Warmboard Comfort System
Installation Guide
TABLE OF CONTENTS

- Getting Started .................................................. Page 2
- Preparation .......................................................... Page 3
- Plumbing and Mechanical .................................... Page 4
- Warmsource Preparation ....................................... Page 5
- Warmsource Specification ...................................... Page 6
- Warmsource Installation ........................................ Page 7
- Filling and Purging ................................................ Page 8
- Construction Mode .............................................. Page 9
- Manifold Cabinet .................................................. Page 10
- Thermostats .......................................................... Page 11
- Air Conditioning .................................................... Page 12
- Testing the System ................................................ Page 13

INSTALLATION HIGHLIGHTS

1. Warmboard Comfort System (WCS) must be installed by a licensed General Contractor, Heating Professional or Plumber.

2. WCS uses proprietary, plug-and-play controls including thermostats, Manifold Controllers and Smart Reset Controller. These items cannot be exchanged with alternative controls.

3. Electrical components require 120 volt wiring.

4. All devices communicate via a pre-configured, wireless network – there’s no need for additional wiring or knowledge of networking equipment.

5. Warmsource boiler requires no programming or commissioning, and water temperatures are calibrated using our Indoor Reset algorithm.

6. Be sure to install the Warmboard supplied, dark grey 6" x 3" CPVC pipe to the Exhaust Gas Vent.

7. The “constant pressure” circulation pump(s) inside Warmsource adjust flow rates depending on the needs of each zone.

8. Once system plumbing is complete, test the system in “Construction Mode” (page 9). This feature allows installers to test the boiler and flow rates, acclimate building products and provide heat on cold job sites.

9. Disable “Construction Mode” before installing actuators, Manifold Controller(s) or thermostats.

10. The use of a Combustion Analyzer is required to calibrate safe carbon monoxide readings. Failure to do so could result in injury or death (page 9).

WARNING

Breathing Hazard – Carbon Monoxide Gas

- Do not operate heater if flood damaged
- Install vent system in accordance with local codes and manufacturers instructions
- Do not place chemical vapor emitting products near the unit
- Per NFPA 720, carbon monoxide detectors should be installed outside each sleeping area
- Never operate the heater unless it is vented to the outdoors
- Analyze the entire vent system to make sure condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.
WCS is a unique offering that changes many aspects installers have become accustomed to. Components are pre-commissioned, temperatures are pre-set, and network components are pre-configured; everything is plug-and-play. Simply follow the instructions in this manual, and the system will work.

**ESSENTIAL DOCUMENTS**

We highly recommend the General Contractor manage the job site with the appropriate trade professional involved. It is important to keep the Warmboard supplied documents available on the job site at all times. During each stage of your project you will need to reference these documents for additional information. Below is a list of the documents:

- 24” x 36” Panel and Tubing Design Documents (found in the Panel Installation Kit)
- 24” x 36” WCS Design Drawings (found in the Panel Installation Kit)
- 24” x 36” WCS Mechanical and Controls Diagrams (found in the Panel Installation Kit)
- Panel Installation Guide (inside the Panel Installation Kit)
- Tubing & Manifolds Installation Guide (inside the Tubing and Manifolds Installation Kit)
- HTP Boiler Install Manual (included with Warmsource)

**INSTALLATION SEQUENCING FOR WARMBOARD-S**

While every project is different, in general, the construction process follows the sequencing below. Use this list as a guide for your installation process when working with Warmboard-S and WCS.

- Foundation and joist
- Install Warmboard–S
- Install tubing (some loops before walls)
- Frame walls, roof sheeting
- Install tubing, manifolds (some loops)
- Install all 120 volt electrical boxes and outlets (WCS Design Drawings)
- Install manifold supply and return distribution lines (WCS Design Drawings)
- Prepare for Warmsource (PVC venting, gas line, T&P, condensation line, water line)
- Insulate walls, floors
- Drywall
- Install Warmsource, then plumb in and fire up using “Construction Mode”
- Tape, texture and paint
- Finish carpentry and all finish floors
- Install Thermostats, Manifolds Controller(s) and actuators

**INSTALLATION SEQUENCING FOR WARMBOARD-R**

While every project is different, in general, the construction process follows the sequencing below. Use this list as a guide for your installation process when working with Warmboard-R and WCS.

