

Reheat Control Station (TS-3) User Manual



TS-3 For HCS-2/3

OVERVIEW

The TS-3 Thermostat Station is designed to provide "reheat" control for air conditioners / HVAC units that are capable of a Reheat function. Reheat is defined as the ability for a HVAC system to also act as a dehumidifier. When an HVAC is operated using reheat, a significant amount of dehumidification is possible without further reducing the temperature within the controlled space. The TS-3 allows the users to utilize the existing refrigeration circuit of their HVAC unit (or a hydronic system), to allow their HVAC unit to become a large-volume dehumidifier. The TS-3 is intended for use with the TrolMaster HCS-2 Pro and HCS-3 Plus controllers and will manage cooling control and supplemental dehumidification. It can be used with single stage HVAC systems and Heat pumps that are capable of operating in this configuration.

***NOTE:** Mini-split AC units and VRF systems are normally NOT compatible with the TS-3 and reheat.

One of the key features of the TS-3 is its ability to perform dehumidification by precisely controlling a HVAC system using hot-gas bypass or hydronic heat systems. This reheat function requires the HVAC unit to have two coils the air will pass through, a cool coil and a warm coil. Standard HVAC systems may not support this without special configuration or modification.

***NOTE:** Improper use could lead to equipment damage. Always consult with an HVAC professional to confirm your system can be controlled as described here.

* IMPORTANT!!! SIMULTANEOUS HEAT/COOL

The connected HVAC / Heatpump device must have either a hot-gas bypass valve, or a hydronic heating valve that will be controlled by the TS-3 module. It is important to consult with an HVAC professional before attempting to install the TS-3 module on HVAC equipment.

HOW DOES IT WORK?

The TS-3 connects to the HVAC system using standard low-voltage (24VAC) thermostat cable, with color-coded wiring for simple installation. The TS-3 wires like any standard 4-wire thermostat and provides signals for Cooling, Dehumidification and Fan control. Once the TS-3 is wired and connected to the HCS-2 or HCS-3 controller, you will be able to set separate Day and Night Temperature and Humidity settings for EACH TS-3 module connected. That allows multiple "stages" of cooling and dehumidification to be set up by the user. You can also select to operate the reheat (supplemental dehumidification) during the Night, Day or 24-hours a day. Adjustable time delays to prevent quick-cycling / hot-starts are also integrated into the TS-3 when using the HCS-2 and HCS-3 controllers.

The dehumidification process within the HVAC / Heatpump connected to the TS-3 involves two steps. First the warm / Humid air enters the air handler where the air is cooled to remove moisture, followed by reheating the air before recirculating the dehumidified air back into the growing space. This functionality helps maintain comfortable and optimum temperatures and to reduce and control humidity.

***NOTE:** The ability to use the TS-3 is dependent on the compatibility of the HVAC system.

FEATURES

- No Extra Power Needed
- LCD Display, Easy Operation
- Micro-SD slot for Firmware Upgrades
- Seamless Connectivity with Hydro-X Plus and Pro controllers

