

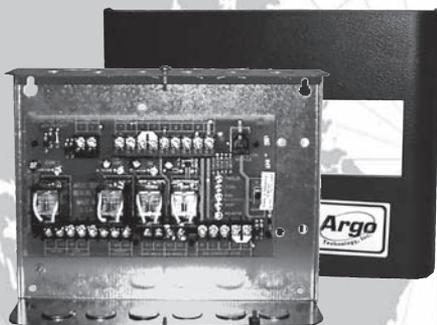
# ARGO HYDRO-AIR ZONING CONTROLS

ARH-1, ARH-2, ARH-3

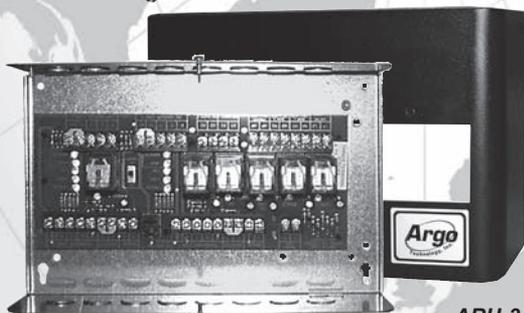
# Argo



**ARH-1**



**ARH-2**



**ARH-3**

**ARGO** (Technical Support)  
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Utica, NY 13501

(Corporate Sales)  
85 Middle Road  
Dunkirk, NY 14048

[www.argoindustries.com](http://www.argoindustries.com)

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



P/N 240005131, Rev. 1.1 [10/06]



# INSTALLATION MANUAL AND OPERATING INSTRUCTIONS

P/N#240005131, Rev. 1.1 [10/06]

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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.



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

## SAFETY SYMBOLS *Continued*

### **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 ARH 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.

## PRODUCT DESCRIPTION

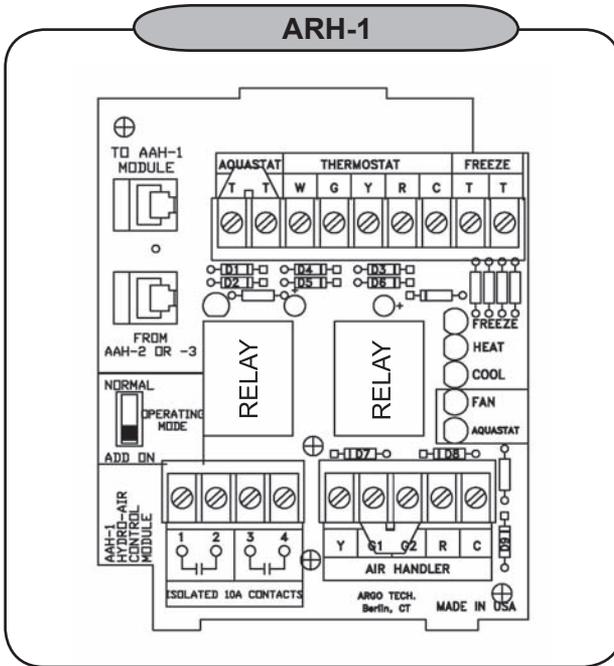
Argo Hydro-Air Zoning Controls provide the easiest way to interface between the thermostat and air handler. These dependable control relays will control from 1 to 20 zones of heating/cooling and provide priority switching for domestic hot water. Boiler and A/C condenser wiring is virtually fool proof.

