

INSTRUCTIONS FOR THE RELIANCE *Eco/Tran*TM ARC Series

THE RELIANCE *Eco/Tran* 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 *Eco/Tran* is an automatic transfer switch purpose-designed to provide a safe and simple method of powering designated branch circuits from non-traditional AC power sources (such as battery powered inverters driven by wind turbines and solar arrays) with utility power as backup. The unique control system maximizes the uptime on the non-traditional source, while facilitating seamless transitions to utility-supplied power when non-traditional power is unavailable. The electrical-over-mechanical transfer switching and interlocking system prevents accidental feedback of non-traditional power onto utility lines.

Generally, non-traditional power sources will not have sufficient capacity to power a large number of circuits simultaneously. The Reliance *Eco/Tran* allows powering of continuous and intermittent loads well beyond the nameplate rating of the non-traditional source by utilizing the utility source to power intermittent circuits in maximum loading conditions.

INSTALLING THE *Eco/Tran* ARC Series

WARNING: Be sure the power from both the main panel and all non-traditional sources is turned off before starting this procedure. Failure to do so could result in serious injury or death. Remember, wind turbines produce power whenever the wind blows and solar arrays produce power whenever light is present (including lightning).

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

1. Mount the ARC next to the main load center (circuit breaker or fuse box). Install a large diameter conduit (2 inch trade size recommended) between the two panels. If the main load center does not have sub-feed lugs, install a double pole circuit breaker that is the same ampacity as the Utility Supply breaker in the ARC.
2. Place both enable switches in the "off" position
3. Install a wire of the proper ampacity between the breaker or sub-feed lug in the main panel and the Utility Supply breaker in the ARC. Route this wire through the small current transformer (doughnut) in the ARC. Install an insulated neutral wire between the neutral bar in the main panel to the neutral bar in the ARC. The neutral wire must be the same ampacity as the power wiring. If non-metallic conduit was used in step 1 or if required by local codes, install a ground wire between the ground busses in the two panels.
4. Select the circuits to be powered by the non-traditional source. Determine if the branch circuit breakers for the selected circuits can be moved from the main panel into the ARC. Reliance ARCs are UL listed for a number of interchangeable breakers (see label on the inside cover of the ARC). If the main panel has this type of breaker, relocate the selected branch circuit breakers to the ARC. If the breakers cannot be moved, other breakers of the same ampacity must be installed in the ARC. **Make certain the openings created by removing the breakers from the main panel are fitted with appropriate covers.**

5. If the branch circuit conductor is long enough, you may want to pull it from the main panel and reinstall it in the ARC. It is also possible to use additional wire and a wire connector to extend the branch conductor in the main panel through the conduit to the ARC. Route all the load wires through the large current transformer (doughnut) in the ARC, and connect each wire to the appropriate branch circuit breaker. Repeat for each of the selected circuits. **The branch conductors must be connected to the same ampacity breakers as in the main panel.**
6. Site the non-traditional inverter and battery bank, and wire the battery bank to the inverter as per manufacturer's instructions. It is recommended that a suitable disconnect and fusing be installed on the power wiring leading from any battery bank to an inverter. It is recommended that a suitable disconnect switch be installed on the load side of all non-traditional power sources to allow for safe servicing of the ARC, inverters, and batteries.
7. Install a wire of the proper ampacity between the power output connector on the inverter and the Wind Supply breaker in the ARC. Install an insulated neutral wire between the neutral output connector on the inverter to the neutral bus in the ARC. The neutral wire must be the same ampacity as the power wiring. If the inverter has a ground connector, install a ground wire between the inverter and the ground bus in the ARC.
8. Route the 2-conductor shielded twisted pair cable from the battery input terminals on the inverter to the sense terminals on the ARC control board. Connect the red wire from DC positive input terminal on the inverter to DC positive sense terminal on the ARC terminal block. Connect the black wire from the DC negative input terminal on inverter to the DC negative sense terminal on ARC terminal block. Connect the shield drain wire to the DC negative sense terminal on ARC terminal block. Do not connect opposite end of shield drain wire at the inverter.

COMMISSIONING THE *Eco/Tran* ARC Series

1. Turn off all of the distribution breakers in the ARC.
2. Manually switch the ARC to utility position.
3. Turn on 20 amp feeder breaker in main panel. (skip this step if you wired to your main panel's lugs)
4. Turn on all distribution breakers. Read the wattmeter and assure that total wattage drawn is less than nameplate maximum rating of the inverter.
5. Close the battery disconnect switch.
6. Turn the inverter on.
7. Turn the wind turbine/solar array disconnect switch(es) on.
8. Verify that non-traditional power is charging the batteries.
9. If the battery voltage is above the minimum acceptable battery voltage (usually 60 VDC on a 1kW, 120 VDC on a 2kW, and 180 VDC on a 3kW inverter), manually switch ARC to wind position. If the battery voltage is below minimum acceptable voltage, wait until the non-traditional sources charge the batteries above minimum acceptable voltage.
10. Read the wattmeter and assure that total wattage drawn is less than inverter maximum.
11. Place wind enable switch in the "on" position.
12. Place utility enable switch in the "on" position.

Your *Eco/Tran* ARC Series automatic transfer switch is now fully functional. To test its performance, disconnect all non-traditional sources (wind turbine, solar array, battery bank). The ARC will switch to the utility to power its loads. When the non-traditional sources are reconnected, the ARC will switch back to them.

***Eco/Tran*TM ARC Series Automatic Transfer Switch Specifications**

Model Number	Enclosure Style	Maximum Amps	Nominal Volts	Maximum Watts	Nominal Battery Voltage
ARC0101C	NEMA 1 indoor	8	120	960	60
ARC0101CR	NEMA 3R outdoor	8	120	960	60
ARC0202C	NEMA 1 indoor	16	120	1920	120
ARC0202CR	NEMA 3R outdoor	16	120	1920	120
ARC0303C	NEMA 1 indoor	24	120	2880	180
ARC0303CR	NEMA 3R outdoor	24	120	2880	180

WARRANTY

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.



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