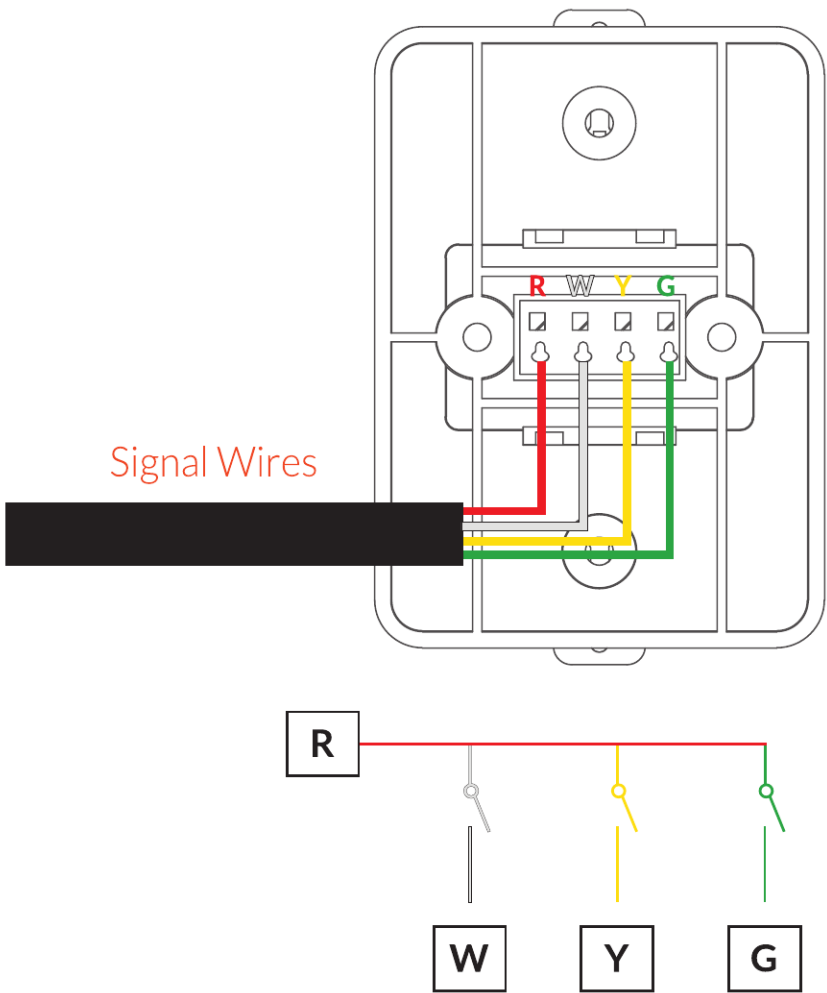
INSTALLATION

Pull the 2 tabs outward to release the bracket from the unit, mount the bracket to the wall or surface near the thermostat cable which consists of 4 color signal wires. Connect the thermostat wires from the HVAC unit to the appropriate terminals on the back of the TS-3 module following the information shown below. Finally, place the unit back on the bracket and press the 2 tabs back in to lock the unit in place.

WIRING CONNECTIONS & TERMINAL DESIGNATIONS

- **R**: 24VAC power from HVAC transformer
- **W**: Dehumidification signal to HVAC
- **Y**: Cooling signal to HVAC
- **G**: Fan signal to HVAC

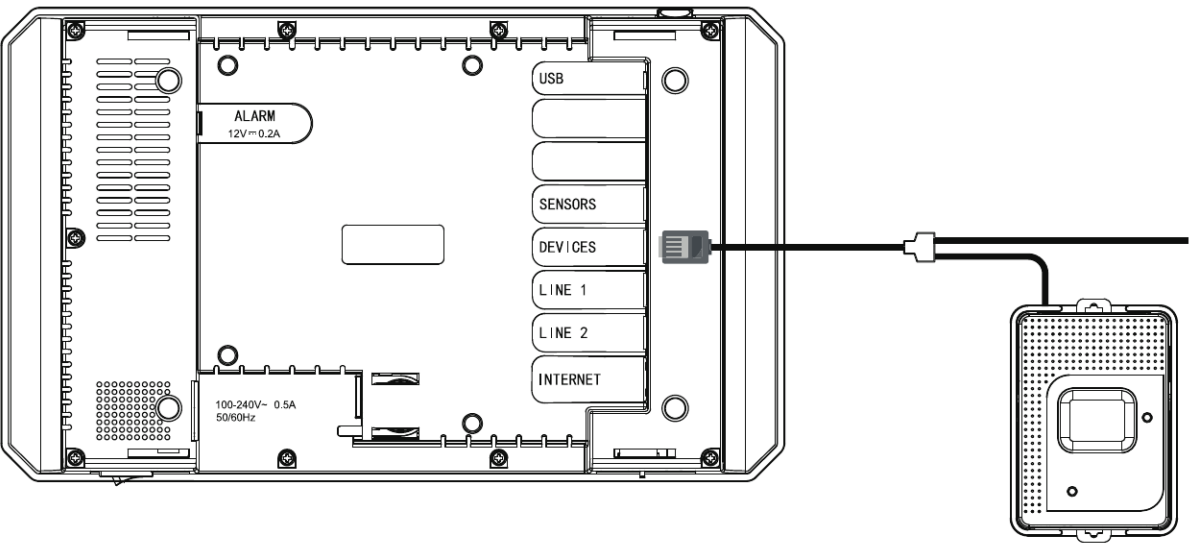
***NOTE:** The TS-3 does NOT require or use the C / Common wire connection from the HVAC unit.



