



# INDIREX™

## INDIRECT-FIRED WATER HEATERS

### INSTALLATION & OPERATION INSTRUCTIONS

#### Models IDX-SS Series



**NOTE:** A properly sized thermal expansion tank is required and should be installed in accordance with the product installation manual.

**NOTE:** The thermostat is adjusted to 120°F when shipped from the factory.



For more information, visit [amtrol.com/product/indirex](http://amtrol.com/product/indirex).

**NOTE:** Inspect for shipping damage and notify freight carrier or store where purchased immediately if damage is present. To avoid risk of personal injury and property damage, if the product appears to be malfunctioning or shows signs of corrosion, call a licensed professional immediately. Current copies of the Product manual can be viewed at [www.amtrol.com](http://www.amtrol.com). Use proper safety equipment when installing.



**THIS IS THE SAFETY ALERT SYMBOL. IT IS USED TO ALERT YOU TO POTENTIAL PERSONAL INJURY AND OTHER HAZARDS. OBEY ALL SAFETY MESSAGES THAT FOLLOW THIS SYMBOL TO REDUCE THE RISK OF PERSONAL INJURY AS WELL AS PROPERTY DAMAGE.**

**WARNING** READ THE PRODUCT INSTALLATION & OPERATION INSTRUCTIONS CAREFULLY. FAILURE TO FOLLOW THE INSTRUCTIONS AND WARNINGS IN THE MANUAL MAY RESULT IN SERIOUS OR FATAL INJURY AND/OR PROPERTY DAMAGE, AND WILL VOID THE PRODUCT WARRANTY. THIS PRODUCT MUST BE INSTALLED BY A LICENSED PROFESSIONAL. FOLLOW ALL APPLICABLE LOCAL AND STATE CODES AND REGULATIONS, IN THE ABSENCE OF SUCH CODES, FOLLOW THE CURRENT EDITIONS OF THE NATIONAL PLUMBING CODE AND NATIONAL ELECTRIC CODE, AS APPLICABLE.

**WARNING** This Product, like most Products under pressure, may over time corrode, weaken and burst or explode, causing serious or fatal injury, leaking or flooding and/or property damage. To minimize risk, a licensed professional must install and periodically inspect and service the Product. A drip pan connected to an adequate drain must be installed if leaking or flooding could cause property damage. Do not locate in an area where leaking could cause property damage to the area adjacent to the appliance or to lower floors of the structure.

**WARNING** A relief valve must be installed to prevent pressure in excess of local code requirement or maximum working pressure designated in the Product Manual, whichever is less. At least once every 3 years or if discharge is present, a licensed contractor should inspect the temperature and pressure relief valve and replace if corrosion is evident or the valve does not function.

**FAILURE TO INSPECT THIS VALVE AS DIRECTED COULD RESULT IN UNSAFE TEMPERATURE OR PRESSURE BUILD-UP WHICH CAN RESULT IN PRODUCT FAILURE, SERIOUS INJURY OR DEATH AND/OR SEVERE PROPERTY DAMAGE AND VOID THE PRODUCT WARRANTY.**

**WARNING** **Chlorine Aggressive Water:** The water quality can significantly influence the life of this Product. You should test for corrosive elements, acidity, total solids and other relevant contaminants, including chlorine and treat your water appropriately to insure satisfactory performance and prevent premature failure.

**DANGER** **EXPLOSION HAZARD.** The pressure of the heat transfer medium must be limited to a maximum of 30 psig by an approved safety or relief valve on your boiler. The water heater pressure must be limited to 150 psig maximum by the installation of a temperature and pressure relief valve (included). The relief tube must be plumbed to a suitable drain per code. No reducing coupling or other restriction may be placed in this line.

**CAUTION** The heat transfer medium must be water or other nontoxic fluid having a toxicity rating or class of 1, as listed in Clinical Toxicology of Commercial Products, 5th edition. The pressure of the heat transfer medium must be limited to 30 psig by an approved safety or relief valve.

**WARNING** Do not expose Product to freezing temperatures or temperatures in excess of the maximum rated operating temperature.

**WARNING** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**⚠ DANGER SCALDING HAZARD.** If the water temperature is over 120° F, household members can suffer serious or fatal scalding and painful and permanent injury.

