

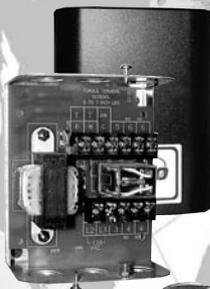
# ARGO AR SERIES CONTROLS

AR822-II, AR861-2II, AR861-3II

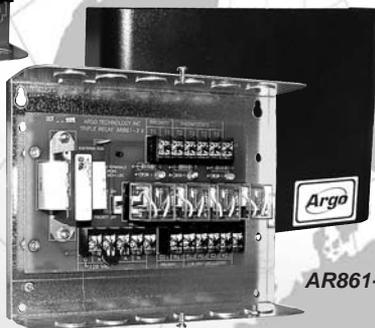
# Argo



**AR861-2II**



**AR822-II**



**AR861-3II**

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An  **ECR International Brand**  
An ISO 9001-2000 Certified Company



P/N 240005122, Rev. A [06/08]



# INSTALLATION MANUAL AND OPERATING INSTRUCTIONS

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**RETAIN THIS MANUAL FOR FUTURE REFERENCE**



## SAFETY SYMBOLS

The following defined symbols are used throughout this manual to notify the reader of potential hazards of varying risk levels.

### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

### **CAUTION**

Indicates a potential hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

**IMPORTANT:** *Read the following instructions COMPLETELY before installing!!*

### **WARNING**

All installations should be done only by a qualified expert and in accordance with the appropriate Argo manual. Installing an electric appliance with improper methods or materials may result in serious injury or death due to fire.

## INTRODUCTION

This manual is intended to familiarize the installer and user of the Argo AR Series of controls with their installation and operation to assure normal trouble-free operation.

Argo controls are designed and manufactured with quality components for maximum life and durability and require minimal service. To insure a satisfactory installation, it is imperative that the instructions be followed carefully before operating the control. Failure to do so may result in breach of warranty.

## MOUNTING INSTRUCTIONS

Mount the Argo AR Series Control vertically on a solid wall or partition. For your convenience it is recommended that the control be mounted as close as possible to the device to be controlled. The control should never be mounted more than 75 feet away. Select a location that is easily accessible for installation and service.

**NOTE: *To reduce the possible transformer hum and relay noise that is sometimes amplified by mounting surfaces such as sheet metal, plasterboard, and similar materials, place rubber or felt washers between the case and the mounting surface.***

1. Position the control and mark the mounting holes.
2. Start screws (not provided) for the keyhole type mounting holes in the upper corner(s). Tighten the screws down to about  $\frac{1}{8}$ " (3mm) from the surface. The AR822-II will require a screw to be installed in the lower left hand corner after the control is hung and leveled.
3. Hang the control on the screw(s), position the case, and start the bottom screws.
4. Tighten all screws.

## ELECTRICAL SPECIFICATIONS & WIRING



**WARNING**

**ELECTRICAL SHOCK HAZARD!** Disconnect power before installing or servicing. Can cause severe personal injury, death, or substantial property damage if ignored.

### – GENERAL WIRING NOTICE –

All primary wiring must be 14 AWG minimum. Torque terminal screws 6 to 7 inch pounds.

**U.S.A.** - National Electric Code and any other national, state, or local code requirements. Wiring must be N.E.C. Class 1.

**CANADA** - C.S.A. C22.1 Canadian Electrical Code Part 1 and any other national, provincial, or local code requirements. Wiring must be C.S.A. C22.1 C.E.C. Part 1.

#### Electrical Specifications

Part Number	Model Number	Transformer Voltage	Relay Switching Action	Contact/Control Amp Draw (120VAC)
Z140	AR822-II	120V/60Hz/40Va	DPDT	7.2
Z209	AR861-2II	120V/60Hz/75Va	DPDT	7.2
Z210	AR861-3II	120V/60Hz/75Va	DPDT	7.2

