

# Thermostat Station (TS-2) User Manual



## OVERVIEW

Thank you for purchasing TrolMaster's TS-2 Thermostat Station for use with the Hydro-Xmaster controller. It is specifically designed to replace the traditional thermostat to control four different systems( Heat/Cool , Cool only , Heat only , Heat pump ) for the purpose of constant temperature auto control.

Mount the TS-2 near the thermostat device using the pre-existing control wires, now you can use the TS-2 in conjunction with the Hydro-X to control your thermostat devices easily. Choose your desired temperature setpoints for the Day/Night mode (see Temperature Settings in Hydro-X's instructions), the TS-2 will turn on/off Cooling Mode or Heating Mode automatically based on the setpoint.

There is no need to provide power supply for the TS-2 unit. It can be connected to the Hydro-X with a simple RJ12 cable. After power-on, the Hydro-X will send the control data to the TS-2 automatically. The LCD screen of the TS-2 will display the temperature setpoint (upper part ) and current temperature (lower part ). When the current measured temperature is beyond the setpoints, the TS-2 unit will control the thermostat device to perform cooling mode (Cool On) or heating mode (Heat On) automatically.

## FEATURES

- No Extra Power Needed
- LCD Display, Easy Operation
- Micro-SD slot for Firmware Upgrades
- Seamless Connectivity with Hydro-X
- Replace Thermostat to Control Commercial AC Units

## PACKAGE CONTENTS

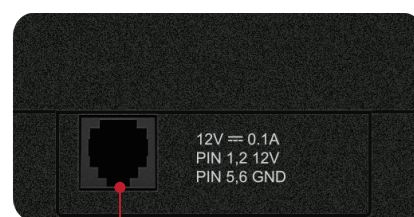
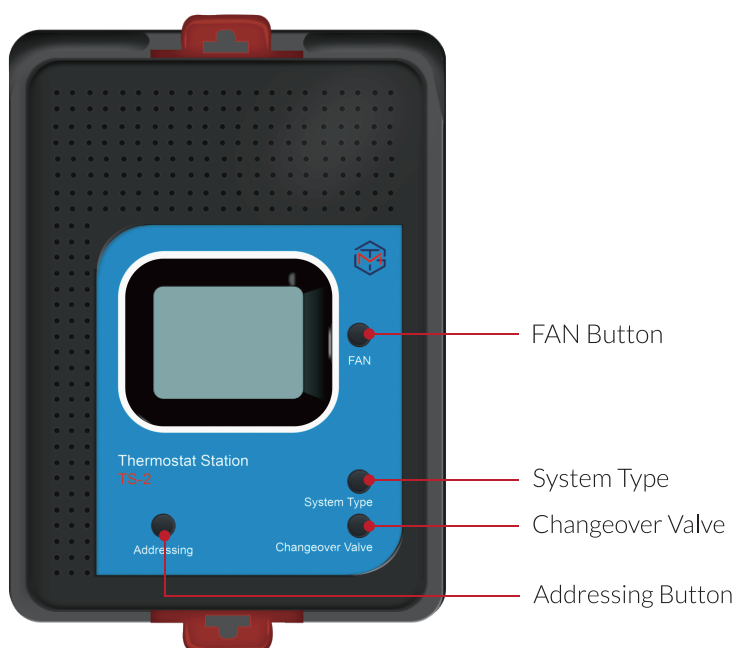
- 1 x Thermostat Station
- 1 x 16ft RJ12 Cable
- 1 x 4ft RJ12 Cable
- 1 x T-shaped Splitter

## SPECIFICATIONS

Input Vpltage	12V~
Maximum Current	0.1A
Degree of Ingress Protection	IP20
Operating Environments	Temperature 32~122°F (0~50°C)
	Humidity ≤90%RH
Package Dimensions (L*W*H)	160 x 86 x 86 mm / 6.30 x 3.39 x 3.39 inch



