INSTRUCTIONS FOR THE RELIANCE CONTROLS
ARM SERIES AUTOMATIC TRANSFER SWITCH

THE RELIANCE CONTROLS ARM SERIES AUTOMATIC TRANSFER SWITCH IS NOT FOR "DO-IT-YOURSELF" INSTALLATION. It must be installed by a qualified electrician thoroughly familiar with all applicable electrical and building codes.

The Reliance Controls ARM Series is an automatic transfer switch purpose-designed to provide a safe and simple method of powering a dwelling from a permanently installed backup AC power source. The electrical-over-mechanical transfer switching and interlocking system prevents accidental feedback of backup power onto utility lines.

This manual has been prepared for the purpose of familiarizing servicing dealer/installer with the design, application, installation and servicing of the equipment. Read the manual carefully and comply with all instructions. This manual or a copy of this manual should remain with the switch.

Every effort has been taken to make sure that the contents of this manual are accurate and current. The manufacturer reserves the right to change, alter or otherwise improve this literature and the product at any time without prior notice and without any obligation or liability whatsoever. The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The warnings in this manual, tags and decals affixed to the unit are, therefore, not all-inclusive. If using a procedure, work method or operating technique the manufacturer does not specifically recommend follow all codes to ensure safety for personnel. Many accidents are caused by failing to follow simple and fundamental rules, codes and precautions. Before installing, operating or servicing this equipment, read the SAFETY RULES carefully. The publications that cover the safe use of ATS and installation are the following NFPA 70, NFPA 70E, UL 1008 and UL 67. It is important to refer to the latest version of any standard/code to ensure correct and current information.

All installations must comply with national, state and local codes. It is responsibility of the installer to perform an installation that will pass the final electrical inspection.

BEFORE INSTALLATION

WARNING: Be certain that the power from the utility is turned off and all backup sources are locked out before starting this procedure. Failure to do so could result in serious injury or death. Remember, automatic start generators will start upon loss of utility mains power unless locked in the “off” position. Consult the generator instruction manual for positive “lock-out tag-out” procedures.

CAUTION: Consult all local and National electrical codes for proper wiring methods for all wiring.

Carefully unpack the ATS. Inspect closely for any damage that might have occurred during shipment. Check that all packing material is completely removed from the ATS prior to installation. Handle ATS carefully when installing. Do not drop. Protect the ATS against impacts at all times and against construction grit and metal chips. Never install an ATS that is damaged.
1. Terminal block
2. Neutral bar
3. Utility L1 terminal
4. Utility L2 terminal
5. Ground bar
6. Current transformer
7. Generator L1 terminal
8. Generator L2 terminal
9. Outer row of relays
10. Inner row of relays
11. Load Management module
12. Drive plate

Mounting dimensions (use ¼” hardware)

23.25

2.50

2.50
1. The ARM is a service-entrance rated device. It is not acceptable for use as a non-service entrance device (e.g. subpanel). Mount the ARM in a convenient spot. The enclosure is NEMA 3R rated, so it can be installed either indoors or outdoors. Install the appropriate hub in all three spots on the cabinet.

2. Open the door and remove the deadfront by removing the four screws, tilting the bottom of the deadfront outward, and sliding the deadfront outward and downward from under the door latch protrusions.

3. Route a multi-conductor cable (min AWG 18 max AWG 12) from the generator to Terminal Block in the ARM. Strip wires \( \frac{1}{4} \) inch and connect each numbered wire to the appropriately numbered terminal. Torque to 28–32 in-oz. Note that some of the terminal block positions are deliberately unused. The positions are:

<table>
<thead>
<tr>
<th>Terminal block position</th>
<th>Function</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB2-1</td>
<td>switch to generator drive power</td>
<td>(120 VAC)</td>
</tr>
<tr>
<td>TB2-2</td>
<td>switch to utility drive power</td>
<td>(120 VAC)</td>
</tr>
<tr>
<td>TB2-3</td>
<td>switch to – common return</td>
<td>(neutral)</td>
</tr>
<tr>
<td>TB2-4</td>
<td>(unused)</td>
<td></td>
</tr>
<tr>
<td>TB2-5</td>
<td>generator position microswitch</td>
<td>switch closure</td>
</tr>
<tr>
<td>TB2-6</td>
<td>utility position microswitch</td>
<td>switch closure</td>
</tr>
<tr>
<td>TB2-7</td>
<td>position microswitch common</td>
<td>switch closure</td>
</tr>
<tr>
<td>TB2-8</td>
<td>(unused)</td>
<td></td>
</tr>
<tr>
<td>TB2-9</td>
<td>load bus line 1 out</td>
<td>(120 VAC)</td>
</tr>
<tr>
<td>TB2-10</td>
<td>load bus line 2 out</td>
<td>(120 VAC)</td>
</tr>
<tr>
<td>TB2-11</td>
<td>utility line 1 out</td>
<td>(120 VAC)</td>
</tr>
<tr>
<td>TB2-12</td>
<td>utility line 2 out</td>
<td>(120 VAC)</td>
</tr>
</tbody>
</table>

