LEADING EDGE®

INSTALLATION INSTRUCTIONS

TRI-TRONICS®

WARRANTY & LIMITATION OF LIABILITY

TRI-TRONICS COMPANY, INC. warrants that the products delivered by it will be of the kind and quality described in the order or contract and will be free of defects in workmanship or material. Should any failure to conform to the express warranty appear within three (3) years, ***TRI-TRONICS*** shall upon notification correct such non-conformity, including non-conformance with the specifications, at its option, either by repairing any defective part or parts or by making available, F.O.B. the seller's plant, a repaired or replacement part. This warranty shall be for a period of three (3) years after the date of delivery of any product not meeting such specifications.

This warranty is in lieu of all warranties of merchantability, fitness for purpose, or other warranties, expressed or implied, except of title and against patent infringement. Correction of non-conformities in the manner and for the period of time provided above shall constitute fulfillment of all liabilities of ***TRI-TRONICS*** to anyone, whether based on contract, negligence, or otherwise with respect to or arising out of such products.

TRI-TRONICS shall not be liable for special, indirect, or consequential damages. The remedies set forth herein are exclusive, and the liability of ***TRI-TRONICS*** with respect to any contract or sale or anything done in connection therewith, whether in contract, in tort, under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the product or products on which such liability is based.

This warranty shall not apply to any product which has been subjected to misuse, negligence, accidental or misapplied or modified or repaired usage by unauthorized persons, or as the result of improper installation thereof. Furthermore, any improper use, operation beyond capacity, substitution of parts not approved by ***TRI-TRONICS***, or any alteration or repair by others in such manner as in ***TRI-TRONICS'*** judgment affects the product materially and adversely shall void this warranty.

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TABLE OF CONTENTS

TRI-TRONICS®

INSTALLATION GUIDE
CENTER PARTING DOORS

INSTALL LIGHT SOURCE & RECEIVER ARRAYS TO DOORS

STEP #1 - Mount six "L" brackets to the Light Source and Receiver Arrays using the star nuts provided. Locate and drill six 1/8˝ diameter pilot mounting holes in ***both*** doors using the location of the "L" bracket as a template. ***(See Figure 1)***

NOTE: *Bottom of arrays must be 1/4˝ up from the door sill.*

STEP #2 - Mount arrays with their attached brackets to door using the self-tapping screws provided.

IMPORTANT:
Avoid tight bends and sharp edges to prevent premature cable failure. Excessive tension on the cable and tension from cable ties will damage cables.

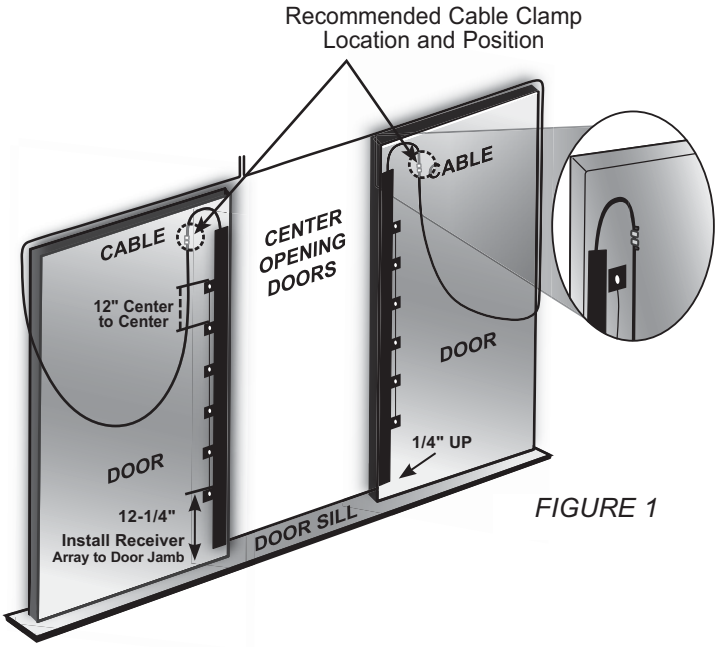


FIGURE 1

SIDE PARTING DOORS

INSTALL LIGHT SOURCE ARRAY TO DOOR

STEP #1 - Mount six “L” brackets to light source array using the star nuts provided. Locate and drill six 1/8" diameter pilot mounting holes in the door using the location of the "L" bracket as a template. ***(See Figure 1)***