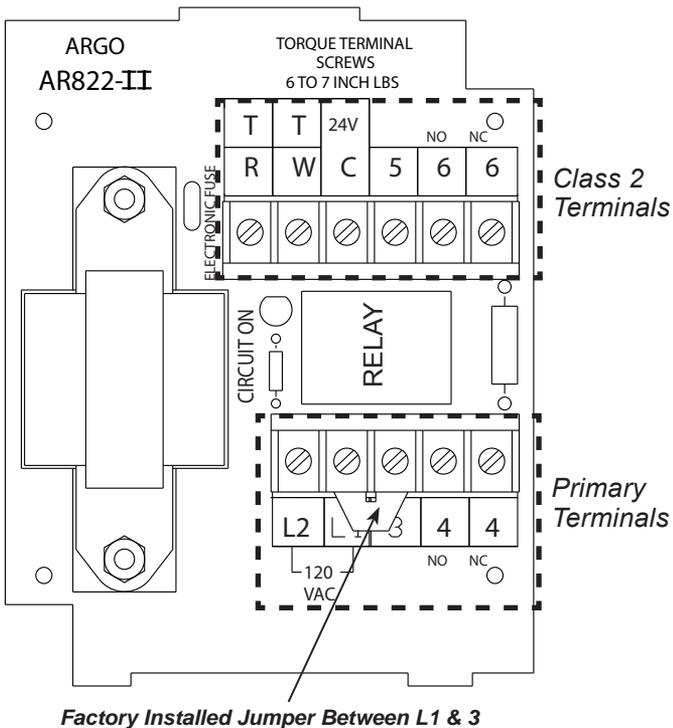
### AR822-II CONTROL FEATURES

- **Auto-Reset Electronic Fuse Protection** – Eliminates Nuisance Service Calls
- **15VA Transformer** – Robust Components Provide Years of Trouble -Free Service
- **Ice Cube Technology** – Plug-In Replacement Relays
- **5-Year Warranty**

## AR822-II SEQUENCE OF OPERATION

1. When the thermostat connection to TR/TW calls for heat the "circuit ON" LED is illuminated.
2. The relay will then close.
3. The contacts between 3/4 NO and 5/6 NO will close.
4. The contacts between 3/4NC and 5/6NC will open.

## AR822-II CONTROL BOARD



The following describes the function of each terminal.

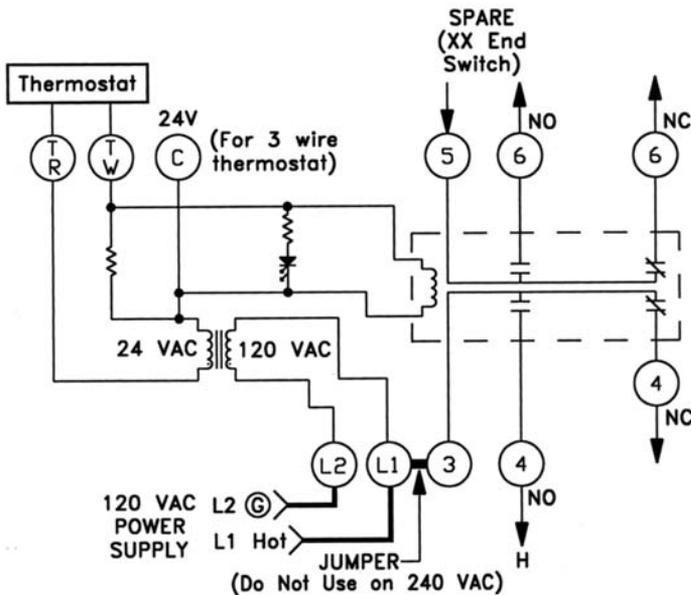
- L1: Hot leg of 120VAC power input
- L2: Common leg of 120VAC power input

## AR822-II CONTROL BOARD

- 3: Input to one pole of relay contacts
- 4 NO: Normally open output, between 3 and 4 NO
- 4 NC: Normally closed output, between 3 and 4 NC
- 5: Input to one pole of relay contacts
- 6 NO: Normally open output, between 5 and 6NO
- 6 NC: Normally closed output, between 5 and 6NC

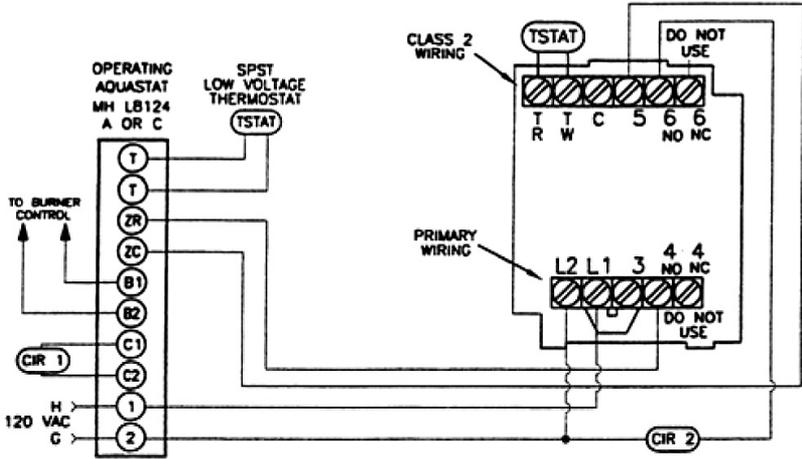
T/R and T/W are the thermostat connections. When a Thermostat calls completing the circuit the relay is activated.