NOTE: Per the NEC, use multicore cable or wire with appropriate insulation rating when running power and control conductors in the same conduit.

4. Install minimum 75°C copper (not aluminum) wires of the appropriate size (min AWG 1 – max AWG 000) from the serving utility electrical meter through the top left hub of the ARM. Route and connect L1 and L2 wires to the circuit breaker on the left side of the cabinet interior. Route and connect the neutral wire to the upper terminal block. Route and connect the ground wire from the grounding rod to the lower terminal block. Torque all power connections to 250 in-lbs.

5. Install minimum 75°C copper (not aluminum) wires of the appropriate size (AWG 1) from the power output terminals of the generator through the top right hub of the ARM. Route and connect L1 and L2 wires through a current transformer (CT) and to the circuit breaker on the right side of the cabinet interior. Make certain that both L1 and L2 pass through a CT. Route and connect the neutral wire to the upper terminal block. Route and connect the ground wire to the lower terminal block. Torque all power connections to 250 in-lbs.

6. Install minimum 75°C copper (not aluminum) wires of the appropriate size (AWG 1 - AWG 000) from the input to the loadcenter to the power output terminals of the transfer switch through the bottom hub of the ARM. Route and connect L1 and L2 wires to the two power lugs underneath the drive plate. Access to the set screws is through two holes in the drive plate. If for some reason the holes do not line up properly with the set screw on the power lug, the drive plate can be driven to an acceptable position by connecting a 120 VAC extension cord temporarily to the control terminal block on the upper left side of the transfer switch (terminal 1 hot - to - terminal 3 neutral; or terminal 2 hot - to - terminal 3 neutral) Route and connect the neutral wire to the upper terminal block. Route and connect the ground wire to the lower terminal block. Torque all power connections to 250 in-lbs.
1. Set the jumper in the upper left corner of the Load Management Module (LMM) to the size of the standby generator, according to the chart below. If the installed generator is not one of these sizes, set the jumper for the setting closest to, but not larger than, the actual generator size.

   - #1 – 8500 watts
   - #2 – 9500 watts
   - #3 – 11000 watts
   - #4 – 12500 watts
   - #5 – 14000 watts
   - #6 – 15500 watts
   - #7 – 17000 watts
   - #8 – 18500 watts
   - #9 – 20000 watts
   - #10 – 21500 watts

   Account for reduced output from LP to NG fuel source, ex: 12,500 watt LP home standby generator only produces 11,000 watts on NG. High altitude operation will also reduce output for either fuel source. De-rate output 4% for each 1000 feet above sea level and set Load Management Module accordingly.

   The Load Management Module controls two separate blocks of 4 relays, 120 VAC, 15 amp each, for a total of (8) 120 VAC, 15 amp loads. Directly managed 240 VAC loads require the use of two relays. Both legs for 240 VAC loads must be wired to the same relay bank and load must not exceed 15A.

   Loads above 15A 240 VAC require a separately supplied 240 VAC contactor. The separately supplied contactor can be run through one 120 VAC relays, on either block of the load management relay for load control.

   Failure to use a separate 240 VAC contactor for loads above 15A will damage the Transfer switch and will not be a warrantable claim.

2. Select up to (8) 120 VAC circuits, or up to (4) 240 VAC circuits in the loadcenter for load shedding. It is the responsibility of the installer to assure that the correct types of circuits are selected for load shedding, and that the chosen circuits are of sufficiently high power draw to assure the proper operation of the home standby generator should an overload condition occur. It is recommended that loads responsible for keeping a dwelling dry (e.g. sump pump) or preventing freezing (e.g. heating plant) NOT be connected to the load management module.