CONFORMS TO  
UL STD.61010-1  
CERTIFIED TO CSA  
STD.C22.2#61010.1



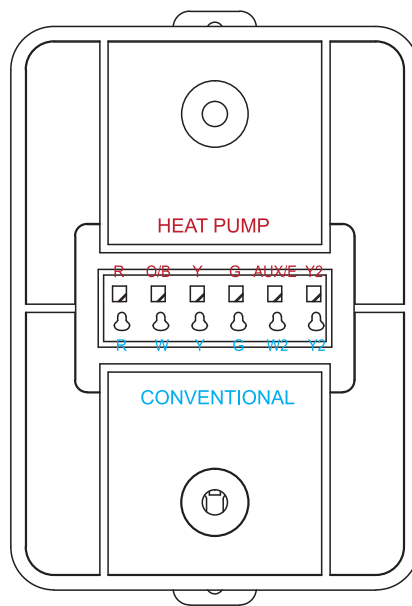
RJ12 Cable Socket



Micro SD Slot

# INSTALLATION

Pull the 2 tabs outward to release the bracket from the unit, mount the bracket to wall or surface near the thermostat cable, which is consist of 5 or 6 color signal wires. Peel off the outer sheath of all wires to reveal the copper wire. Then insert each bare wire into Heat Pump Terminals (R, O/B, Y, G, AUX/EY2) or Conventional Terminals (R, W, Y, G, W2, Y2) on the back panel while pressing the button of the terminal designation at the same time. Release the button to clamp the wire in each terminal. Verify wire is firmly secured by gently pulling on wire. Finally, place the unit back on the bracket and press the 2 tabs back in to lock the unit in place.



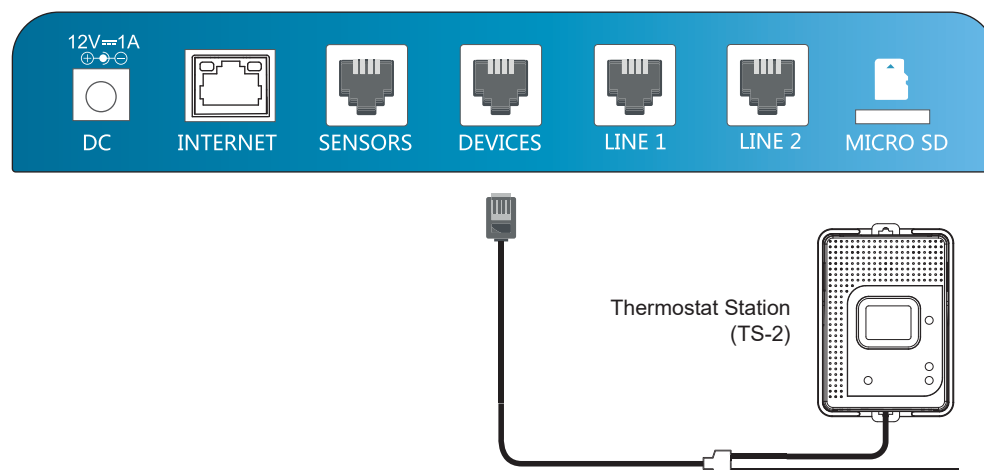
## Wiring terminal designations

- Heat Pump Terminals:
  - R** 24VAC power from heating transformer
  - O/B** Changeover valve
  - Y** Compressor contactor
  - G** Fan relay
  - AUX/E** Auxiliary/Emergency heat relay
  - Y2** Cool relay (stage 2)
- Conventional Terminals:
  - R** 24VAC power from heating transformer
  - W** Heat relay (stage 1)
  - Y** Compressor contactor(stage 1)
  - G** Fan relay
  - W2** Heat relay (stage 2)
  - Y2** Compressor contactor(stage 2)

# OPERATION INSTRUCTIONS

## 1. Connection to Hydro-X

After the signal wires are successfully connected to the TS-2 unit, connect the TS-2 to the Hydro-X with a RJ12 cable through the DEVICES port on the bottom of Hydro-X. See below connection diagram for reference.



After power-on, the LCD screen of TS-2 will show "Please press Addressing Key" when the TS-2 is connected correctly. Otherwise, it will show "Offline" if the TS-2 is connected incorrectly.