## AR822-II WIRING SCHEMATICS

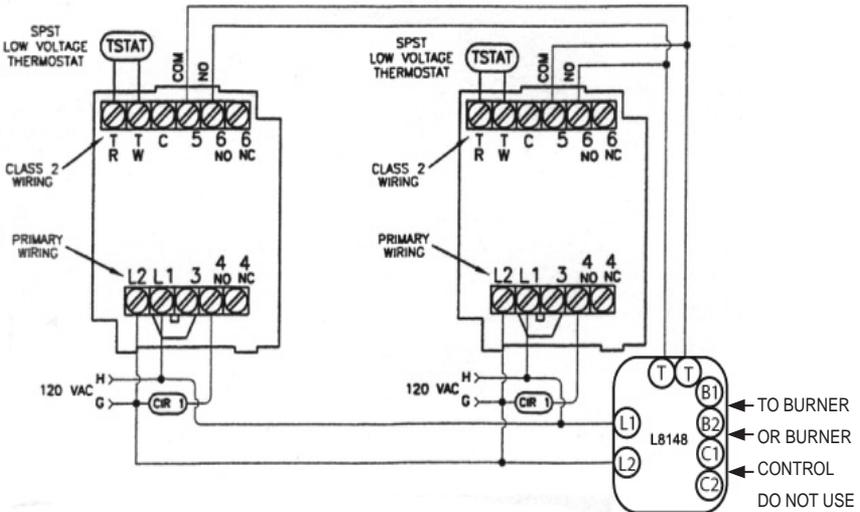


# AR822-II APPLICATIONS

## AR822-II Single Zone Application with Tankless Coil Boiler

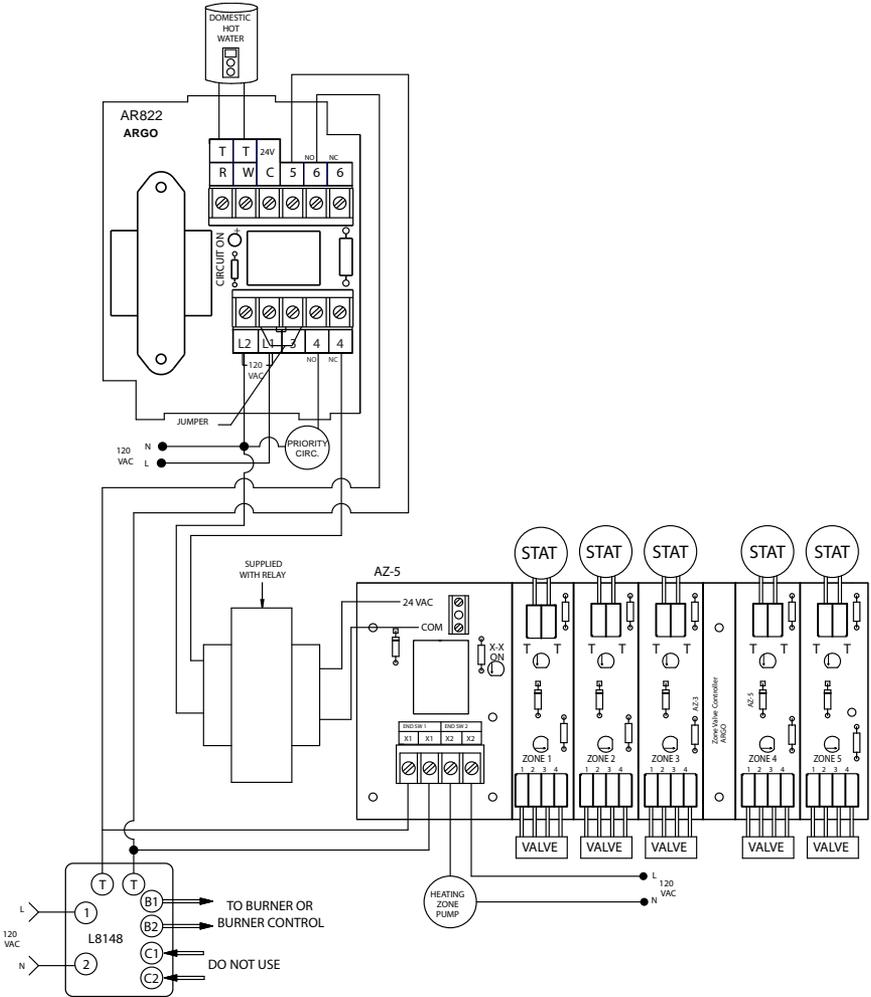


## AR822-II Dual Zone Application without Tankless Coil Boiler



# AR822-II APPLICATIONS

## AR822-II Indirect Tank Priority with Zone Valve Control



**NOTE:** Thermostats must be mercury switch style or battery powered for this installation to function properly.

## AR861-2II & AR861-3II CONTROL FEATURES

- **2-Zone AR861-2II or 3-Zone AR861-3II**
- **Auto-Reset Electronic Fuse Protection** – Eliminates Nuisance Service Calls
- **15VA Transformer** – Robust Components Provide Years of Trouble -Free Service
- **Ice Cube Technology** – Plug-In Replacement Relays
- **Priority Function**
- **5-Year Warranty**