## ARH FEATURES AND BENEFITS

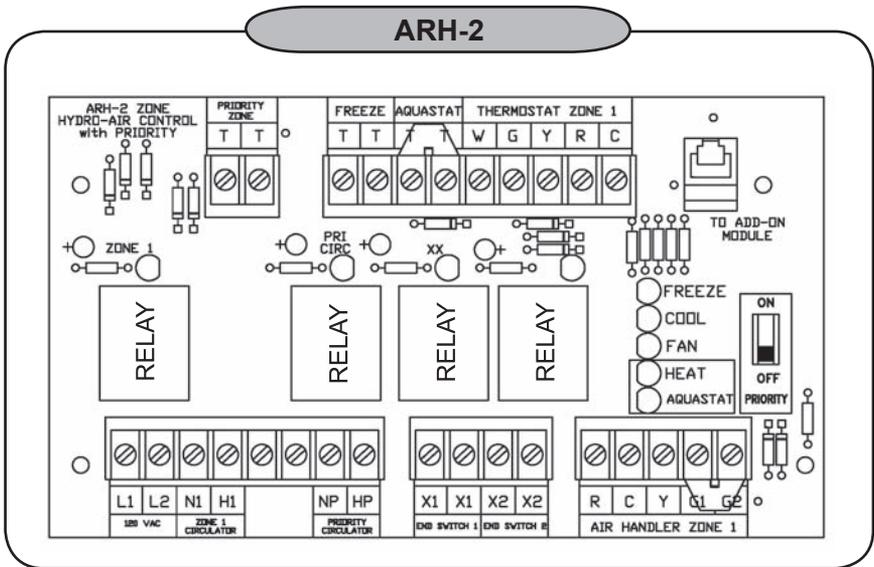
- ▲▼ **Choice of Three Models**
  - Single Zone/Expansion module
  - Two-Zone With Priority
  - Three-Zone with Priority
- ▲▼ **All ARH Models** have plug-in connections for easy expansion up to 20 zones.
- ▲▼ **Multiple Terminals** for 2-speed air handlers
- ▲▼ **Built-In Air Handler “Freeze Protection”**
- ▲▼ **Switchable Priority** for domestic hot water applications.
- ▲▼ **LED Diagnostic Lights** for easy troubleshooting.
- ▲▼ **Includes Strap-On Bi-Metal Aquastat** to prevent “cold air” circulation in heating mode.
- ▲▼ **18 Month Warranty**
- ▲▼ **All Controls Made In The USA**
- ▲▼ **100% Quality Controlled**
- ▲▼ **All Controls Supported by Argo Technical/Training Programs**

# ARH CONTROL BOARD DIAGRAMS

## ARH-1

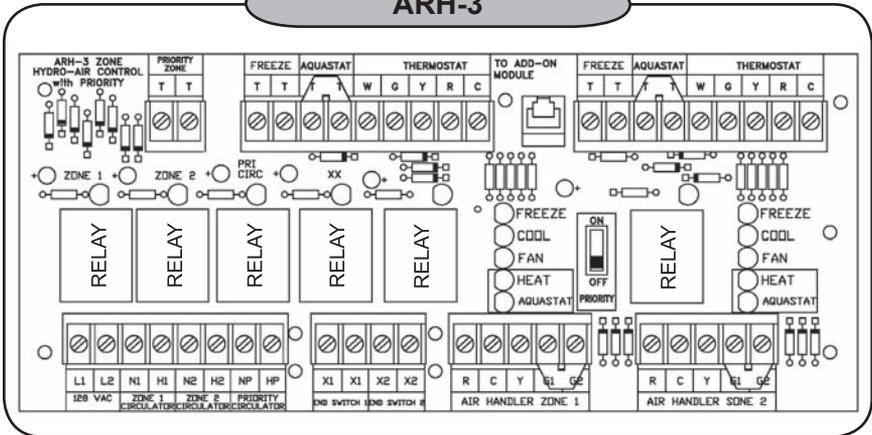


## ARH-2



## ARH CONTROL BOARD DIAGRAMS *Continued*

### ARH-3



## MOUNTING INSTRUCTIONS

Mount the Argo ARH 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 being controlled, however it 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 ARH-1 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 screws, 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

Argo Model Number	Argo Part Number	Power Input	Thermostat Current	Supplied Aquastat
ARH-1	Z181	24VAC/60Hz	.085A	3/8" to 3-4" Strap on Bi-Metal (ON at 118°F ± 5%) (OFF at 95°F ± 5%)
ARH-2	Z179	24VAC/60Hz		
		120VAC/60Hz for Circulator Power		
ARH-3	Z180	24VAC/60Hz		
		120VAC/60Hz for Circulator Power		

## SEQUENCE OF OPERATION

When the thermostat calls for heat, the boiler end switch closes, starting the burner and energizing the heating circulator. The fan will operate at low speed (G1) when the water temperature is above the aquastat setting at the Hydro-Coil.

When priority zone is actuated, the priority circulator and boiler end switch is energized. The heating circulator is shut off and the fan will operate at low speed (G1) until the water temperature drops below the aquastat setting.

When the thermostat calls for cooling, the Argo Control energizes the outdoor condenser and starts the fan on high speed (G2).

**Optional Freeze Protection** for Hydro-Coil: When the Freeze Terminals (TT) are shorted together as with SPST actuator, the heating zone circulator will operate to circulate water through the Hydro-Coil.