Correct Connection

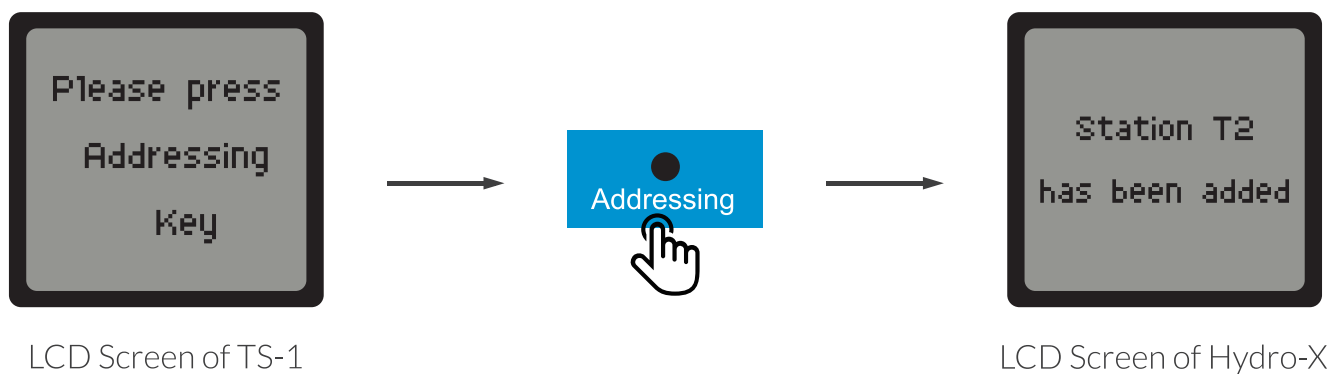


Incorrect Connection

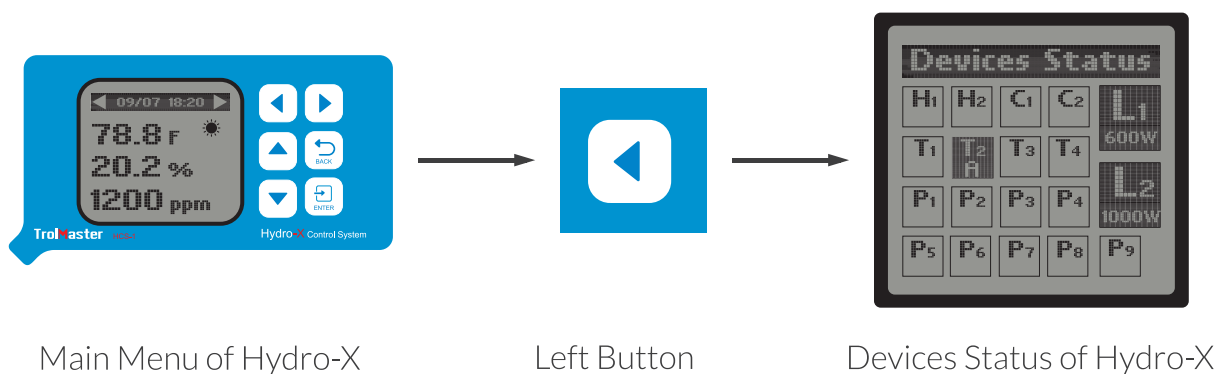
## 2. Address Assignment

Press the Addressing button on the TS-2 unit so that the Hydro-X will assign an address such as "T2" to the TS-2 unit accordingly. The LCD screen of Hydro-X will display "Station T2 has been added". T2 is not the constant address code, it can be T1, T3 or T4 depending on the connection sequence of the temperature devices. The first one is marked as T1, the second one as T2. And so on.