- Ensure existing subfloor or slab is level and flat and 100% dried in
- Install Warmboard–R
- Install tubing, manifolds
- Install all 120 volt electrical boxes and outlets (WCS Design Drawings)
- Install manifold supply and return distribution lines (WCS Design Drawings)
- Prepare for Warmsource (PVC venting, gas line, T&P, condensation line, water line)
- Insulate walls, floors
- Drywall
- Install Warmsource, then plumb in and fire up using “Construction Mode”
- Tape, texture and paint
- Finish carpentry and all finish floors
- Install Thermostats, Manifolds Controller(s) and actuators
INCLUDED IN WARMSOURCE

The following components are pre-plumbed inside the unit itself:

- Automatic air vent
- Expansion Tank (preset at 15 PSI, but can be reset with a bike pump and ball valve in the closed position)
- Constant pressure circulation pump(s), pre-set to “Constant Pressure” by Warmboard Inc.

The following are included with Warmsource but not pre-plumbed. Refer to the WCS Design Drawings for location and pipe sizing:

- Follow all instructions and be sure to complete the HTP registration card. Use a combustion analyzer to calibrate safe carbon monoxide levels
- Pressure Reducing Valve – Maintains a constant water pressure of 12-18 PSI, and adds “make up” water for evaporation
- Backflow Preventer – Required by code in many jurisdictions, it prevents water in the closed-loop system from mixing with the domestic water
- Air Purging Valves – A 1 1/4” combo ball and hose bib valve, along with several smaller valves, for easy air purging (be sure to install in the correct location and water flow direction)
- Temperature and Pressure (T&P) Relief Valve

WCS DESIGN DRAWINGS

Our WCS Design Drawings list all the necessary plumbing and mechanical materials. Reference this document regularly. Before proceeding, make sure all boiler components are pre-plumbed per the HTP UFT install manual, including:

- PVC intake and exhaust venting (pages 31-39)
- Gas (page 46-47) and condensation line (page 40)
- T&P Relief Valve discharge (page 30)
- 1/2” cold water line from the domestic water supply to the T&P valve (WCS Design Drawings)
**INSTALL LOCATION**

Before installing Warmsource, it’s important to consider its location. Like all gas fired boilers, Warmsource does make a small amount of noise, which may be disruptive if installed near a bedroom or common living space. Garages and basements are the better choice. Installation of a drain pan, especially in living spaces, is highly recommended.

**INSTALLING DISTRIBUTION LINES**

- After installing the tubing and manifolds, install the manifold distribution lines. Sizing, layout and length of the piping can be found in the WCS Design Drawings.
- Pressure test all distribution lines for 15 minutes at 100 PSI (International Mechanical Code, Section 1208.1)

**MINIMUM CLEARANCES**

This illustration shows the recommended minimum dimensions for the Warmsource mechanical room. Note that this view also depicts space needed for piping and mechanical components. The minimum depth is 40” for access and serviceability.

Cabinet Dimensions: 17.5W x 56H x 15.5D

See the Boiler page in the WCS Design Drawings to see how the manifold distribution lines should be plumbed, and get a better idea of labor costs.

Install the Warmboard-supplied ball valves and hose bibs as shown in our Design Drawings for the proper filling and purging of air from the system.

Pre-plumb boiler components prior to drywall. Reference the page 6 of this manual and/or the HTP manual.
Warmsource Specification

FRONT VIEW

3/4" Gas Line
(Left side preferred, Right side OK)

Condensation Discharge Line

TOP VIEW

3" Air Intake

3" Exhaust

T&P Relief Valve

BOTTOM VIEW

1 1/4" Brass Union (Supply)

1 1/4" Brass Union (Return)
SECURING WARMSOURCE

- Double check code clearances and minimum clearance dimensions (page 5)
- Fasten the mounting bracket to the wall (Note: in many situations, two 2"x4"x18" wood cleats will be necessary to secure the bracket. Securely fasten the cleats to the existing wall studs, then mount the bracket to the cleats
- Once the bracket is secured, lift Warmsource on to the mounting bracket (the unit is top heavy and weighs 150lbs, use 2 individuals to move safely)

CONNECTIONS

- Connect the PVC intake and exhaust lines, gas line, condensation discharge line and T&P relief discharge line per the HTP manual
- Plumb the cold water line to the Backflow Preventer and the Pressure Reducing Valve (WCS Design Drawings)
- Install all 1 1/4" copper plumbing and distribution lines
- Install the Warmboard-supplied, dark grey, 6" x 3" CPVC pipe to the Exhaust Gas Vent (see photo)
- Install the Condensate Neutralizer (see HTP Install Manual, page 40)

Warmsource is top heavy and weighs 150lbs. Use two individuals to lift and carry.
Once the system is plumbed and pressure tested with air (see our T&M Installation Guide), the next step is to fill the system with water and purge the air in the lines.