## AR861-2II & AR861-3II SEQUENCE OF OPERATION

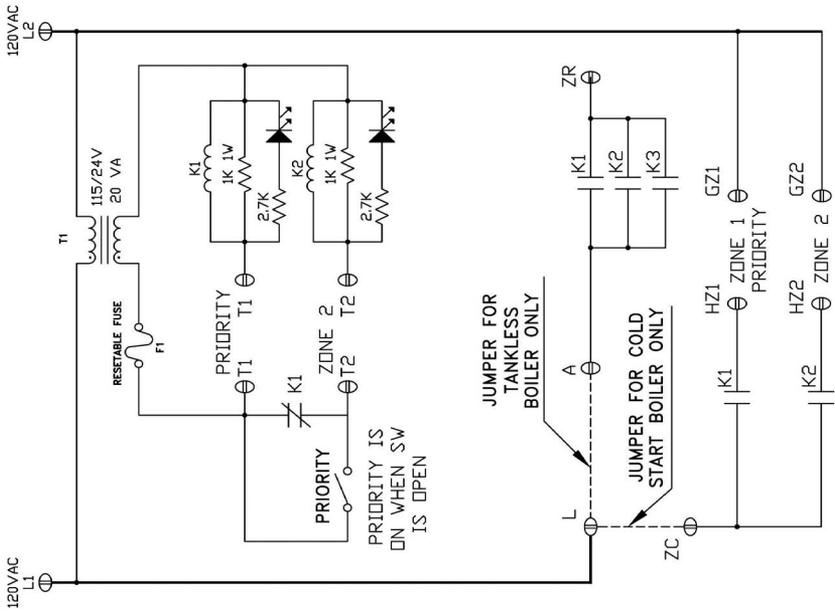
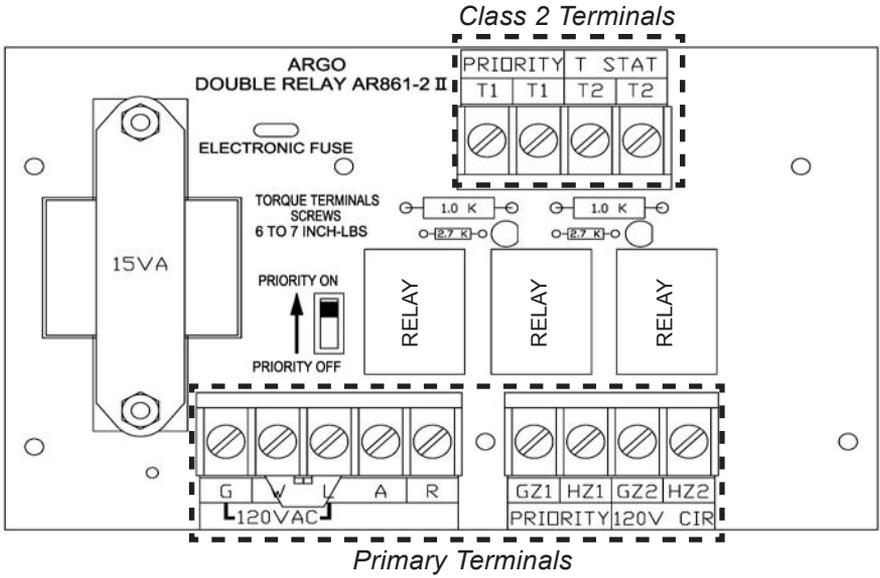
### IF THE PRIORITY SWITCH IS IN THE “OFF” POSITION

1. When a zone calls for heat the corresponding zone LED is illuminated.
2. The relay for the corresponding zone will then close.
3. A/R terminals will close starting the boiler.
4. The corresponding GZ/HZ terminals will be energized with 120 Volts.

