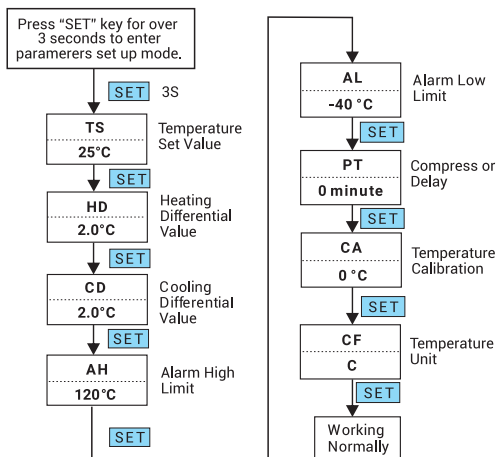
Step 2: Make sure the upper window says "TS".

Step 3: Select the parameter you want by pressing "SET" key to scroll through all of the parameters (see Sec 5.3).

Step 4: Adjust the parameter setting by pressing " \wedge " key and " \vee " key to see the value change in the lower display window.

Step 5: To save your changes, press "SET" key for at least 3 seconds. To exit without saving changes, do not press any buttons and it will revert back to display mode without saving after 10 seconds.

5.3 Setup Flow Chart



6.Menu Instruction

When the temperature is displayed in Centigrade

Menu	Function	Setting range	Default	Remarks
TS	Temperature Set Value	-50 ~ 120 °C	25 °C	6.1
HD	Heating Differential value	0.3 ~ 15 °C	2.0 °C	
CD	Cooling Differential value	0.3 ~ 15 °C	2.0 °C	
AH	Alarm High Limit	-50 ~ 120 °C	120 °C	6.2
AL	Alarm Low Limit	-50 ~ 120 °C	-40 °C	
PT	Compressor Delay	0 ~ 10 minutes	0	6.3
CA	Temperature Calibration	-15 °C ~ +15 °C	0 °C	6.4
CF	Display in Fahrenheit or Centigrade		C	6.5

When the temperature is displayed in Fahrenheit

Menu	Function	Setting range	Default	Remarks
TS	Temperature Set Value	-58 ~ 248 °F	77 °F	6.1
HD	Heating Differential value	1 ~ 30 °F	3 °F	
CD	Cooling Differential value	1 ~ 30 °F	3 °F	
AH	Alarm High Limit	-50 ~ 248 °F	248 °F	6.2
AL	Alarm Low Limit	-50 ~ 248 °F	-40 °C	
PT	Compressor Delay	0 ~ 10 minutes	0	6.3
CA	Temperature Calibration	-15 °F ~ +15 °F	0 °F	6.4
CF	Display in Fahrenheit or Centigrade		F	6.5

6.1 Temperature Control Range Setting (TS, HD, CD)

When the controller is working normally, the LED displays the current measured temperature, and automatically switches between refrigeration and heating modes as needed.

When the measured temperature is above your set temperature by

at least CD (cooling differential value) degrees, the system enters refrigeration status. The cool indicator light turns on, and power is provided to the Cooling outlet (when the cool indicator light is flickering, it is waiting for compressor delay protection time to count down).

When the measured temperature reaches your set temperature, the cool indicator light turns off, and the refrigeration relay shuts off.

When the measured temperature is below your set temperature by at least HD (heating differential value) degrees, the system enters heating status. The heat indicator light turns on, and power is provided to the Heating outlet.

When the measured temperature reaches your set temperature, the heat indicator light turns off, and the heating relay shuts off.

For example, with $TS = 25\text{ }^{\circ}\text{C}$, $CD = 2\text{ }^{\circ}\text{C}$, and $HD = 3\text{ }^{\circ}\text{C}$, when measured temperature is higher or equal to $27\text{ }^{\circ}\text{C}$ ($TS + CD$), the system enters refrigeration status; when temperature drops to $25\text{ }^{\circ}\text{C}$ (TS), refrigeration stops. And when measured temperature is lower or equal to $22\text{ }^{\circ}\text{C}$ ($TS - HD$), the system enters heating status; when the temperature increases to $25\text{ }^{\circ}\text{C}$ (TS), heating stops.

6.2 Alarm High/Low Limit Setting (AH, AL)

When measured temperature is higher or equal to AH, high temperature alarm will be triggered and will beep until the temperature is lower than AH or any key is pressed.

When measured temperature is lower or equal to AL, low temperature alarm will be triggered and will beep until the temperature is higher than AL or any key is pressed.

6.3 Compressor Delay (PT)

If the measured temperature is higher than the set temperature (TS) by (CD) degrees, the equipment normally enters refrigeration mode. To avoid too frequent cycling of the attached refrigeration unit compressor, Compressor Delay can be used.

Setting Compressor Delay (PT) is the time in minutes you want to wait between compressor cycles. When your last refrigeration mode ends, a timer starts counting, and the unit won't power the refrigeration relay until the timer exceeds (PT) minutes. The cooling light will blink until this time has passed, and then it will enter refrigeration mode normally.