- The Consumer Products Safety Commission recommends an initial setting of 120°F, but advised that a slower response time of infants, aged, disabled and other persons increases the scalding hazard and may require lower settings.
- Always check the water temperature before use, including washing, bathing or showering.
- Temperature limiting valves are available from your plumbing supplier. A check valve must be installed in the boiler return line to prevent gravity flow through the heat exchanger. This can cause overheating and result in serious or fatal scalding.

**⚠ DANGER SCALDING HAZARD.** If the thermostat is not working properly or if this product is not installed in accordance with the manual, water temperature can reach excessive levels that may cause serious or fatal scalding. After installation and any servicing of the unit, verify that the thermostat is working and firmly inserted in the thermostat well.

**⚠ WARNING** Failure to use the correct replacement parts may make your product unsafe.

**⚠ WARNING** In limited circumstances, space heating can be lost in the home with unit utilizing priority mode. Any demand for space heating is postponed until the water heater has reached its set temperature. This delay in supplying the space heating zones is usually not noticed by the inhabitants of the living spaces. However, in the event of certain malfunctions such as circulator or thermostat failure, space heating could be delayed indefinitely. If undetected and uncorrected, freezing damage to piping could result.

**⚠ CAUTION** If a steel hydropneumatic tank is in place, replace it with a properly sized diaphragm expansion tank. Otherwise, significant heat transfer problems can occur by causing air to be trapped in the heat exchanger. If the boiler system has a diaphragm expansion tank and the boiler temperatures are being changed, resize the expansion tank.

**⚠ WARNING** If installing on city water supply, a properly sized thermal expansion tank is required with the water heater and should be installed as set forth in the product installation manual. Contact your water supplier or local plumbing inspector for additional information.

**⚠ DANGER** Prevent pressure build-up in any existing internal tankless coil. Do not plug incoming or outgoing tapings in the internal tankless coil plate. Leave the coil in the boiler and leave system connections open to prevent pressure build-up.

**⚠ DANGER ELECTROCUTION HAZARD.** The water heater must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70. Electrical supply must come from the boiler side of boiler's emergency shut-off switch in order to prevent unsafe boiler operation.

**⚠ DANGER** If not installed by the boiler manufacturer, install a low water cut-off or pressure reducing valve on your boiler so that leaking will not result in a dry boiler which if the boiler continues to fire, will cause an explosion hazard.

**⚠ DANGER** This unit must be installed as a separate heating zone. Do not connect this unit to an existing heating zone or feed boiler water directly through the coil as dangerous over-heating will result.

**⚠ CAUTION** Do not drain this appliance before shutting off the supply valve and opening the relief valve or another downstream fixture, as it will damage this unit. A vacuum breaker should be installed to avoid damaging the liner. Damage to the unit and leakage can occur if a vacuum breaker is not installed.

**⚠ CAUTION** As in all plumbing products and water storage vessels, bacteria can grow in this Product, especially during times of non-use. Consult your local plumbing professional regarding any steps you may wish to take to safely disinfect your home's plumbing system.

**⚠ WARNING** Do not connect the water heater domestic supply with baseboard or other space heating units or elements. Any contaminants in the baseboard units will contaminate the potable water in the water heater and also adversely affect its performance.

**⚠ CAUTION** Do not drill, puncture or otherwise penetrate the steel outer tank shell. Do not screw pipe hangers or other hardware into the exterior of the tank.

## Model Specifications

MODEL	IDX-40SS	IDX-50SS	IDX-80SS
Capacity (Gallons)	40	50	80
Heat Exchanger Surface Area (sq. ft.)	10.4	12.6	15.0
Recommended Flow Rate gpm (Boiler Water)	10	10	14
Pressure drop Ft. Hd. (Heat Exchanger)	7.1	7.3	5.0
First Hr. Ratings gph 90° Rise	210	249	336
Continuous Flow gph 90° Rise	168	197	252
First Hr. Ratings gph 77° Rise	238	282	379
Continuous Flow gph 77° Rise	197	229	295
Boiler Size BTU's Required to Obtain Rated Performance	120,000	140,000	180,000

**PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY**  
**IMPORTANT GENERAL SAFETY INFORMATION -**  
**ADDITIONAL SPECIFIC SAFETY ALERTS APPEAR IN THE FOLLOWING INSTRUCTIONS.**

**Pre-Installation**

- THIS PRODUCT MUST BE INSTALLED AND MAINTAINED BY A LICENSED PROFESSIONAL PLUMBER, ELECTRICIAN, AS APPLICABLE. IN ADDITION TO THE INSTRUCTIONS IN THIS MANUAL, FOLLOW ALL APPLICABLE LOCAL AND STATE CODES INCLUDING MA CMR 248 OR IN THE ABSENCE OF SUCH CODES, THE CURRENT EDITIONS OF THE NATIONAL PLUMBING CODE AND THE NATIONAL ELECTRIC CODE.
- DRIP PAN AND DRAIN: This appliance should not be installed in an area where leakage of the tank or connections can result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations cannot be avoided, a suitable drain pan, adequately drained and kept clear, must be installed under the appliance.
- CAUTION: Determine whether your water is corrosive or acidic, and that there are no suspended solids, toxic or other substances or abnormally high chlorine levels in the water that could damage or affect the water heater or the rest of your plumbing system.
- Wiring Options. Select either a Non-Priority or Priority System: Two options are available when wiring the controls of the water heater in the space heating system (boiler and distribution elements).
  1. **Non-Priority System** - The controls of the water heater must be wired as a separate heating zone with a standard zone valve or a separate circulator dedicated to the water heater "zone".  
**NOTICE:** In this non-priority option, the water heater will be supplied just as another zone. This means that if all space heating zones call for hot boiler water at the same time, the water heater may not be supplied with enough hot boiler water to "recover" adequately. The delivery of domestic hot water will be diminished. In many, but not all cases, this is not a problem because the routine oversizing of boiler output is adequate for both loads.
  2. **Priority System** - Under this wiring option the water heater will be supplied before space heating.



**WARNING** In limited circumstances, space heating can be lost in the home in this priority mode. Any demand for space heating is postponed until the water heater has reached its set temperature. This delay in supplying the space heating zones is usually not noticed by the inhabitants of the living spaces. However, in the event of certain malfunctions such as circulator or thermostat failure, space heating could be delayed indefinitely. If undetected and uncorrected, freezing damage to piping could result.

- **Select Circulator versus Zone Valve**  
 The flow of hot boiler water to the water heater can be controlled with either a motorized zone valve or a circulator.
  1. **Separate circulator.** The recommended way to provide adequate flow through the water heater heat exchanger is to use a separate dedicated circulator. This option may be used even though the heating system utilizes zone valves.
  2. **Zone valve.** If a zone valve is to be used, a full-port zone valve should be installed.
- All installations require a low-water cut-off or automatic fill valve on your boiler system to reduce the risk of boiler water loss.
- Steam boiler installations require a low-water cut-off which is also required by most codes.
- Installation of a vacuum breaker is required to prevent damage to the water heater when drained. There must be no valves installed between the vacuum breaker and water heater.

**Required Components**

MODEL	CIRCULATOR	ZONE VALVE*	SHUTOFF VALVE	VACUUM BREAKER	RELIEF VALVE	THERMAL EXPANSION TANK	DRAIN
IDX-40SS	See Chart Below	1" Full Port	4	1	Included	2 Gallon	Included
IDX-50SS	See Chart Below	1" Full Port	4	1	Included	4.4 Gallon	Included
IDX-80SS	See Chart Below	1" Full Port	4	1	Included	4.4 Gallon	Included

\*If circulator is not used. All installations require an adequate amount of pipe sealant for threaded joints.

**Flow Specifications**

MODEL	RECOMMENDED FLOW RATE	HEAT EXCHANGER PRESSURE DROP (FT. HD.)	BOILER WATER CONNECTION SIZES
IDX-40SS	10 GPM	7.1	1"
IDX-50SS	10 GPM	7.3	1"
IDX-80SS	14 GPM	5.0	1"

## Installation - Domestic Water Piping

1. Connect cold water supply to connection labeled COLD WATER.
2. Connect HOT WATER piping to the domestic hot water system.
3. Install the temperature & pressure relief valve into top (front) port and plumb a blow down tube to within 6" above a floor drain or as directed by plumbing code.
4. When all domestic water piping is complete, open the cold water supply and allow some water to enter the tank. Look and listen for signs of leaks and repair as necessary before continuing.