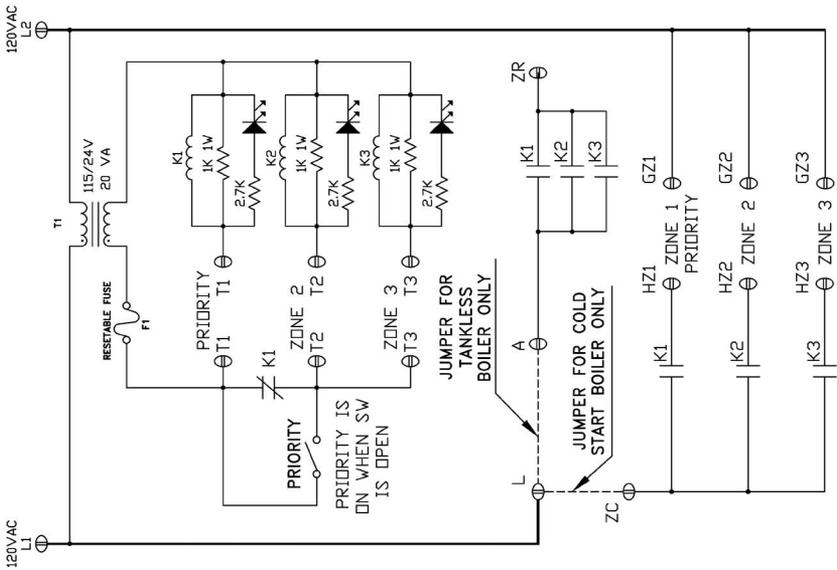
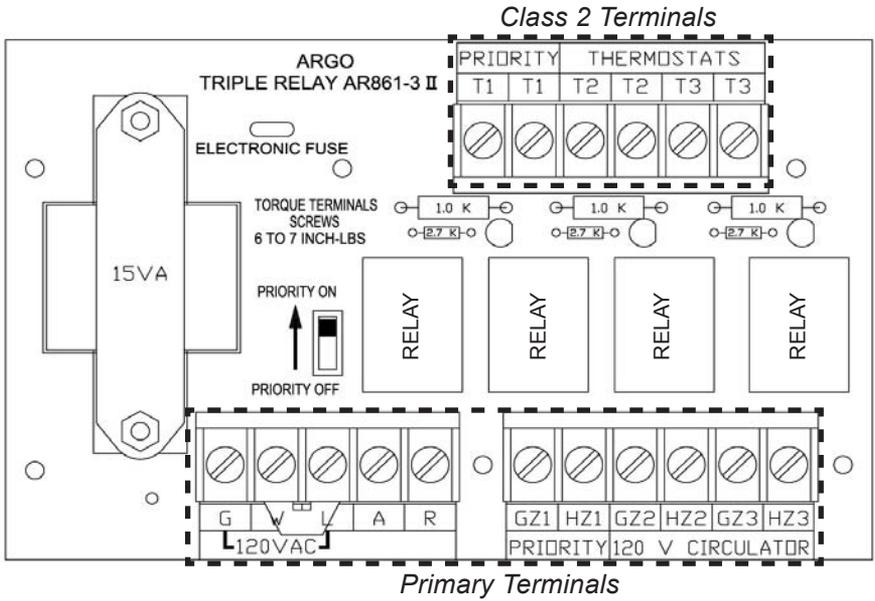
### IF THE PRIORITY SWITCH IS IN THE “ON” POSITION

1. Zone 1 becomes the priority zone.
2. When zone 1 calls for heat, the priority zone is activated and all other zones are deactivated (circulators for zones 2 and higher will not operate). Zone 1 LED is illuminated indicating a call for heat.
3. Zone 1 relay will close.
4. A/R terminals will close starting the boiler.
5. GZ 1/HZ 1 will be energized with 120 Volts.

# AR861-2II CONTROL BOARD & WIRING SCHEMATIC



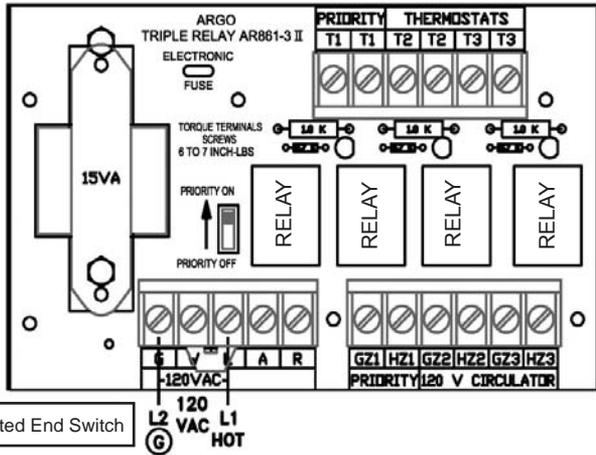
# AR861-3II CONTROL BOARD AND WIRING SCHEMATIC



## AR861-2II & AR861-3II APPLICATIONS

The diagrams on the following pages represent the AR861-3II. The AR861-2II is wired in a similar fashion.