NOTE: *Bottom of array must be 1/4” up from the door sill.*

STEP #2 - With brackets attached, mount light source arrays to door using the self-tapping screws provided.

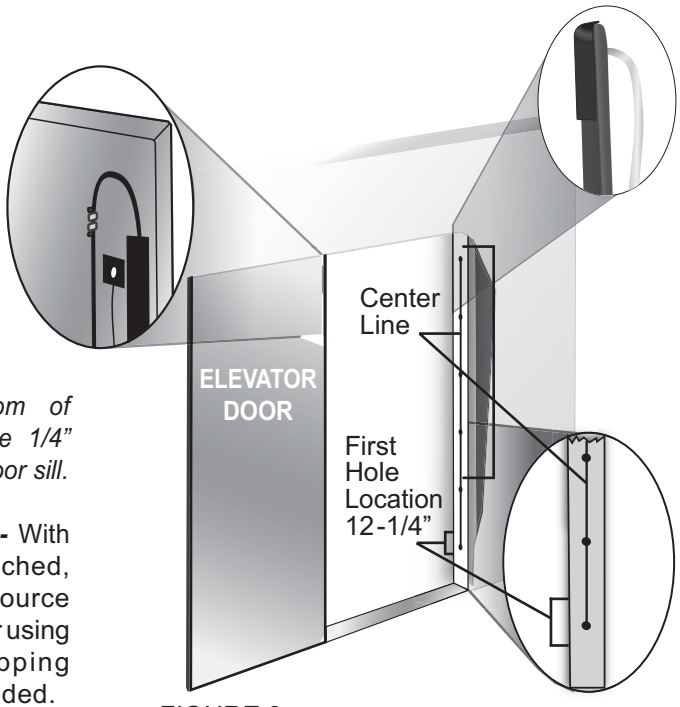


FIGURE 2

INSTALL RECEIVER ARRAY TO DOOR JAMB

CAUTION: **Removal of threaded studs voids warranty.**

STEP #1 - Draw a vertical center line on the door jamb. ***(See Figure 2)***

STEP #2 - Locate and mark the location of the bottom mounting hole on the vertical line by measuring exactly 12-1/4" up from the door sill.

STEP #3 - Moving up the line, locate and mark 5 additional mounting holes spaced exactly 12" apart, center to center.

STEP #4 - Center punch and drill six 1/4" diameter mounting holes.

STEP #5 - Screw the six nylon fasteners provided in the EGAC kit onto the six threaded studs located on the back of the array. **Use the tool provided for this purpose.** ***(See Figures 3a, 3b, and 3c for details)***

HINT: *In some installations it may be advisable to use double-sided tape, in combination with the nylon fasteners, to ensure proper attachment of the edge to the door jamb.*

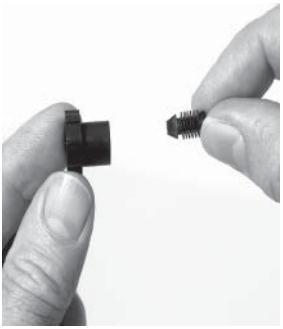


FIGURE 3a

FIGURE 3b

FIGURE 3c

STEP #6 - Position the six nylon fasteners mounted to the array in line with the six 1/4" diameter mounting holes.

STEP #7 - By hand, push the array in place.

INSTALLATION OF POWER SUPPLY/CONTROLLER

STEP #1 - INSTALL ENCLOSURE FOR POWER SUPPLY/CONTROLLER

Locate a convenient mounting position on top of the elevator cab for the Power Supply / Controller. Secure in position.