OPERATION INSTRUCTIONS

1. Connection to Hydro-X Plus or Pro Main controllers

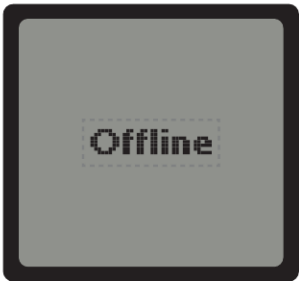
After the low-voltage signal wires are successfully connected to the TS-3 unit, connect the TS-3 to the Hydro-X Plus or Pro controller with an RJ12 cable plugged into the DEVICES port. After the RJ12 cable is connected and the TS-3 powers-on, the LCD screen of TS-3 will show "Please press Addressing Key". You can now address / link the TS-3 module to the main controller in the next step below.



Reheat Control Station
For HCS-2/3



Correct Connection



Incorrect Connection

2. Address the TS-3 to the Controller

Press the Addressing button on the TS-3 unit so that the Hydro-X Plus / Pro controller will assign an "address" to the TS-3 unit. The LCD screen of Hydro-X will display "Station T2 has been added". T2 is not the constant address code; it can be T1, T2, or T3 depending on the connection sequence of the temperature devices connected to the Hydro-X Plus / Pro. When the TS-3 is connected correctly, you will now see data displayed on the TS-3 screen. After powering-on and addressing, the LCD screen of the TS-3 unit will display the current sensor readings for Temperature and Humidity, as well as the user setpoints for Temperature and Humidity. If the TS-3 is connected incorrectly or not communicating with the Hydro-X Plus or Pro controller it will show "Offline".

***NOTE:** Check your cable connections and ensure the TS-3 is connected to the DEVICE port on the main controller.



Device Interface Configuration for TS-3

By accessing the device interface, users can configure the TS-3 to operate in either Day or Night mode. This functionality allows the TS-3 to function optimally based on the time of day. The sensor settings can be adjusted to utilize either average or specific sensor readings, enhancing operational flexibility.

Cooling and Heating Delay Settings

The TS-3 includes adjustable on/off delay settings for both cooling and heating functions. Users can specify a delay period, allowing the system to activate or deactivate its cooling or heating capabilities after the predetermined time interval.



Advanced Settings Configuration

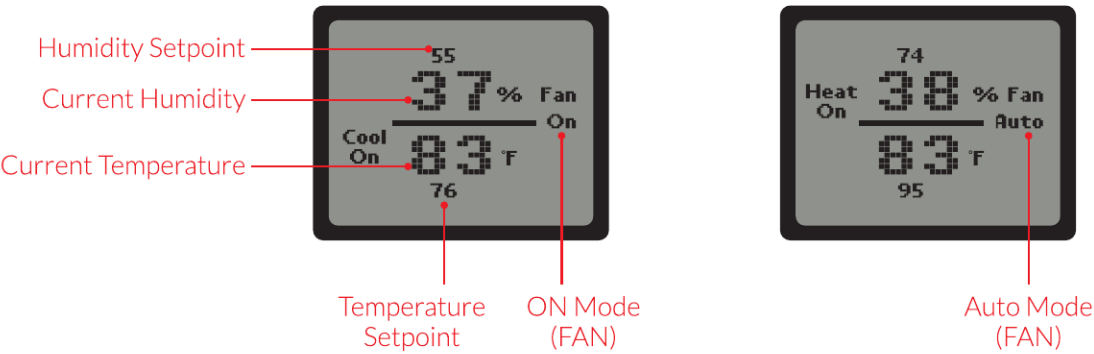
- The advanced settings allow for fine-tuning of various parameters:
- Temperature Setpoint Offset: This setting determines the temperature at which the system will cease operation once the target degree is reached.
 - Temperature Deadband: The temperature deadband setting establishes a buffer zone that prevents the system from cycling on and off too frequently, thereby reducing inefficiencies and minimizing wear on components.
 - Humidity Setpoint Offset: This parameter defines the humidity level at which the system will stabilize.
 - Humidity Deadband: Similar to the temperature deadband, this setting creates a buffer zone for humidity control, preventing excessive cycling and promoting system longevity.