6.4 Temperature Calibration (CA)

If the temperature sensor has an error in measuring the actual temperature, you can use the temperature calibration function to align the measured temperature and actual temperature. The value you put into (CA) is added to the measured temperature before reporting the measured value. (CA) Can be a positive value, 0, or a negative value.

6.5 Display in Fahrenheit or Centigrade (CF)

You can select to display in Fahrenheit or Centigrade. Default setting is to display with Centigrade. To display with Fahrenheit temperature value, set CF value to F.

Attention: When CF value is changed, all the settings will be reset to factory default settings.

7. Error Descriptions

Sensor Fault Alarm:

If the temperature sensor is detected to be either short circuited or open loop, the controller will enter sensor fault mode, and cancel all operations. The alarm will sound, and the LED displays "ER". The alarm can be dismissed by pressing any key. After the electrical fault is corrected, the system will return to normal working mode.

Over-temperature Alarm:

If the measured temperature exceeds the measuring range (higher than 120 °C/248 °F), the controller will initiate over-temperature alarm mode, and cancel all operations. The alarm will sound, and the LED displays "HL". The alarm can be dismissed by pressing any key. When the temperature returns to within the measuring range, the system will return to normal working mode.

8. Troubleshooting Guide

Issues	Causes	Solutions
The probe reading is incorrect.	1. The probe is placed in a area with poor temperature circulation. 2. The probe is damaged.	1. Adjust the position of the probe. 2. If the probe was used in liquids, dry it using a hairdryer and then test it at room temperature. 3. Check if the probe is intact. 4. If the deviation is small, please use the CA function to calibrate.
Heating output will not turn on.	1. Incorrect settings. 2. Incompatible heater. 3. Output malfunction.	1. Verify that the settings are correct. 2. The heater power is within the range of 100-240V, 10A. The heater can automatically turn on when plugged in. The heater does not have a built-in temperature control, or the built-in temperature control does not affect the ITC-308 control. 3. There is no problem with 1&2, please: <ul style="list-style-type: none"> · Unplug the controller. · Press and hold the "SET" button. · Plug the controller to power on, then release the "SET" button · Quickly press the "▲" button (do not press the "▼" button). The "HEATING" indicator and output should activate. If the heater still does not work, please contact customer service.
Cooling output will not turn on.	1. Incorrect settings. 2. Incompatible cooler. 3. Output malfunction.	1. Verify that the settings are correct. 2. The cooler power is within the range of 100-240V, 10A. The cooler can automatically turn on after power is connected. The cooler does not have a built-in temperature control, or the built-in temperature control does not affect the ITC-308 control. 3. There is no problem with 1&2, please: <ul style="list-style-type: none"> · Unplug the controller. · Press and hold the "SET" button. · Plug the controller to power on, then release the "SET" button · Quickly press the "▼" button (do not press the "▲" button). The "COOLING" indicator and output should activate. If the cooler still does not work, please contact customer service.

Issues	Causes	Solutions
Heating output will not turn off.	1. Incorrect settings. 2. Heater power exceeds limit. 3. Output malfunction.	1. Verify that the settings are correct. 2. The heater power is within the range of 100-240V, 10A. 3. There is no problem with 1&2, please: ·Unplug the controller. ·Press and hold the "SET" button. ·Plug the controller to power on, then release the "SET" button · Quickly press the "▼" button (do not press the "▲" button). The "COOLING" indicator and output should activate. If the heater still does not off, please contact customer service.
Cooling output will not turn off.	1. Incorrect settings. 2. Cooler power exceeds limit. 3. Output malfunction.	1. Verify that the settings are correct. 2. The cooler power is within the range of 100-240V, 10A. 3. There is no problem with 1&2, please: ·Unplug the controller. ·Press and hold the "SET" button. ·Plug the controller to power on, then release the "SET" button · Quickly press the "▲" button (do not press the "▼" button). The 'heating' indicator and output should activate. If the cooler still does not off, please contact customer service.
Display shows 'HD' or 'CD' continuously.	1. The screws on the back of the controller are too tight. 2. The program is not responding.	Slightly loosen the screws on the back of the controller, then: ·Unplug the controller. ·Press and hold the "SET" button. ·Plug the controller back in and release the "SET" button when power is applied. ·The unit will enter test mode, press the "▲" and "▼" button alternately. Unplug the controller again and plug it back in without pressing the "SET" button. The device should now enter normal mode. If it still does not work, please contact customer service.
ITC-308 does not power on.	1. The power socket is not supplying power. 2. The heater or cooler exceeds the power limit. 3. Device malfunction.	1. Plug the ITC-308 into a different power outlet. 2. Ensure the heater or cooler power is within the range of 100-240V, 10A. If it still does not work, please contact customer service.

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