STEP #2A - MOUNTING THE POWER SUPPLY PC ASSEMBLY

Mount Power Supply / Controller PC assembly into the enclosure using four 6/32 screws provided. ***(See Figure 4a)***

STEP #2B - OPTIONAL NUDGE/BUZZER PC ASSEMBLY

Plug optional Nudge / Buzzer PC assembly into the Power Supply / Controller and mount with additional four 6/32 screws.
(See Figure 4b)

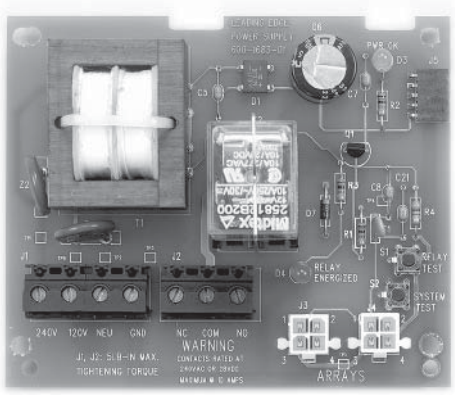


FIGURE 4a

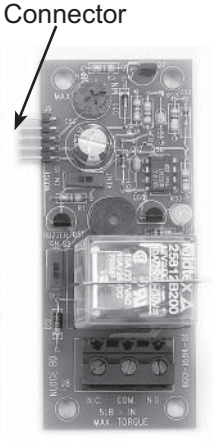


FIGURE 4b

POWER SUPPLY/CONTROLLER PC ASSEMBLY

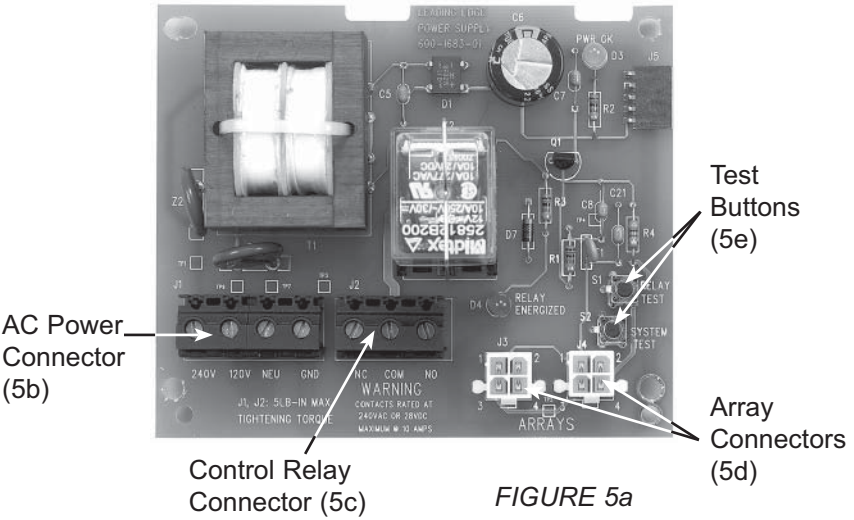
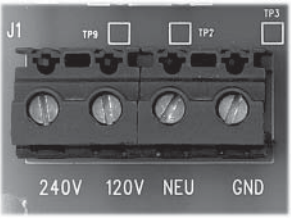


FIGURE 5a

CAUTION: **Ensure AC Supply Voltage is "OFF" at the source before attempting to connect to the Power Supply/Controller Terminals.**

STEP #3 - AC POWER CONNECTIONS

Wire AC power to the appropriate Power Input Connections on Power Supply/Controller *(see Figure 5b).*



120V		X	X	X
240V	X		X	X

FIGURE 5b

STEP #3B - CONTROL RELAY CONNECTIONS

Wire the contacts of the Control Relay into the door control circuit Relay de-energized on Beam Break. Wire the contacts of this relay so that, when de-energized, the door remains open *(see Figure 5c).*