Air in a closed loop heating system can create noise or inhibit the flow of water. Follow these steps to save hours or days of frustration.

**PURGE AIR, FILL WITH WATER**

Follow the steps below to fill and purge air from the system. This process should be done one manifold at a time. In this example, we’ll begin with Manifold 1. (see illustration)

- Thread a discharge hose on to Valve A, and ensure the other end of the hose reaches the exterior of the house (or drain)
- On Valve A, make sure the ball valve is closed and the hose bib is open
- Close all hose bibs and ball valves on the remaining manifold return lines (B, C)
- On the supply side, close the hose bib and open ball valve D
- To fill Warmsource and the Manifold 1 loops with water (city or well supply), lift the Fast Fill Lever on the Pressure Reducing Valve E
- Check each loop flow meter on Manifold 1 and confirm good flow is taking place
- Continue filling the system with water for 10–15 minutes until no air is seen, or heard, escaping the hose
- Close the Fast Fill Lever, then slowly close hose bib A
- Check the pressure gauge located inside Warmsource. It should read 12–18 PSI
- Manifold 1 is now complete. Repeat this process for each manifold (B, C)

**PROPYLENE GLYCOL**

In some situations, it may be necessary to add propylene glycol to prevent freezing. To do this, open the ball valve on D, and add via the hose bib. We recommend a 10-30% mix, but refer to the manufacturer’s recommendation. Only use propylene glycol for freeze protection.

To fill the system with a propylene glycol/water solution, we recommend a Liberty 331 Portable Transfer Pump, or equivalent (available at Home Depot). To maintain additional propylene glycol to feed the system for many years, we recommend a mini system feeder such as the Axiom MF200 pressure pal.

---

**See Page 7 of the HTP manual for allowable water levels and quality. Filtered water may be required.**
Once the system is filled with water, put Warmsource in “Construction Mode”: an operating state that supplies heat to the structure before thermostats, Manifold Controller(s) or actuators are installed. Construction Mode offers the opportunity to listen for air noises while confirming all loops are operating with the proper flow rates and water temperatures. Activating the system also brings heat to cold working conditions and helps hasten the release of moisture from various materials, including paint, plaster, hardwood flooring and other wood materials.

- Remove the front cover from Warmsource
- Locate the Smart Reset Controller (SRC), then plug the Construction Mode jumper into the “Sensor 2” terminal. Use the white jumper for 100°F water or the red jumper for 120°F water
- Plug Warmsource into the 120v outlet and confirm the system is ON using the rocker switch and power button circled in the photo to the right (it should take about 10 minutes for Warmsource to reach the target temperature)
- Return to each manifold location to adjust the flow rates of each loop

1. Unthread and remove the white caps from the Return side of the manifold (these caps can now be thrown out)
2. Remove the red caps on the Supply side of the manifold and adjust the black knobs beneath. Flow rates for each loop should be equal to, or greater than, those noted in the WCS Design Drawings. When done, replace the red caps

While in “Construction Mode” it is required to use a Combustion Analyzer to verify, and adjust, the Carbon Monoxide output. The values must match those listed in the HTP manual (table 25, page 48). Failure to do so could result in injury or death.
**Manifold Cabinet**

**PREPARATION**

Before installing the controls, an electrician should review the Electrical page of the WCS Design Drawings and note necessary materials, locations, voltage and amperage of all electrical components.

**TUBING AND LABELING**

Included with your controls is a series of labels to adhere to each supply and return loop beneath the manifold. Appropriate use of these labels will ensure each loop is accurately labeled for diagnostic issues. These color-coded labels coincide with the color labels on the side of the Manifold Controller (see photo) and those displayed in your WCS Design Drawings.