You can also check the address code on the Hydro-X as shown below:



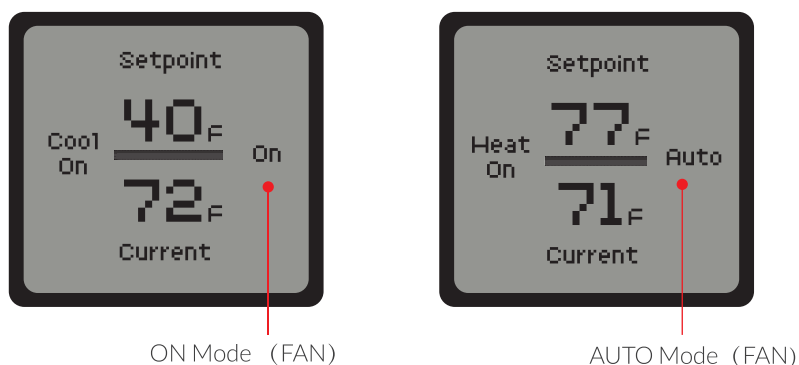
### 3. FAN Setting

Press FAN button to switch between ON mode and AUTO mode for the fan inside an air-conditioner.

**AUTO:** Fan runs only when the heating or cooling mode is on (Auto is the most commonly used setting).

**ON:** Fan is always on.

**NOTE:** Options may vary depending on your heating/cooling equipment.

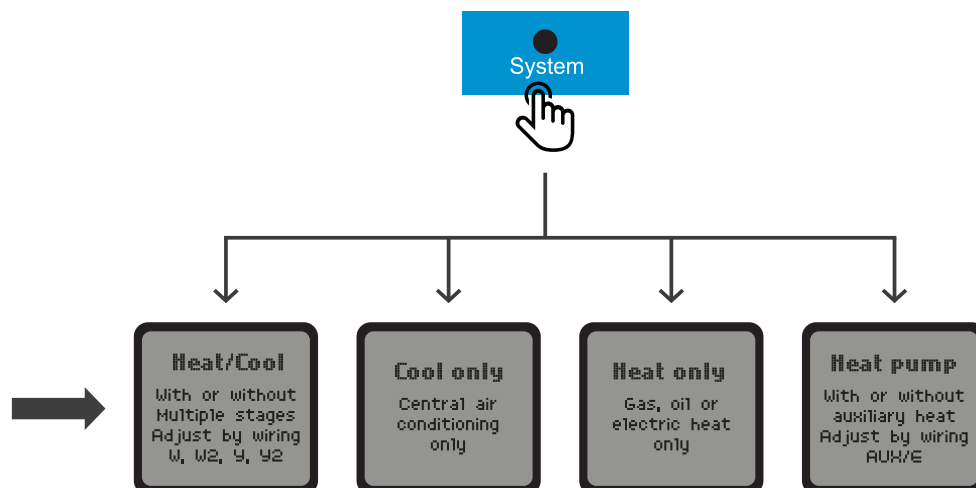


#### NOTE:

1. When one of the four system types is selected, press and hold the "System Type" button for 3 seconds and the LCD screen of TS-2 will return back to main menu.
2. When the FAN is set into Auto mode, FAN will continue to work for 1 minute before stop when Heat or Cool is stopped.

## 4. Select System Type

After power-on, the LCD screen of TS-2 unit will display the setting temperature (setpoint) and current temperature. Press and hold the "System Type" button for 3 seconds on the main menu, the LCD screen of TS-2 will display in 4 modes in sequence: Heat/Cool, Cool only, Heat only, Heat pump as illustrated below.



**Heat/Cool:** Heat/cool device that can be use for heating or cooling. With or without multiple stages by wiring W, W2, Y, Y2, W (stage 1) and W2 (stage 2) for heat control wire. Y (stage 1) and Y2 (stage 2) for cool control wire.