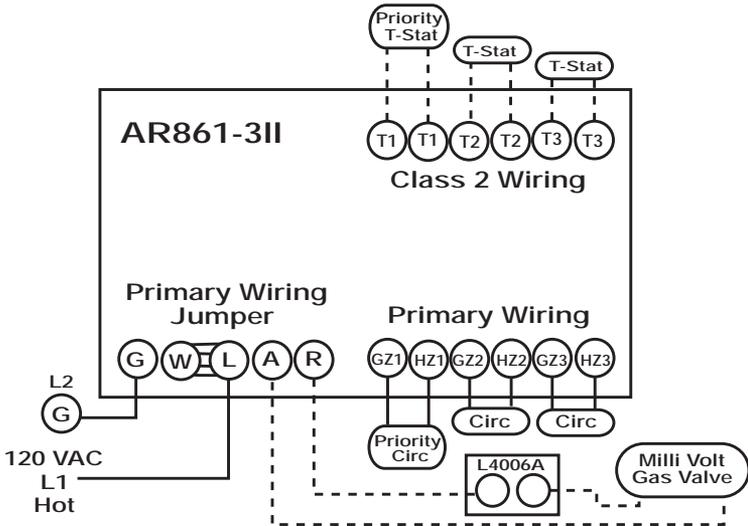
"COLD  
START"  
BOILER



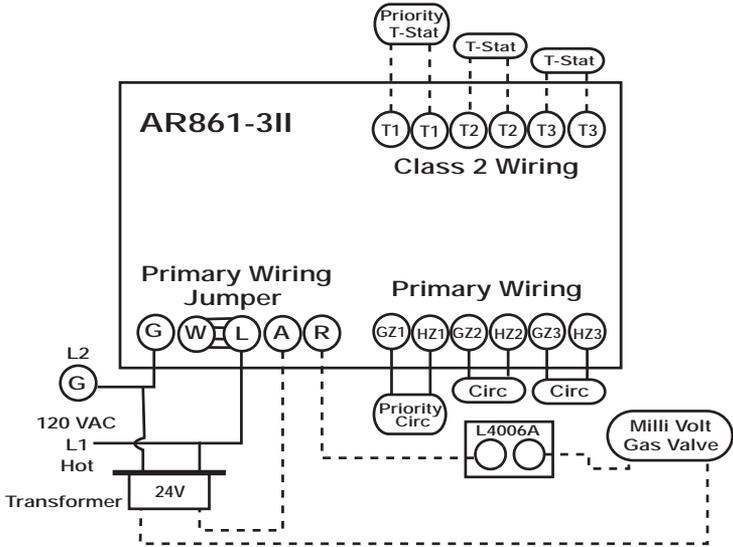
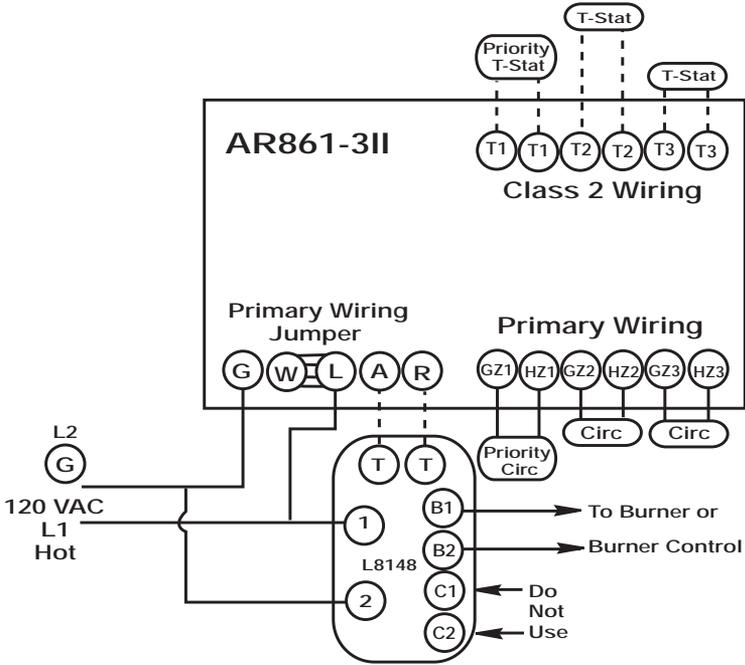
Terminals (A) and (R) Isolated End Switch

Each of the low voltage controllers (SPST Thermostats) will actuate a circulator and start the burner when used in conjunction with an isolated switch aquastat.

**Jumper:** To be placed between terminals (L) and (W). In this position (A) and (R) become the isolated end switch. (Jumper is factory installed in this position)



# AR861-2II & AR861-3II APPLICATIONS

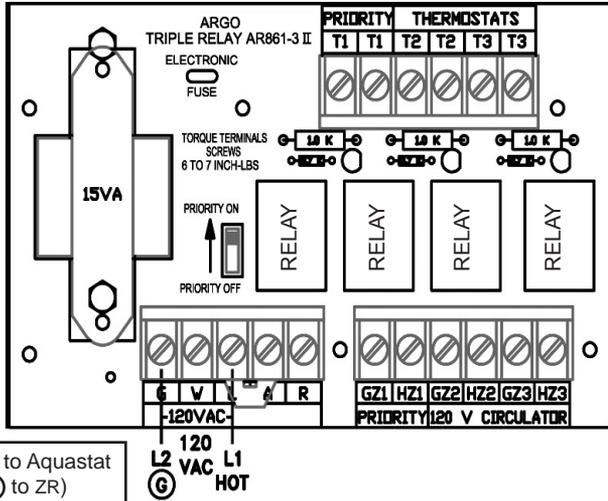


## AR861-2II & AR861-3II APPLICATIONS

### ⚠ WARNING ⚠

AR relays will not work properly if 120 VAC polarity is not the same at the 120 VAC L and N terminals on both the AR control and the boiler aquastat. The neutral and hot wires must not be reversed. Reversing the L and N wires could result in a secondary source of power that may activate the boiler under certain circumstances that may cause serious injury or death.