   For each circuit, disconnect the load wire from its circuit breaker in the loadcenter, and connect it to a wire of the same AWG using twist-on wire connectors. Route this new wire to the ARM through knockouts in the bottom and connect it to the common terminal of one of the relays on the LMM using a ¼” push-on terminal. Connect another wire of the same AWG to the normally-closed (NC) terminal on the same LMM relay, also using a ¼” push-on terminal. Route that wire back to the loadcenter and install it into the circuit breaker from which the original wire was removed. Repeat this for the remainder of the circuits.

3. THEORY OF OPERATION: The LMM contains circuitry that monitors the current draw on generator feeder L1 and L2. If at any time, the current draw exceeds that preset by the jumper, the unit will de-energize all eight circuits. After 4-5 minutes, the circuitry will re-energize four circuits in the center row of the LMM. After an additional 3-4 minutes, the circuitry will re-energize the four circuits in the outer row.
COMMISSIONING THE ARM Series

1. Make certain that the utility breaker (left side) is in the “on” position (handle up), and the generator breaker (right side) is in the “off” position (also handle up). **Note that the generator breaker is upside down, so its off position is with the handle up.**
2. Replace the deadfront by sliding it from the bottom into the cabinet underneath the door latch protrusions. Secure it to the deadfront brackets with the screws removed earlier.
3. Close and latch the door. If the ARM is mounted outdoors, padlock the door closed.
4. Re-enable the utility power.
5. Remove the generator lock-out apparatus and arm the generator.

Your ARM Series automatic transfer switch is now fully functional. To test its performance, follow the instructions provided by the generator manufacturer. Test the unit monthly. Service yearly per maintenance instructions.

ANNUAL MAINTENANCE

The ARM should be maintained yearly by a qualified electrician.

1. Lubricate the drive plate. To do so, disable the generator and remove the deadfront. Apply a thin layer of grease around all the slotted holes in the drive plate with the exception of the two rectangular holes through which the circuit breaker handles protrude.
2. Visually inspect the unit to assure that there are no broken objects or loose wires in the cabinet.

Reliance Controls ARM Series Automatic Transfer Switch Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Enclosure Style</th>
<th>Maximum Amps</th>
<th>Nominal Volts</th>
<th>Load Management Circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARM15154R</td>
<td>NEMA 3R outdoor</td>
<td>150</td>
<td>120/240</td>
<td>4</td>
</tr>
<tr>
<td>ARM15158R</td>
<td>NEMA 3R outdoor</td>
<td>150</td>
<td>120/240</td>
<td>8</td>
</tr>
<tr>
<td>ARM20204R</td>
<td>NEMA 3R outdoor</td>
<td>200</td>
<td>120/240</td>
<td>4</td>
</tr>
<tr>
<td>ARM20208R</td>
<td>NEMA 3R outdoor</td>
<td>200</td>
<td>120/240</td>
<td>8</td>
</tr>
</tbody>
</table>

Technical Specifications:

- 120/240 VAC, 150A or 200A (see chart above), 22kAIC, no short-time current rating.
- Suitable for use in accordance with the National Electrical Code, NFPA 70.
- Suitable for control of motors, electrical discharge lamps, tungsten filament lamps, and electrical heating equipment, where the sum of the motor full load ampere ratings and the ampere ratings of the other loads does not exceed the ampere rating of the switch, and the tungsten load does not exceed 30% of the switch rating.
- Continuous load not to exceed 80% of switch rating.
- Power wiring: Cu only, min 75°C, min AWG 1 – max AWG 000, torque to 250 in-lb.
- Signal wiring: Cu only, min AWG 22 – max AWG 12, torque to 28-32 in-oz.
Each Reliance transfer switch or accessory is guaranteed against mechanical or electrical failure due to manufacturing defects for a period of 24 months following shipment from the factory. The manufacturer's responsibility during this warranty period is limited to repair or replacement, free of charge, of products proving defective under normal use or service when returned to the factory, transportation charges prepaid. Guarantee is void on products that have been subjected to improper installation, misuse, alteration, abuse or unauthorized repair. The manufacturer makes no warranty with respect to the fitness of any goods for a user's particular application and assumes no responsibility for proper selection and installation of its products. This warranty is in lieu of all other warranties, expressed or implied, and limits the manufacturer's liability for damages to the cost of the product. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.