**Cool only:** Control air conditioner only.

**Heat Only:** Control gas heater, oil heater or electric heater only.

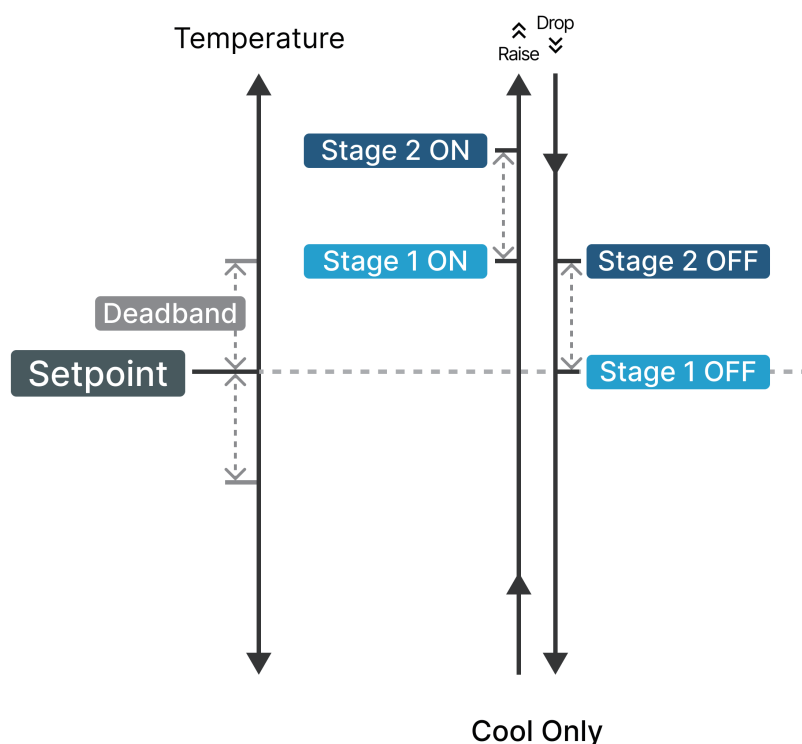
**Heat Pump:** Control heat pump. With or without auxiliary heater by wiring terminal AUX/E.

The TS-2 will turn on Cooling Mode or Heating Mode automatically depending on the variance between current temperature and setpoint. For example, when the current temperature is HIGHER than the setpoint, the TS-2 will start cooling mode and display "Cool On" on the screen. When the current temperature is LOWER than the setpoint, the TS-2 will start heating mode and display "Heat On" on the screen.

The Deadband (Two-stage) Control feature prevents the thermostat from bouncing quickly between heating and cooling in rapid succession.

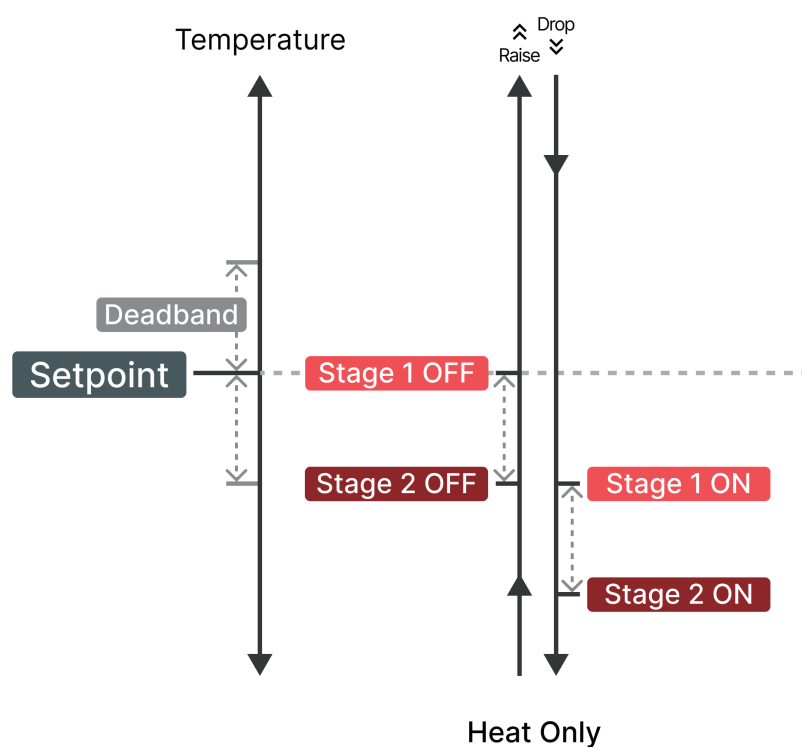
- **Cool only**

When the "Cool only" mode is chosen, the first stage is activated when the temperature reaches the high end of the set deadband. The second stage is separated from the first stage based on the number the deadband was set to. Stage 2 will be activated when the temperature exceeds that difference and will only stop when the temperature drops to the high end of the set deadband. Stage 1 will only be deactivated when the temperature drops to the setpoint.