### Clearance From Combustible Surfaces

LEFT SIDE.....	1"	REAR.....	1"
RIGHT SIDE.....	1"	FLOOR.....	0"
TOP.....	9"	FRONT.....	1"

### Clearance for Servicing

LEFT.....	12"	HEAD ROOM.....	36"
RIGHT.....	12"	REAR.....	1"
FRONT.....	30"		

## Installation - Boiler Piping

1. Plumb the circulator or zone valve on the BOILER SUPPLY line.
2. Pipe the BOILER RETURN connection to the boiler return line.

**CAUTION** Be sure the return line is NOT plumbed to the suction side of any heating circulators. This may require moving the heating circulator off the boiler tapping on packaged boilers. Failure to do so will result in overheating and tank damage when the heating system is in operation.

3. Install a weighted flow check on the boiler return line. This is not necessary on systems utilizing a zone valve to control the water heater temperature.

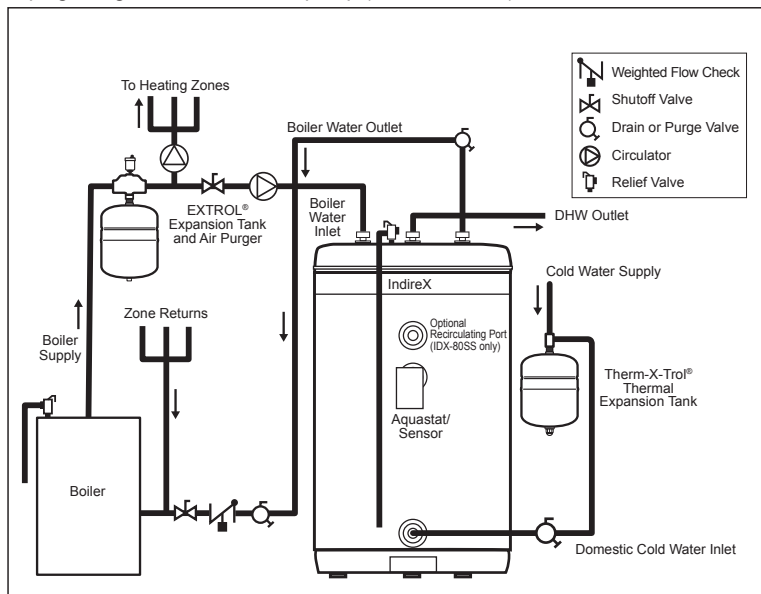
**WARNING** An air eliminator device needs to be installed at the highest portion of the water heater loop. Failure to relieve all trapped air could result in no hot water.

4. After completing the boiler piping, slowly open the boiler fill valve and pressurize the water heater loop. Check for leaks and repair as necessary. Proceed to the appropriate wiring section in this manual.

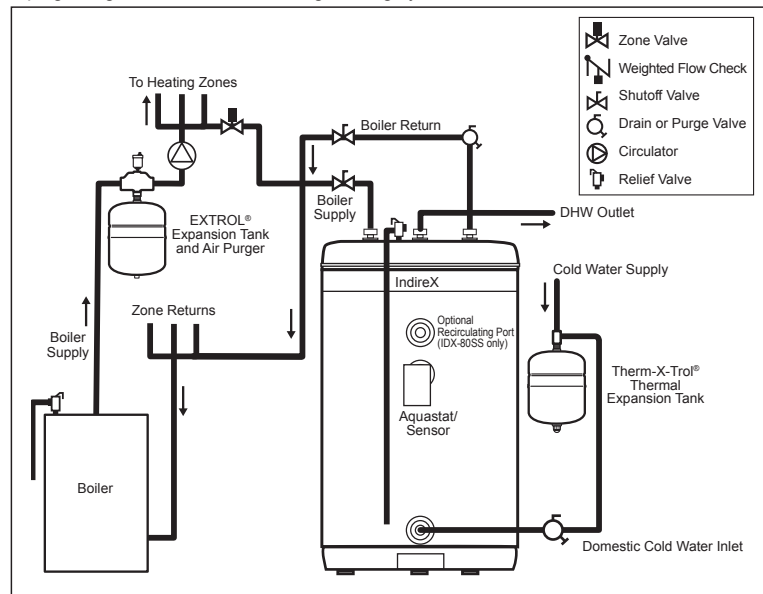
**DANGER** EXPLOSION HAZARD. Do not install to a high pressure steam boiler (greater than 15 psig).

