



INSTALLATION INSTRUCTIONS
ARF & ARP SERIES
ALTERNATING RELAYS

September 2017, Rev B (Replaces March 2017, Rev A)

901-0000-323

DANGER!



Potentially hazardous voltages are present. Electrical shock can cause death or serious injury. Installation should be done by qualified personnel following all National, State & Local Codes.



BE SURE TO REMOVE ALL POWER SUPPLYING THIS EQUIPMENT BEFORE CONNECTING OR DISCONNECTING WIRING. READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

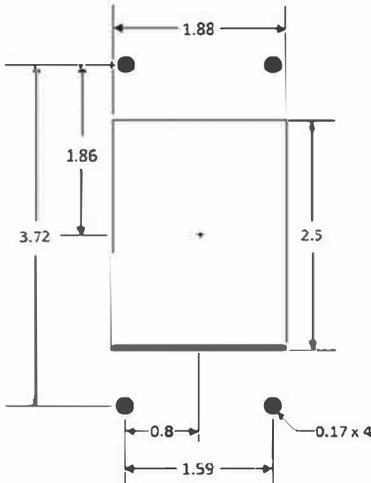
Installation & Setup

Find the appropriate Catalog Number from the tables below or on the back of this instruction sheet to determine the correct wiring diagram and socket to use.

ARF Series Flange-Mounted: Use the Cutout Drawing at right to cut the appropriate size hole in the mounting surface and drill the four mounting holes. Install the relay to the mounting surface.

ARP Series Plug-in: Mount the appropriate socket in a suitable enclosure.

All Products: When connecting wires to the socket terminals, make sure to match the terminal numbers on the socket to the ones shown on the appropriate wiring diagram (the wiring diagram on the relay is the view looking towards the bottom of the relay vs. the top of the socket). Plug the relay into the socket, making sure the key on the center post is in the proper orientation before insertion. If the relay must be removed from the socket, do NOT rock the relay back & forth excessively—the center post could be damaged.



All Dimensions in Inches

Catalog Number	ARP012A2 ARP024A2 ARP120A2 ARP240A2	ARP012A2R ARP024A2R ARP120A2R ARP240A2R	ARP120A4	ARP120A4R	ARF012A6R ARF024A6R ARF120A6R ARF240A6R	ARP012A6 ARP024A6 ARP120A6 ARP240A6	ARP012A6R ARP024A6R ARP120A6R ARP240A6R
Wiring Diagram	<p>LOAD 1: PINS 3 OR 11 LOAD 2: PINS 1 OR 9</p> <p>DIAGRAM 18</p>		<p>LOAD 1: PIN 3 OR 12 LOAD 2: PIN 1 OR 10</p> <p>DIAGRAM 178</p>		<p>LOAD 1: PIN 2 LOAD 2: PIN 8</p> <p>DIAGRAM 17</p>		
Socket	Macromatic 70170-D or Custom Connector OT11-PC		Custom Connector SD12-PC		Custom Connector OR08-PC	Macromatic 70169-D or Custom Connector OT08-PC	
Tightening Torque	12 in-lbs		12 in-lbs		7 in-lbs	12 in-lbs	
Wire Size	One or two #12-22 solid or stranded copper or copper-clad aluminum conductors						
Notes	<p>NOTE: If you are using the same control voltage for both the Alternating Relays and the two loads, you must add a jumper between Pins 6 & 2 and 6 & 10.</p>		<p>NOTE: If you are using the same control voltage for both the Alternating Relays and the two loads, you must add a jumper between Pins 6 & 2 and 6 & 11.</p>		<p>NOTE: If you are using the same control voltage for both the Alternating Relays and the two loads, you must add a jumper between Pins 1 & 5.</p>		
Options	<p>Selector Switch (R Suffix) Set the top-mounted three-position selector switch to "ALTERNATE". In this mode, the unit will operate as a normal Alternating Relay, alternating between the two loads on each subsequent opening of the control switch. Setting the selector switch to either "LOAD 1" or "LOAD 2" indicates which load will be the only one to energize each time the control switch closes - the relay does not alternate.</p>						