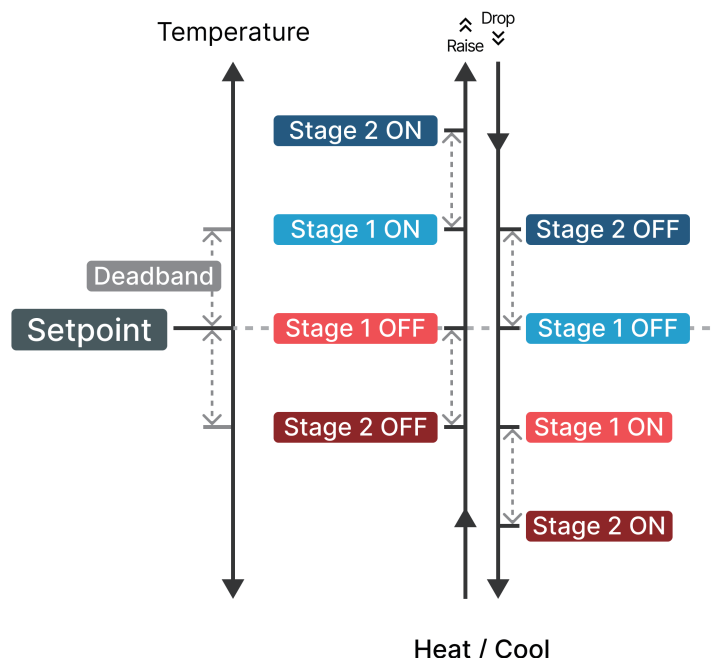
- **Heat only**

When the "Heat only" mode is chosen, the first stage is activated when the temperature reaches the high end of the set deadband. The second stage is separated from the first stage based on the number the deadband was set to. Stage 2 will be activated when the temperature exceeds that difference and will only stop when the temperature rises back to the high end of the set deadband. Stage 1 will be deactivated when the temperature rises back to the setpoint.



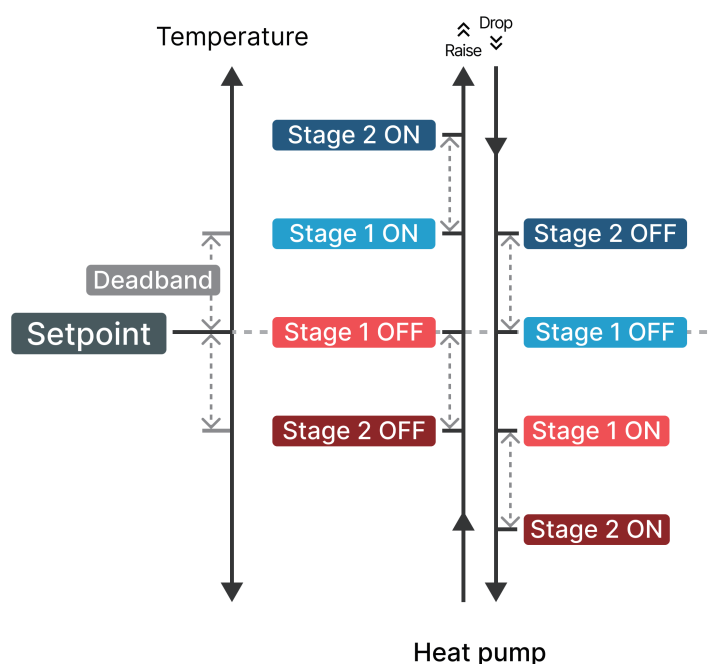
## • Heat/Cool mode

When "Heat/Cool" mode is chosen, the first stage is activated when the temperature reaches the high end of the set deadband. The second stage is separated from the first stage based on the number the deadband was set to. Stage 2 will be activated when the temperature exceeds that difference and will only stop when the temperature rises / drops back to the high end of the set deadband. Stage 1 will be deactivated when the temperature rises/drops back to the setpoint.