For additional zones, use telephone connector to ARH-1 module. Up to 20 Air Handler Zones can be "Daisy Chained" together.

## TERMINAL DESCRIPTIONS

### Thermostat

**W** - Heat Switched Leg

**G** - Fan Switching Leg

**Y** - Cool Switching Leg

**R** - 24VAC Hot

**C** - 24VAC Common (*Optional for use on thermostats requiring common leg*)

## TERMINAL DESCRIPTIONS *Continued*

### Aquastat

**TT** - Connect to factory supplied strap-on aquastat at Hydro-Coil. These terminals must be closed for fan the to operate in Heating Mode. Install a jumper if no aquastat is used.

### Freeze

**TT** - Optional freeze protection when (TT) is connected to aquastat at Hydro-Coil. When closed, these terminals start the heating circulator, but the not fan. Using an SPST aquastat that closes when temperature falls to 40°F with a 5°F differential (MHL 480B), is recommended.

### Boiler End Switch

**X1X1** - Connect to TT terminal on boiler  
**X2X2** - Extra End Switch

### Air Handler

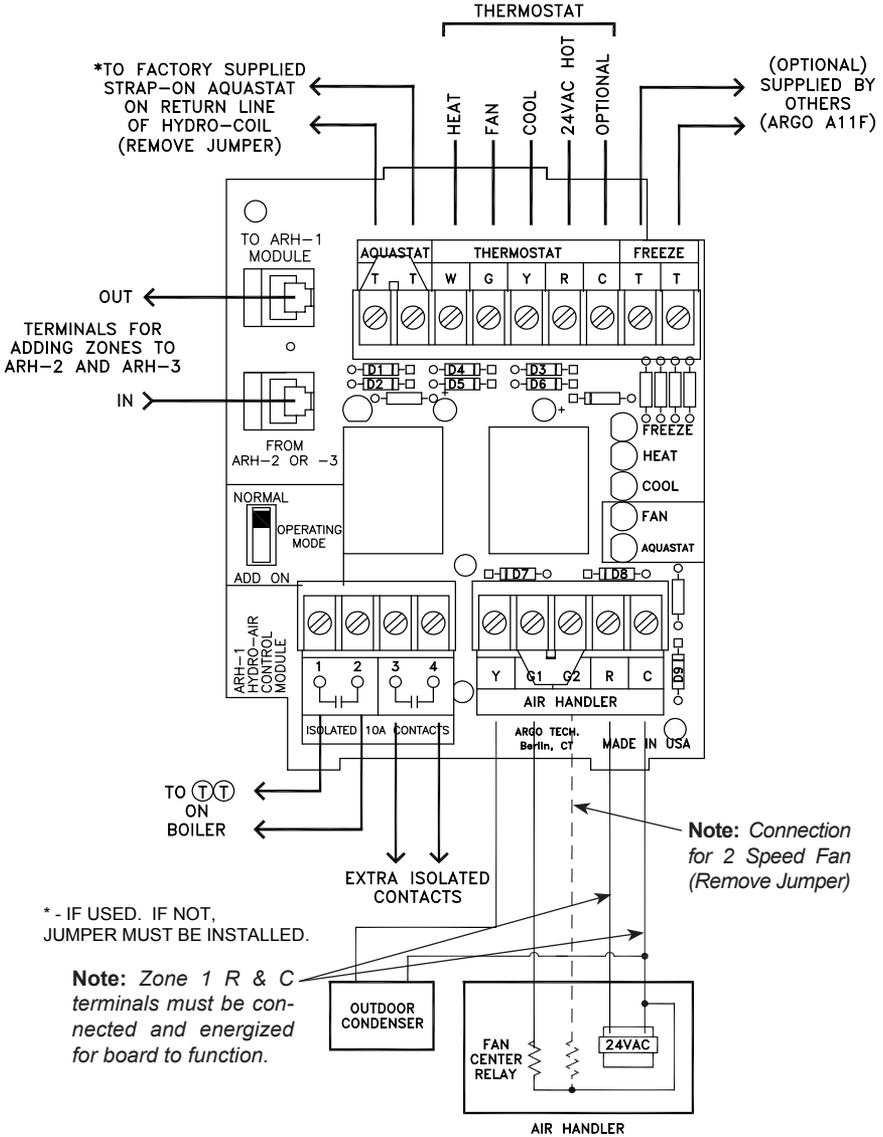
**Y** - Cooling Relay (Condenser)  
**G1** - Heat Fan Center Relay (Low Speed)  
**G2** - Cool Fan Center Relay (High Speed)