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Catalog Number	ARF012A3R ARF024A3R ARF120A3R ARF240A3R	ARP012A3 ARP024A3 ARP120A3 ARP240A3	ARP012A3R ARP024A3R ARP120A3R ARP240A3R	ARP012A5 ARP024A5 ARP120A5 ARP240A5	ARP012A5R ARP024A5R ARP120A5R ARP240A5R
Wiring Diagram	<p style="text-align: center;">DIAGRAM 19</p>			<p style="text-align: center;">DIAGRAM 147</p>	
Socket	Custom Connector OR08-PC	Macromatic 70169-D or Custom Connector OT08-PC		Macromatic 70169-D or Custom Connector OT08-PC	
Tightening Torque	7 in-lbs	12 in-lbs		12 in-lbs	
Wire Size	One or two #12-22 solid or stranded copper or copper-clad aluminum conductors				
Notes	NOTE: If using multiple switches on these Alternating Relays, check to see the proper sequence of switch closures is followed, i.e., LEAD before LAG, STOP before LEAD (if applicable), etc.				
Options	Selector Switch (R Suffix) Set the top-mounted three-position selector switch to "ALTERNATE". In this mode, the unit will operate as a normal Alternating Relay, alternating between the two loads on each subsequent opening of the control switch. Setting the selector switch to either "LOAD 1" or "LOAD 2" indicates which LOAD will always be energized first when the LEAD switch closes - the relay does not alternate.				

Troubleshooting

If the unit fails to operate properly, check that all connections are correct per the appropriate wiring diagram. Check the Troubleshooting Guide below.

Situation	Cause	Solution
The relay does not alternate. Load 1 always comes on and Load 2 never comes on.	The input voltage connected to the Alternating Relay must be applied at all times. If an input voltage wire is switched by the control device, the relay will always start in the Load 1 position and Load 2 will never energize.	Refer to the appropriate wiring diagram or the Knowledge Base article at www.macromatic.com/ar-apps to learn how to connect the relays. Make sure the two input voltage wires are not switched and input voltage is present at all times.
	The socket is wired incorrectly. The wiring diagram on the relay is the view looking towards the bottom of the relay vs. the top of the socket.	Make sure the wires are connected to the correct terminal number on the socket.
I bought a DPDT cross-wired unit, but only have one control switch.	Cross-wired units are typically used with both a LEAD & LAG control switch, but can be used with only one switch if connected correctly.	Wire the single control switch exactly as the LEAD switch is shown in the wiring diagram and disregard any reference to the LAG switch.
The relay appears to be alternating because the LEDs alternate, but my Loads do not.	No jumper has been connected between the control switch terminal and the Common connection of the output relay or relays.	See "Notes" section of the table on page 1 and connect a jumper wire or wires as required.
On SPDT and DPDT versions, why do I have to put a jumper wire between the Control Switch terminal and one or two terminals?	The standard in the industry has been to leave the Common connection of the output relay or relays open for the option of using a different voltage for the output loads vs. the input voltage of the alternating relay.	NOTE: No such jumper wire is required on DPDT Cross-Wired units.
Can I use a different voltage for the two Loads than the input voltage for the Alternating Relay?	Yes, but only for SPDT & DPDT units. DPDT cross-wired units require the same voltage for both input voltage & the loads.	See Knowledge Base Article "Using a 120V Alternating Relay with 208V Loads" on www.macromatic.com .
I have a DPDT Cross-Wired Alternating Relay and Load 2 is always ON when the LEAD Switch is closed.	Normally this means a jumper wire was placed between pins 1 & 2. Whenever the LEAD switch is closed, voltage is then brought to Pin 2, which mimics the closure of the LAG switch and turns on Load 2.	Remove the jumper wire between pins 1 & 2. Connect the LEAD and LAG switches as shown on the wiring diagrams above.

Warranty

All catalog-listed ARF & ARP Series products manufactured by Macromatic are warranted to be free from defects in workmanship or material under normal service and use for a period of five (5) years from date of manufacture.