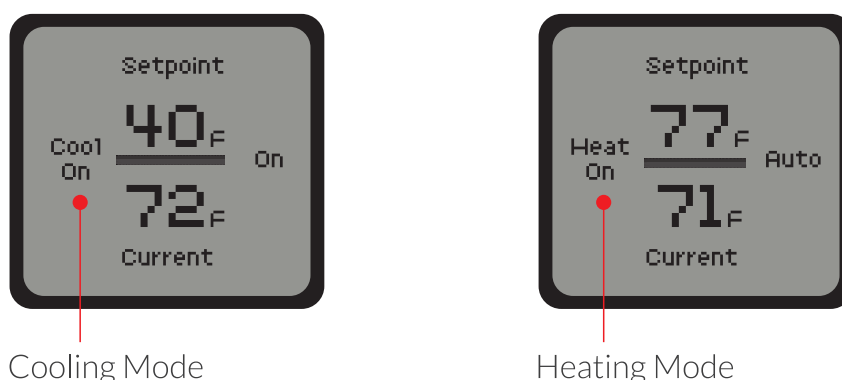


## • Heat Pump Mode

When Heat Pump Mode is chosen, the first stage is activated when the temperature reaches the high end of the set deadband. The second stage is separated from the first stage based on the number the deadband was set to. Stage 2 will be activated when the temperature exceeds that difference and will only stop when the temperature rises / drops back to the high end of the set deadband. Stage 1 will be deactivated when the temperature rises/drops back to the setpoint.



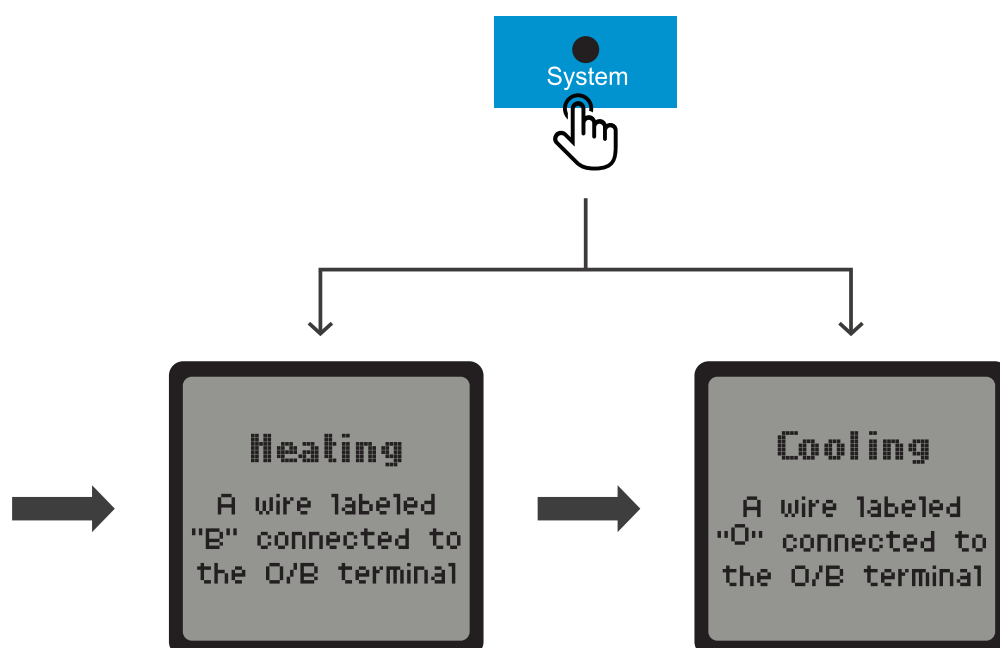
For example, if the deadband number is set to 2°F, stage 1 and stage 2 are separated by 2°F.



The number will be flashing when there is a Hot Start Delay.

## 5. Changeover Valve

When the Heat Pump mode is selected, press and hold the "Changeover Valve" button for 3 seconds, the LCD screen of TS-2 will display Heating and Cooling mode in sequence.