"TANKLESS  
COIL"  
BOILER



Terminals (W) and (R) to Aquastat  
(W) to ZC and (R) to ZR

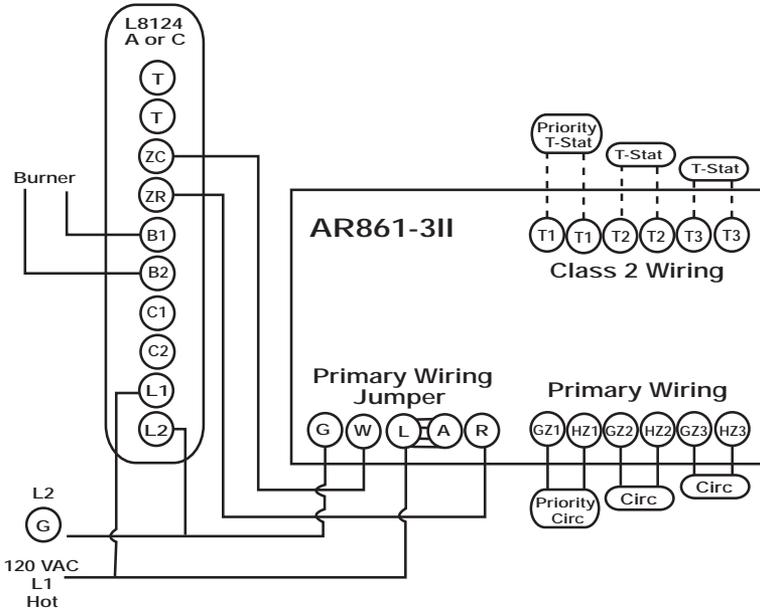
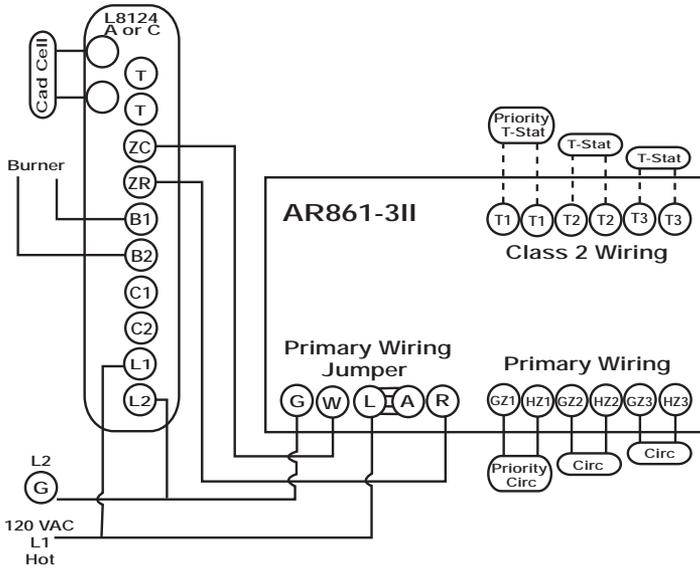
Each of the low voltage controllers (SPST Thermostats) will actuate a circulator and start the burner when used in conjunction with a boiler aquastat control. If the boiler temperature drops below the low limit (circulator) setting, all circulating will cease until the temperature of the boiler water is increased.

**Jumper:** To be placed between terminals (L) and (A). In this position a line voltage message is sent out (R) to ZR terminal on the aquastat and returns to (W) from the ZC terminal on the aquastat.

### ⚠ WARNING ⚠

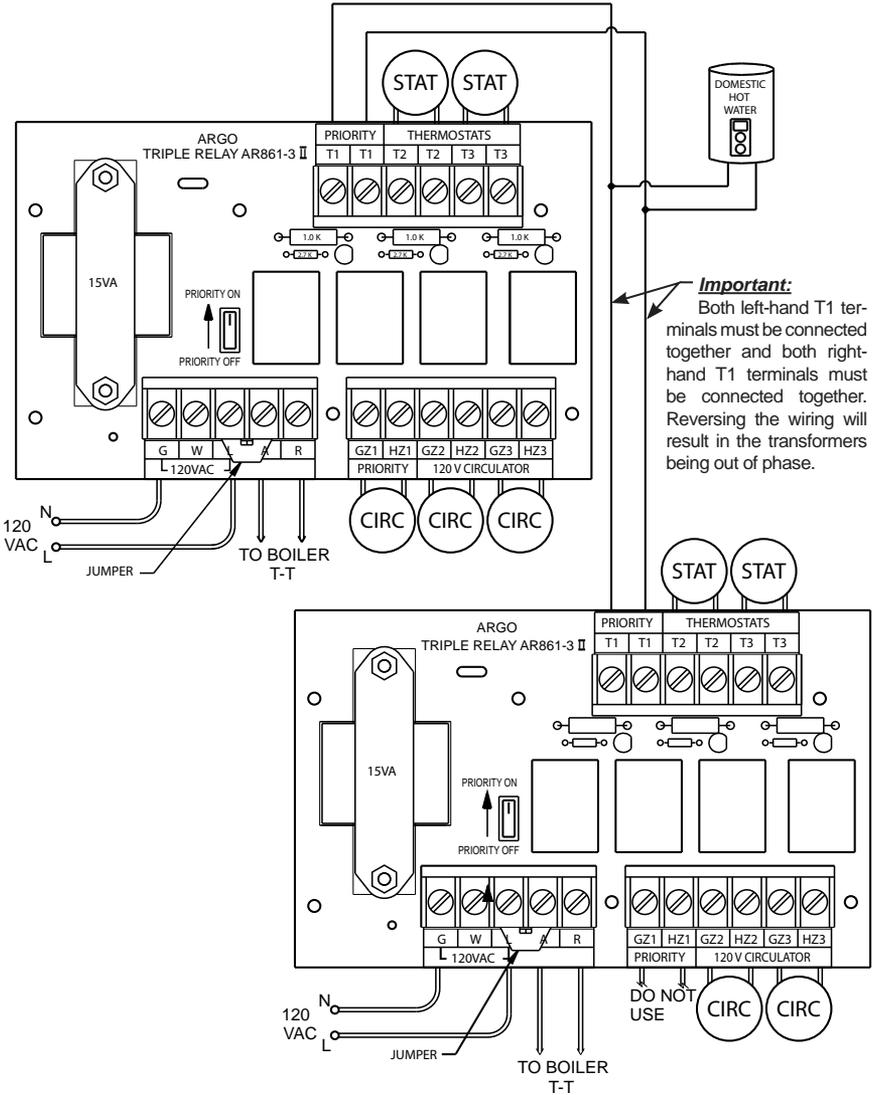
When using ZC-ZR careful attention must be paid to keeping the polarity of the wiring consistent between the Argo control and the boiler aquastat. Failure to do so could result in a secondary source of power activating the boiler under certain circumstances which could result in serious injury or death. Always disconnect power to both the Argo control and the boiler when installing or servicing this product.