- Install brass tee and drain valve.
- Install start-off valve between water supply and tank cold water inlet.
- Install thermal expansion tank.

Piping using dedicated circular pump (recommended) for **IDX-40SS** to **IDX-80SS**.

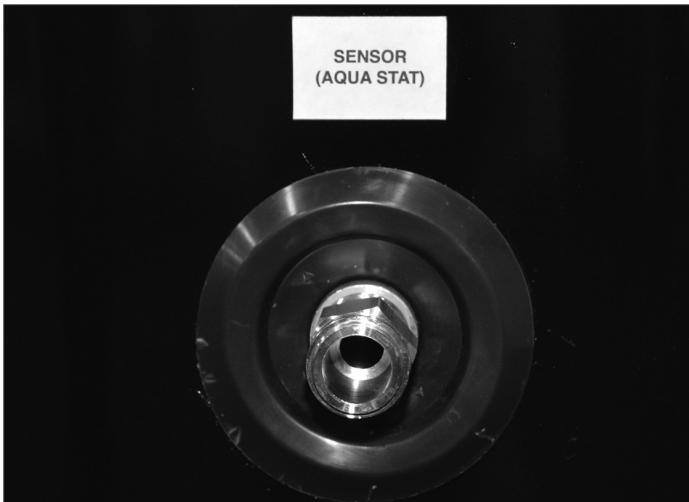


Piping using zone valve with existing heating system circulator or **IDX-40SS** to **IDX-80SS**.

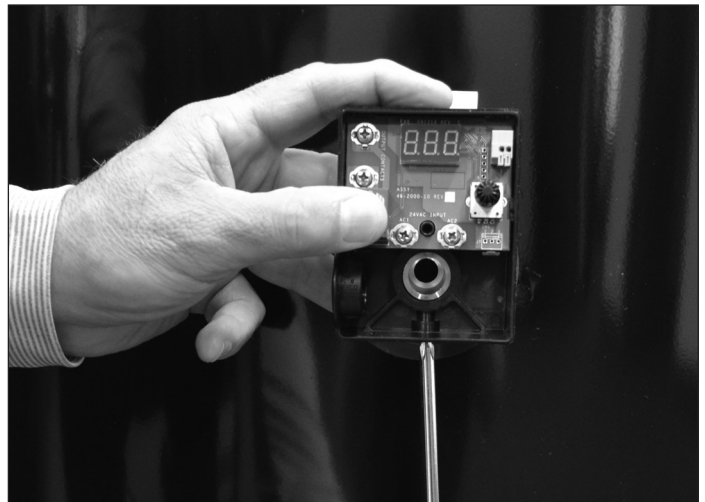




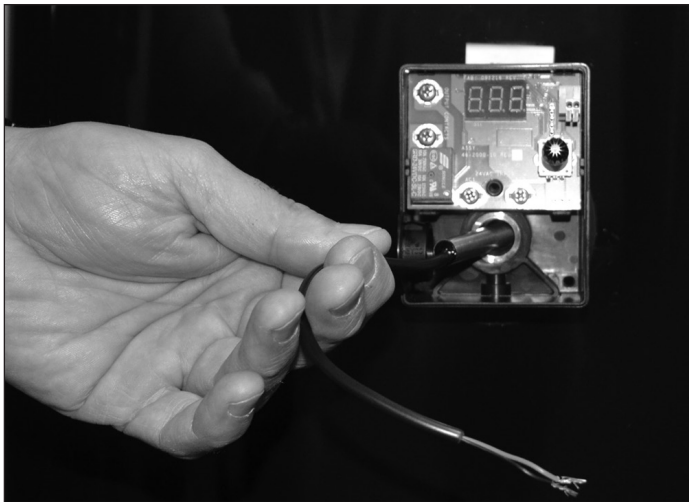
## Installation - Installing the Control



