



# INSTALLATION INSTRUCTIONS

## ARF & ARP SERIES

### ALTERNATING RELAYS

December 2020, Rev D

901-0000-323

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.

*Présence de tensions potentiellement dangereuses. Une décharge électrique peut causer la mort ou des blessures graves.  
L'installation devrait être effectuée par du personnel qualifié suivant tous les codes nationaux, provinciaux et locaux.*

**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.**

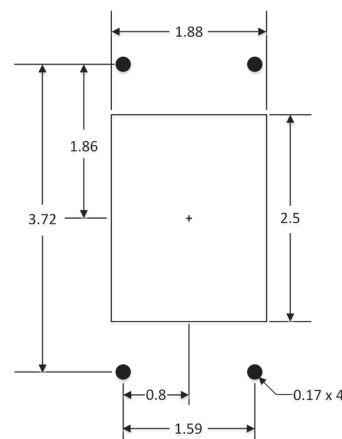
#### Installation & Setup

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.**

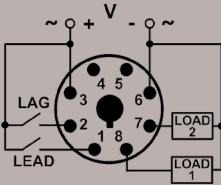
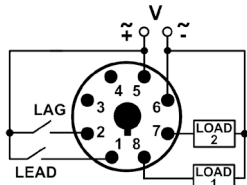


All Dimensions in Inches

| Catalog Number    | ARP012A2<br>ARP024A2<br>ARP120A2<br>ARP240A2                                                                                                                                                                                                                                                                                                                                                                                                        | ARP012A2R<br>ARP024A2R<br>ARP120A2R<br>ARP240A2R | ARP120A4                                                                                                                                                       | ARP120A4R | ARF012A6R<br>ARF024A6R<br>ARF120A6R<br>ARF240A6R                                                                                                    | ARP012A6<br>ARP024A6<br>ARP120A6<br>ARP240A6 | ARP012A6R<br>ARP024A6R<br>ARP120A6R<br>ARP240A6R |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------|
| Wiring Diagram    | <p><b>DIAGRAM 18</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                  | <p><b>DIAGRAM 178</b></p>                                                                                                                                      |           | <p><b>DIAGRAM 17</b></p>                                                                                                                            |                                              |                                                  |
| Socket            | Macromatic 70170-D                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  | Custom Connector SD12-PC                                                                                                                                       |           | IDEC<br>SR6P-M08G                                                                                                                                   | Macromatic 70169-D                           |                                                  |
| Tightening Torque | 12 in-lbs                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                  | 12 in-lbs                                                                                                                                                      |           | 10 in-lbs                                                                                                                                           | 12 in-lbs                                    |                                                  |
| Wire Size         | One or two #12-20 solid or stranded copper or copper-clad aluminum conductors                                                                                                                                                                                                                                                                                                                                                                       |                                                  |                                                                                                                                                                |           |                                                                                                                                                     |                                              |                                                  |
| Notes             | <b>NOTE:</b> 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.                                                                                                                                                                                                                                                                                      |                                                  | <b>NOTE:</b> 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. |           | <b>NOTE:</b> 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. |                                              |                                                  |
| Options           | <b>Selector Switch (R Suffix)</b><br>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. |                                                  |                                                                                                                                                                |           |                                                                                                                                                     |                                              |                                                  |



# **INSTALLATION INSTRUCTIONS** **ARF & ARP SERIES** **ALTERNATING RELAYS**

| Catalog Number    | ARF012A3R<br>ARF024A3R<br>ARF120A3R<br>ARF240A3R                                                                                                                                                                                                                                                                                                                                                                                                 | ARP012A3<br>ARP024A3<br>ARP120A3<br>ARP240A3 | ARP012A3R<br>ARP024A3R<br>ARP120A3R<br>ARP240A3R | ARP012A5<br>ARP024A5<br>ARP120A5<br>ARP240A5                                                                  | ARP012A5R<br>ARP024A5R<br>ARP120A5R<br>ARP240A5R |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Wiring Diagram    |  <p><b>DIAGRAM 19</b></p>                                                                                                                                                                                                                                                                                                                                       |                                              |                                                  |  <p><b>DIAGRAM 147</b></p> |                                                  |
| Socket            | IDEC<br>SR6P-M08G                                                                                                                                                                                                                                                                                                                                                                                                                                | Macromatic 70169-D                           |                                                  |                                                                                                               | Macromatic 70169-D                               |
| Tightening Torque | 10 in-lbs                                                                                                                                                                                                                                                                                                                                                                                                                                        | 12 in-lbs                                    |                                                  |                                                                                                               | 12 in-lbs                                        |
| Wire Size         | One or two #12-20 solid or stranded copper or copper-clad aluminum conductors                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                                  |                                                                                                               |                                                  |
| Notes             | <b>NOTE:</b> 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           | <b><u>Selector Switch (R Suffix)</u></b><br>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. If problems continue, contact Macromatic at 800-238-7474 or e-mail [tech-support@macromatic.com](mailto:tech-support@macromatic.com) for assistance.

| 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 <a href="http://www.macromatic.com/ar-apps">www.macromatic.com/ar-apps</a> 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 <a href="http://www.macromatic.com">www.macromatic.com</a> .                                                                                                                                               |
| 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.