# AR861-2II & AR861-3II APPLICATIONS



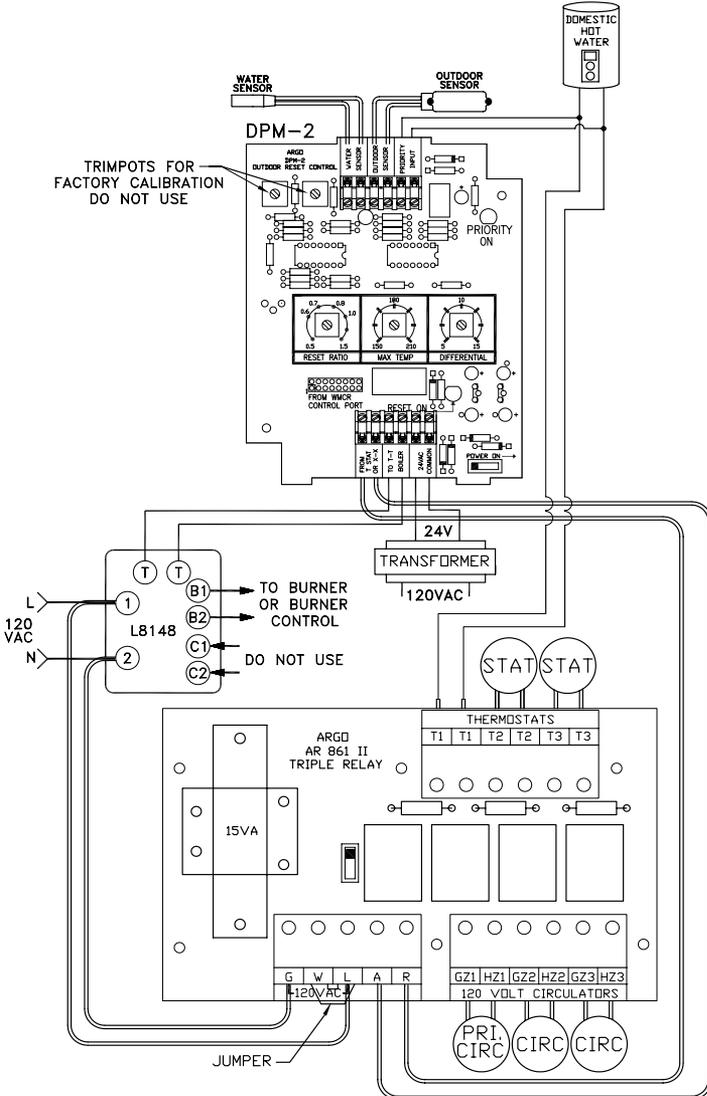
## AR861-2II & AR861-3II EXPANSION TECHNIQUE

The two controls on this page are capable of running six zones. When they are installed as shown below, only one priority and four standard zones (for a total of five zones) are available.



# AR SERIES WITH DPM-2 OUTDOOR RESET CONTROL

The DPM-2 Outdoor Reset Control is designed to raise or lower the temperature of the boiler supply water based upon a proportionate drop or rise in temperature at the outside sensor. This control plugs into Argo control equipment with a data port or as a stand alone device that can be easily wired into almost any system. See the separate DPM-2 Installation Manual for more information.



## REPLACEMENT PARTS

Replacement Part	
Part Description	Argo Part Number
Replacement Control Relay	R35C

## TECHNICAL SUPPORT

For technical support on this and all Argo products, please contact ECR International Technical Service at 1-800-325-5479. Please have your model number available when calling.

Information Needed When Calling
Model Number
Installation Date
Installer