1. Locate the immersion well in the tank that is designed for the temperature control.



2. Hold the control onto the well and tighten the screw at the base of the control.

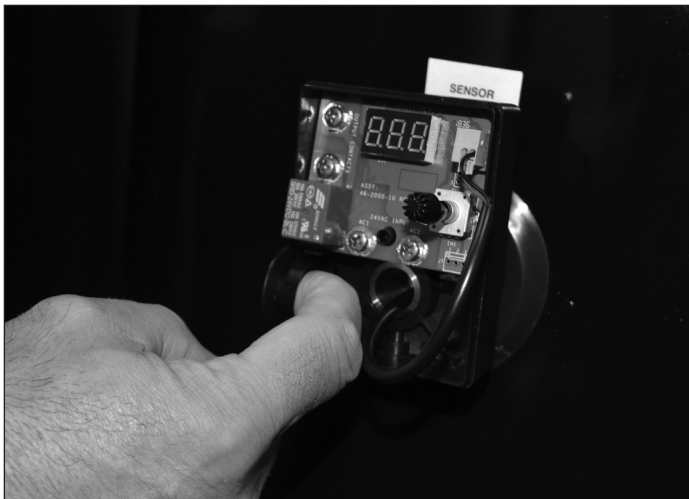


3. Slide the sensor into the well.

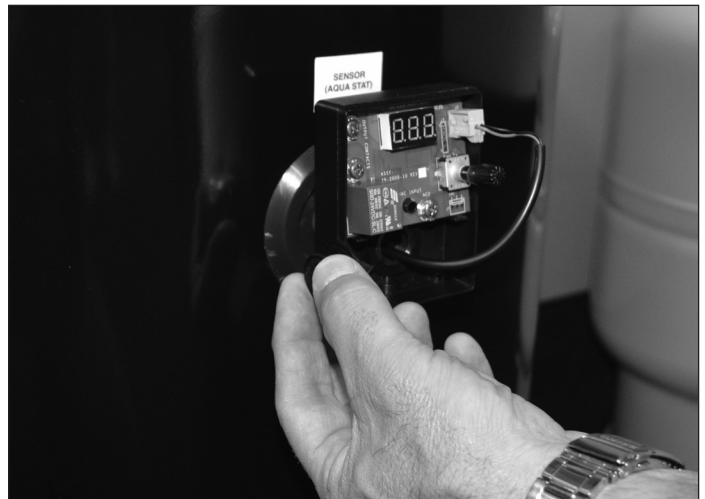
**WARNING** The sensor must be fully inserted and fit snugly in the well for proper operation.



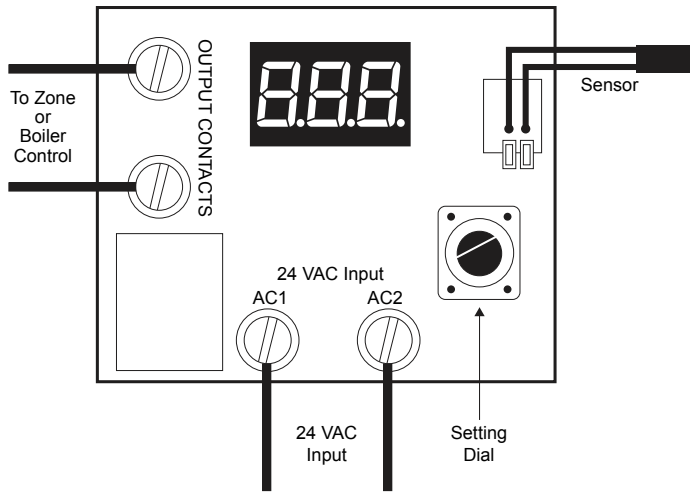
4. Plug the sensor into the sensor input. The terminals are not polarity sensitive. **NOTE: Be sure the wires are fully inserted into the sensor input.**



5. Remove the knockout and replace it with the plastic bushing.



## Installation - Temperature Control Setting



During normal operation, the control will display the temperature set point. If the control is calling for heat, the decimal point in the bottom right of the display will light. When the tank temperature reaches the control set point, the decimal will turn off.