**Heating** changeover valve: Use this setting if you have connected a wire labelled "B" to the O/B terminal.

**Cooling** changeover valve: Use this setting if you have connected a wire labelled "O" to the O/B terminal.

### NOTE:

1. When the device type is Heat Pump, the time interval for restart must be 5 minutes after stopping the Heating mode or Cooling mode. If less than 5 minutes, the output will not be opened and the LCD screen will display "Heat On" or "Cool On" and blink.
2. When the device type is Heat/Cool or Cool only, the time interval for restart must be 5 minutes after stopping the Cooling mode. If less than 5 minutes, the output will not be opened and the LCD screen will display "Cool On" and blink.

## 6. Hot Start Delay/ Compressor Delay Time Setting

Rapid On/Off cycling will damage devices with compressors, such as dehumidifiers and air conditioners. Hot Start Delay is designed to allow these devices to cool down prior to restart preventing damage to equipment or wiring. Press and hold "Addressing", the screen will display the hot start delay setting interface. The time can be manually adjusted by pressing the "system type" (+) and "changeover valve" (-) within the range of 0-5 minutes.

High-powered home appliances like air conditioners require a lot of power to switch on. When these appliances request this power, they can inadvertently create a spike. If more than one heating and cooling equipment needs to be turned on and operate altogether at once, it could cause power surges, which can damage or destroy plugged-in electrical devices. The appliance could overheat or even catch fire when too much electricity flows through an appliance at once. The Compressor Delay Time is designed to set a few seconds delay between the time each appliance is turned on to prevent power surges.

Press and release "Addressing" while staying on the hot start delay interface. The screen will display the compressor delay time setting interface. Adjust the time with the "system type" (+) and "changeover valve" (-) buttons, within the range of 0 to 20 seconds. Press and hold "Addressing" to return to the main menu.

## 7. Firmware Upgrade

Press and hold the "Addressing" button while replugging the RJ12 cable, the upgrade process will be done automatically.



## GENERAL INFORMATION

- Please use TrolMaster's components for better performance.
- In the case of defects of the Thermostat Station, the Thermostat Station will either be replaced or repaired using new or reconditioned products or parts by TrolMaster within three-year warranty from the original date of purchase. For service, return the Thermostat Station in good packaging to our agent with the original sale receipt.
- Non-professionals DO NOT open the cabinet to prevent electric shock or damage to the Thermostat Station.



**WARNING:** **DO NOT** allow the Thermostat Station to be exposed to water or excessive heat. **DO NOT** open or attempt to repair or disassemble the Thermostat Station, as there are no user-serviceable parts inside. Opening the controller will void the warranty.

1. If the surface of Control Board is dirty, wipe it with a dry towel.
2. The Thermostat Station is designed for indoor use only, it should be operated under natural ventilation conditions. For safety, it's necessary to connect the ground wire. If a short circuit did occur, the current would flow
3. through the ground wire, causing a blown fuse or tripped circuit breaker.
4. The Thermostat Station should be positioned in a place that it's easily to be pull out when a fault occurs.



**AVERTISSEMENT:** **N'exposez PAS** le Thermoast Station à de l'eau ou à une chaleur excessive. **NE** l'ouvrez PAS, **NE** tentez PAS de le réparer ou de le démonter, car il ne contient aucune pièce réparable par l'utilisateur. Louverture du régulateur entraîne l'annulation de la garantie.

1. Si la surface du Thermoast Station est sale, essuyez-la à l'aide d'un chiffon sec.
2. Le Thermoast Station fonctionne sous des conditions de ventilation naturelle.
3. Pour la sécurité, il est nécessaire de connecter le fil de terre. Si un court-circuit se produisait, le courant circulerait à travers le fil de terre, causant un fusible grillé ou un disjoncteur déclenché.
4. La Thermoast Station de l'appareil doit être placée dans un endroit où il est facile de la retirer en cas de panne.

For any issues or concerns with our products, **DO NOT** return them to the store. Please contact our tech support department at [support@trolmaster.com](mailto:support@trolmaster.com) or call **877-420-9876**.

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