**Note:** *One Speed Fan requires Jumper to be installed between G1 and G2.*

**R** - 24VAC Hot used to switch all functions.  
**C** - 24VAC Common used to power fan control.

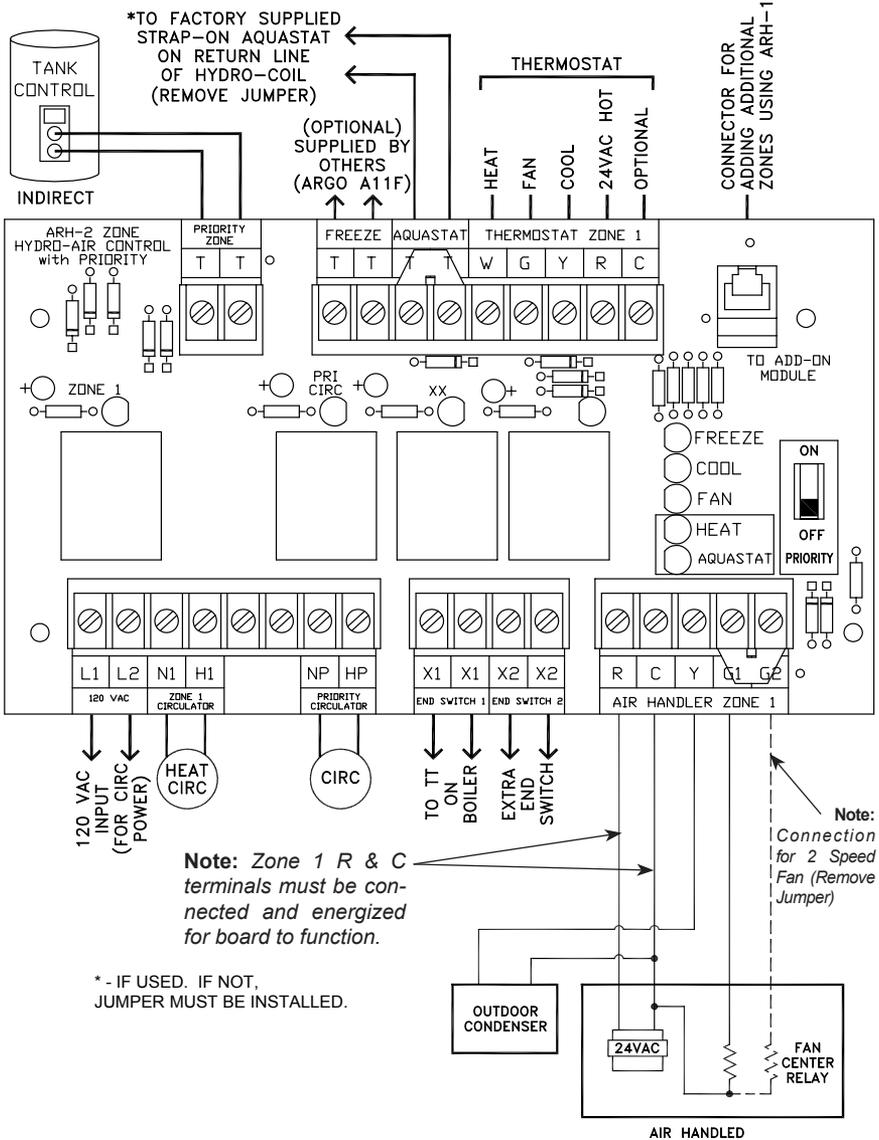
# WIRING DIAGRAM APPLICATIONS

## ARH-1 SINGLE ZONE HYDRO-AIR CONTROL INSTRUCTION



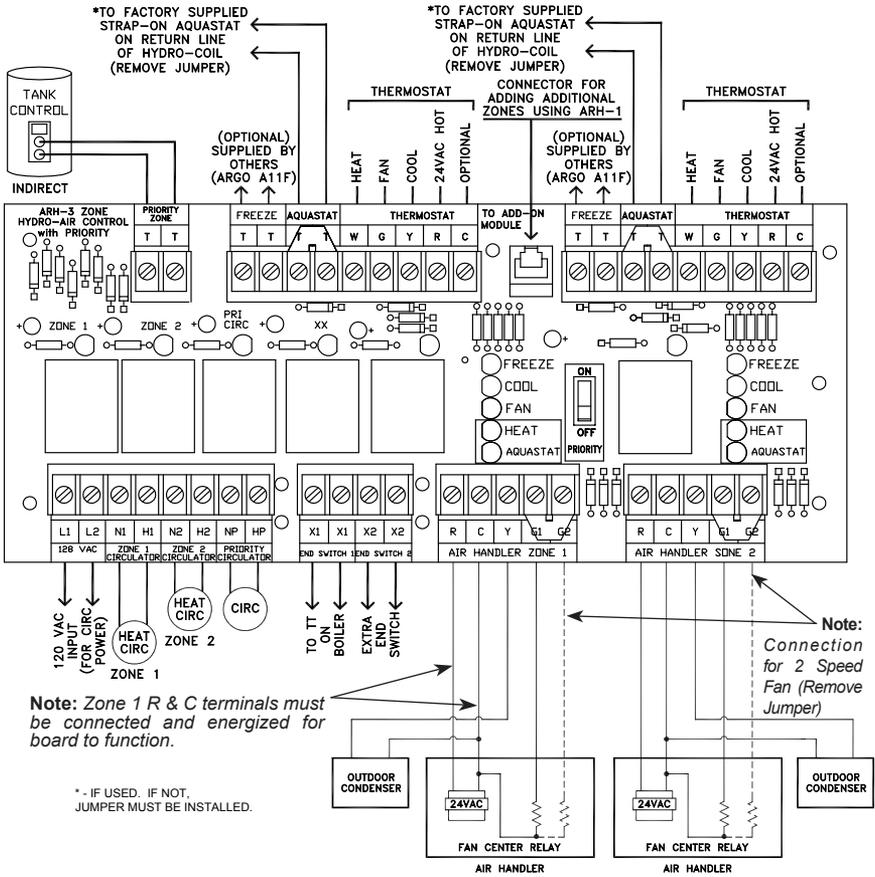
# WIRING DIAGRAM APPLICATIONS

## ARH-2 TWO ZONE HYDRO-AIR CONTROL INSTRUCTION (1 AIR HANDLER AND 1 PRIORITY ZONE)



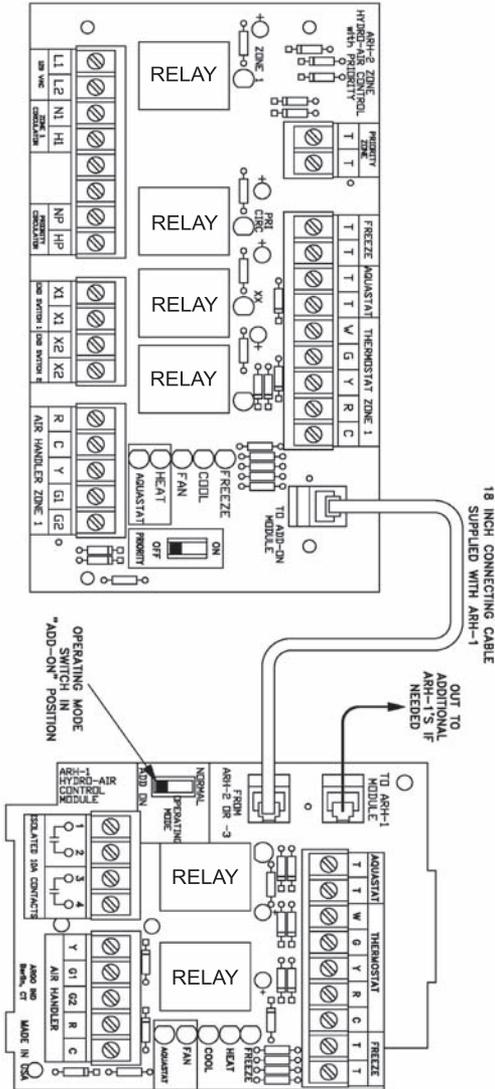
# WIRING DIAGRAM APPLICATIONS

## ARH-3 THREE ZONE HYDRO-AIR CONTROL INSTRUCTION (2 AIR HANDLERS AND 1 PRIORITY ZONE)



# CONTROL EXPANSION APPLICATION

## Wiring Diagram for Adding ARH-1 to ARH-2 or ARH-3



## Replacement Parts

Part Description	Argo Part Number
Relay 24VDC Coil	R35DC
Snap on Aquastat	A10
18" Telephone Cable	C1
Freeze Stat Aquastat	A11F

## 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