Calling for Heat

<b>Input</b>	24 VAC, 60 Hz
<b>Power</b>	2.4 VA
<b>Output</b>	Dry contact, 50 VA @24 VAC, 60 Hz
<b>Ambient Temp.</b>	30° F - 140° F
<b>Operating Temp.</b>	60° F - 180° F

**WARNING** Temperature settings above 120°F can create a scald hazard.



## Installation - Setting the Control

Push the setting dial to enter the Temperature Setting mode. When pressed, the display will show "OFF" or the current temperature setting. Turn the dial to select the desired water temperature to be maintained in the water heater. See Commercial/Residential for available temperature ranges. The display will return to the operating mode after five seconds of inactivity.

**IMPORTANT** Temperature variations can exist within the water heater. The value displayed on the control is the approximate temperature. A typical starting adjustment point is 120° F. Test the water at the closest point of use for final control adjustment.

**DANGER SCALD HAZARD** - Exposure to 125° F or hotter water can cause scalding injuries. A mixing valve should be installed on installation where point of use water temperature are 125° F or higher.

**TEMPERATURE DIFFERENTIAL** The differential does not need to be set. The Control Temp's advanced software algorithm determines the optimum temperature to initiate heat calls.

**CELSIUS / FAHRENHEIT** To change from Fahrenheit to Celsius, push and hold the setting dial for 5 seconds. The current selection, "F" or "c" will blink on the LED display. Release and turn the setting dial to the desired setting "F" or "c" following the temperature. Once selected, the display will return to the operating mode.

**RESIDENTIAL / COMMERCIAL** The control is equipped with two temperature ranges: One for residential installations ( ) and a second for commercial installations ( ). **NOTE:** Default setting is residential. To change from the Residential range to the Commercial range, remove power from the control, then push and hold the setting dial while restoring power. The current range, "r" or "c" will blink in the LED display. Release and turn the setting dial to the desired range "r" or "c", then push the setting dial again to enter the setting. Once entered, the display will briefly show the selected setting; then the control will display "off". Follow the instructions above (Setting the Control) to set the desired temperature within the selected (residential or commercial) range.

## ERROR CODES



**SENSOR ERROR** The resistance value of the sensor is out of range. Check the sensor connection to the pc board. If the connection is good, the sensor may need to be replaced.



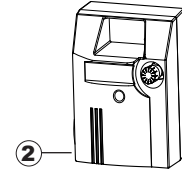
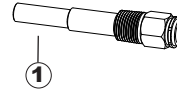
**SELF TEST ERROR** The control has failed an internal test of the hardware or software. Try cycling 24 VAC power off and on. If the problem is resolved, the control will return to normal operation. If the error does not clear, the control should be replaced.

## Start-Up Procedure

- Purge Heat Exchanger:** The heat exchanger should be free of large air pockets to allow the circulator to operate properly. Isolate the boiler return line and flush the loop until large air pockets are purged. After this, the air elimination equipment will collect smaller air bubbles.
- Fill Tank:** Open the hot water fixture furthest from the heater. Open the cold water supply and allow the water to run until air stops emerging. Air pockets may appear at any hot water fixture. This is considered normal and will clear as hot water is used.
- Start Heater:** Turn power on to the unit. Control should be set at 120°F mark. The circulator or zone valve should operate and the boiler should start.
- Check Operation:** The water heater will begin to heat. Depending upon the size of the water heater, output of the boiler and the space heating load, the unit should typically reach set temperature within 15 to 60 minutes. If heating does not occur, consult the troubleshooting section in this manual. **NOTE:** Large heaters coupled with small boilers and non-priority wired applications may exceed this time period upon initial startup.
- Set Temperature:** The control should be set to the minimum temperature consistent with the user's needs. Make small temperature adjustments and allow time for the tank to settle before making another adjustment. This maximizes efficiency and reduces scald potential.