3. FAN Setting

Press the FAN button on the TS-3 to switch between ON mode and AUTO mode for the fan for the air-conditioner.

AUTO: Fan runs only when the heating or cooling mode is on.

ON: Fan is always on.





*** IMPORTANT!!! REHEAT OPERATION**

For systems equipped to handle dual signal input (heat and cool), the TS-3 can engage both heating and cooling in high humidity situations, but only if the AC unit supports this functionality. This configuration is primarily intended for dehumidification, using the heating system to remove moisture while simultaneously cooling the space. Standard HVAC systems may not support this function, and it may require a specially programmed or configured system. Consult with your HVAC professional for assistance and installation.

HOT START DELAY SETTING

Rapid On/Off cycling can damage equipment that use compressors, such as dehumidifiers and air conditioners. The TS-3 Hot Start Delay is designed to allow these devices to cool down and for pressures to stabilize prior to restart, preventing damage to equipment or wiring. You can change the Hot-start delay time on the TS-3 by pressing and holding the Addressing button for 5 seconds. Hot-start delay prevents "quick-cycling" of the HVAC compressor by adding a time delay from 0 to 5 minutes.

*Consult the HVAC unit information to see if adding the TS-3 Hot-start delay is required ... Some HVAC units have internal Hot-start delay timers. Using HVAC units with built-in Hot-start delay permits the TS-3 Hot-start to be disabled, (can set to OFF).

FIRMWARE UPDATE

Occasionally there might be a firmware update to make improvements to the TS-3. Updated firmware can be downloaded from the TrolMaster website under the SUPPORT tab. To determine the current TS-3 firmware installed, remove the RJ12 cable and then reinstall the cable. The firmware version will be displayed on the TS-3 module briefly during start-up.

If you want to do an update, the firmware update requires a 32gb or smaller MicroSD card. Copy the firmware file from the TrolMaster website onto the MicroSD card, and then insert the card into the slot at the bottom of the TS-3 module.

***NOTE:** Ensure the filename is exactly as it was copied and cannot include any () or numbers after the file name. Disconnect the RJ12 cable from the TS-3 module then press and hold the "Addressing" button while reconnecting the RJ12 cable. Continue to hold the Address button until prompted, the upgrade process will be done automatically.

SPECIFICATIONS

Certifications	FCC
Degree of Ingress Protection	IP20
Input Voltage	12 V
Maximum Current	0.1 A
Working Environments	Temperature 32-122°F Humidity≤90%

GENERAL INFORMATION

TrolMaster warrants the mechanical and electronic components of all TrolMaster series to be free of defects in material and workmanship if used under normal operating conditions for a period of three (3) years from the original date of purchase, except one (1) year warranty on sensor probes. If the product shows any defects within this period and that defect is not due to user error or improper use, TroMaster shall, at its discretion, either replace or repair the product using suitable new or refurbished parts. In case TrolMaster decides to replace the entire product, this limited warranty shall apply to the replacement product for the remaining initial warranty period, i.e. three (3) years from the date of purchase of the original product.

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