**INSTALLING THE MC**

- Use the provided screws to mount each Manifold Controller (MC) inside the manifold cabinet specified by the WCS Design Drawings
- Plug the MC into the nearby 120v outlet

**INSTALLING THE ACTUATORS**

- Attach an actuator to each return port on the return manifold
- Connect each actuator wire to the appropriate port on the side of the MC, which is pre-labeled and color coded (WCS Design Drawings)

**CONTROLS**

Warmboard Controls consist of the following:

- 120v thermostats (one per heating zone)
- 120v Manifold Controller (one per manifold)
- 24v Solenoid valve loop actuators (one per loop, powered by the Manifold Controller)
- Smart Reset Controller (inside Warmsource)

---

Before installing the controls, you **MUST** disable Construction Mode by removing the jumper from the terminal (Sensor 1 or 2) on the SRC inside Warmsource.
Warmboard Comfort System offers 3 different types of thermostats:

- **Heating**
  Controls the heat in one zone of the house

- **Cooling/Heating**
  Controls one cooling zone and one heating zone (limit 2 per Warmsource)

- **Floor Warming/Heating**
  Controls the heat in one bathroom and offers a warming feature which keeps the floor warm even when heat is not called for (can be enabled/disabled by the homeowner)

**THERMOSTAT INSTALLATION**

Every thermostat must be installed in the location specified in the WCS Design Drawings. Failure to do so will cause the system to behave inaccurately. If there are any discrepancies regarding the thermostat or zoning, contact us immediately.

- Remove the appropriate thermostat from the box
- Grip the “face” of the thermostat on the sides with one hand, and the back of the thermostat with the other hand, then slowly separate the pieces
- Set the “face” of the thermostat to the side
- Connect the hot and neutral (black and white) wires from the back piece to the connections in the junction box, then fasten into place with the provided screws – be sure the arrows point “up”
- Snap the face plate back into place
- Repeat for each thermostat, always checking to make sure they are installed in the correct location
AIR CONDITIONING INSTALLATION

Warmboard thermostats offer Single-Stage Air Conditioning. Connecting an AC system to WCS is very similar to wiring a 24v thermostat from an AC unit, just follow the steps below.

- Remove the front cover from WarmSource
- Locate terminal connection “AC1/Fan” on the Smart Reset Controller (SRC)
- Connect the wires from the AC unit to the terminal block accordingly:
  - RC: 24v power (red wire)
  - Y: Cooling Call (yellow wire)
  - G: Fan (green wire)
- To activate the “Fan only” feature, use a small jumper wire between the two RC ports on the terminal block
- Repeat for “AC2/Fan” if using air conditioning across two cooling zones

Some AC solutions require their own proprietary controls. In these instances, WCS thermostats should not be used to control the cooling.
Testing the System

PRIOR STEPS

Before testing and operating the complete system, it is imperative that all previous tasks have been completed. This includes:

- Using Construction Mode to test the boiler and flow rates on each loop (page 9)
- Disabling Construction Mode by removing the jumper from the appropriate sensor port
- Successful installation of all electrical components (Manifold Controllers, Actuators, Thermostats)

Once these steps have been completed sequentially, proceed to the next steps.

Before proceeding, make sure the indoor temperature is above 60°F.

Note: WCS thermostats have an “Off” setting of 55°F for freeze protection.

Make sure all Supply and Return tubing labels have been affixed to the appropriate loop at the manifold location.

TESTING THE CONTROLS

With all components installed, it’s time to test each zone independently to ensure the thermostats are accurately controlling each zone.

To begin, go to the Zone 1 thermostat, then follow the instructions below.

- Tap the thermostat screen
- Next, tap the button in the lower right corner and choose “Tutorial” to familiarize yourself with the controls
- Once complete, navigate to “Mode Select” and turn the heat “off”
- Go to all Warmboard thermostats and ensure they are also turned off
- Return to the Zone 1 thermostat, and turn it “on”. Then, increase the temperature so that thermostat calls for heat. Hit “Done” to return to the main screen where you will now see a flame icon
- Go to the Manifold Controller for that zone, and you will see a green light on the affected loop(s) for that zone, indicating that a call for heat has been made
- After 5 minutes, the actuators will be completely open and the green light(s) will turn blue showing that the signal has been sent to Warmsource and water is now flowing to the zone
- Return to this thermostat, choose “Mode Select” and turn the heat “off”
- Repeat this process for each thermostat

FINAL CHECKLIST

- When the water is circulating, the LEDs on the pump will show the flow rate in GPM’s (pump should be set on “Constant Pressure”)
- Confirm boiler is firing with water temps shown on boiler LED screen, generally 90-140°F *(WARNING: If firing above 140°F, shut down immediately and call us, 1.844.482.7922)*
- All zones should operate smoothly and match our Warmboard Designs Drawings
- Navigate to the “Settings” on one of the thermostats to set the date and time across the system

After a zone has called for heat, actuators will take approximately 5 minutes to open and begin heat flow.