## Replacement Parts

Description	Part Number	ID
Thermwell	2722R01	1
Control with Sensor	2722R02	2



To obtain replacement parts, contact the installer or place of purchase. Technical support is available by calling AMTROL at 401.535.1216.

### MAINTENANCE

The water heater and system should be periodically checked by a licensed professional at least annually and more often as system ages.

### WARRANTY

IDX-SS Models: Ten (10) years limited warranty for residential applications. Visit [www.amtrol.com](http://www.amtrol.com) for complete warranty details.

## Troubleshooting - Amtrol Technical Support can be reached at 401.535.1216.

PROBLEM	POSSIBLE CAUSES	SOLUTION
No hot water	<ol style="list-style-type: none"> <li>No power to unit</li> <li>Circulator air-bound/coil air-bound</li> <li>Faulty circulator or zone valve</li> <li>Faulty control</li> <li>Boiler inoperable</li> </ol>	<ol style="list-style-type: none"> <li>Check circuit breaker, boiler emergency switch and boiler reset switch.</li> <li>Purge air. Ensure circulator is on Boiler Supply. Check air vents.</li> <li>Check circulator and zone valve. Repair or replace if necessary.</li> <li>Check continuity. Switching circuits should close. If not, replace control.</li> <li>Check boiler system. Boiler must operate to generate hot water.</li> </ol>
Insufficient hot water	<ol style="list-style-type: none"> <li>Demand exceeds capacity</li> <li>Temperature too low</li> <li>Boiler lacks output for simultaneous heat &amp; hot water</li> <li>Fouled heat exchanger</li> <li>Insufficient heat exchanger flow</li> </ol>	<ol style="list-style-type: none"> <li>Check sizing based on household size and boiler output.</li> <li>Increase temperature setpoint.</li> <li>Set up for priority. If problem persists add storage or increase tank size.</li> <li>Check Boiler Supply/Boiler Return during cold startup. If difference is less than 20°F, clean heat exchanger as outlined below. Install water treatment equipment to prevent recurrence.</li> <li>Check for undersized or faulty circulator, stuck or undersized zone valve. Ensure all shutoff valves are open. Check for stuck flow check valve. Purge boiler loop to remove air.</li> </ol>
Water too hot	<ol style="list-style-type: none"> <li>Improper plumbing</li> <li>Temperature set too high</li> <li>Temperature sensor not fully inserted</li> <li>Stuck zone valve</li> <li>Flow check valve stuck open</li> </ol>	<ol style="list-style-type: none"> <li>If Boiler Return is plumbed to the suction-side of a heating circulator, overheating will occur when the home's heat is on. Fix plumbing.</li> <li>Reduce temperature setting.</li> <li>Re-insert temperature sensor.</li> <li>Repair or replace.</li> <li>Clean, repair or replace.</li> </ol>
Relief valve dripping or opening	<ol style="list-style-type: none"> <li>Thermal expansion tank undersized or missing</li> <li>Thermal expansion tank set improperly</li> <li>City pressure too high</li> <li>System over temperature</li> <li>Faulty relief valve</li> </ol>	<ol style="list-style-type: none"> <li>Install the properly sized thermal expansion tank.</li> <li>Ensure precharge air pressure matches static water pressure.</li> <li>Install a Pressure Reducing Valve (PRV) if city pressure is over 80 psi.</li> <li>Determine cause of over temperature condition and correct problem.</li> <li>Replace relief valve.</li> </ol>
Discolored water at faucet	<ol style="list-style-type: none"> <li>Poor water quality</li> <li>Sediment or suspended particles</li> </ol>	<ol style="list-style-type: none"> <li>Have water tested for contaminants.</li> <li>Install sediment filter, purge unit more often to avoid future problems.</li> </ol>
Boiler will not operate when calling for hot water	<ol style="list-style-type: none"> <li>Improper or loose wiring</li> <li>Boiler high limit has been reached</li> <li>Post Purge (POS) set too high</li> <li>Problem with boiler system</li> </ol>	<ol style="list-style-type: none"> <li>Check connections against wiring diagrams in this manual.</li> <li>Boiler will periodically cycle on and off during operation.</li> <li>Have boiler diagnosed for proper operation.</li> </ol>