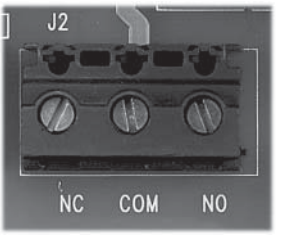


FIGURE 5c

NOTE: *Care should be taken not to exceed the 10 amp @ 240 VAC/30 VDC ratings of the* ***Model 455-0001*** *plug-in relay. When the installation calls for* ***switching high-voltage*** *DC, an external slave relay is recommended. Damage to the relays caused by loads in excess of the contact ratings is not covered by the TRI-TRONICS warranty.*

STEP #4A - APPLY POWER AND VERIFY THE "PWR OK" GREEN LIGHT IS ON.

STEP #4B - WITH POWER APPLIED, PUSH THE "RELAY TEST" SWITCH. (See Figure 5e)

The Control Relay should energize. The red "RELAY ENERGIZED" light comes ON and the door(s) should close.

STEP #5A - ARRAY CONNECTIONS

Plug both LA (Light Source Array) and RA (Receiver Array) into the Power Supply/Controller. ***(See Figure 5d)***

If the Arrays are properly aligned, the control "RELAY ENERGIZED" light comes ON and the door(s) will shut.

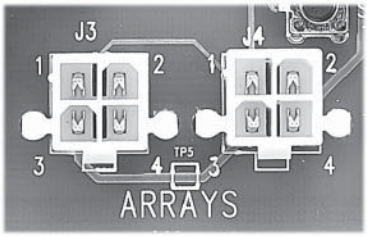


FIGURE 5d

NOTE: *Plugs are interchangeable and short-circuit protected.*

STEP #5B - AS THE DOOR(S) ARE CLOSING, PUSH THE "SYSTEM TEST" SWITCH.

This simulates a Beam Break and the door(s) will stop closing. Release the switch and the door(s) will close. ***(See Figure 5e)***

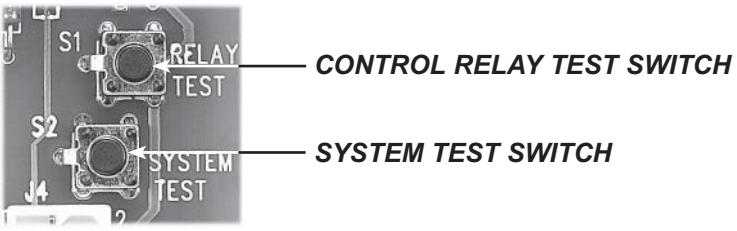


FIGURE 5e

INSTALLATION IS NOW COMPLETE!

1. NUDGE/BUZZER ASSEMBLY NUDGING/REDUNDANT OPERATION

The nudge Control Relay can be used to ***"NUDGE"*** the door closed after an adjustable (5 to 45 sec.) time delay. This same relay can also operate in a "***REDUNDANT"*** mode (i.e., both the main control relay and the accessory relay operate simultaneously). The "***REDUNDANT"*** mode is useful as an optional safety measure when switching high voltage. Simply series the N.O. contacts of both relays to prevent accidental closure as a result of relay contact failure (i.e., welded contacts).

CAUTION: Check to be sure that "Nudging" the door closed after the adjustable time delay is in accordance with all applicable codes and specifications.

IMPORTANT: *TRI-TRONICS COMPANY, INC. strongly discourages nudging the door closed after the adjustable time delay in any situation where an elevator transports patients in hospital beds or gurneys. Consider using the "**Buzzer Only**" option. Simply set the accessory control switch to the "**Redundant**" mode and the "**Buzzer**" switch to the "**On**" position. After the delay, the buzzer will prompt a quick entry into the elevator. However, the door will not close until the doorway is cleared.* ***(See Figure 6)***

2. BUZZER OPERATION

Nudge buzzer can be enabled or disabled with the BUZZER On/Off switch. ***(See Figure 6)***

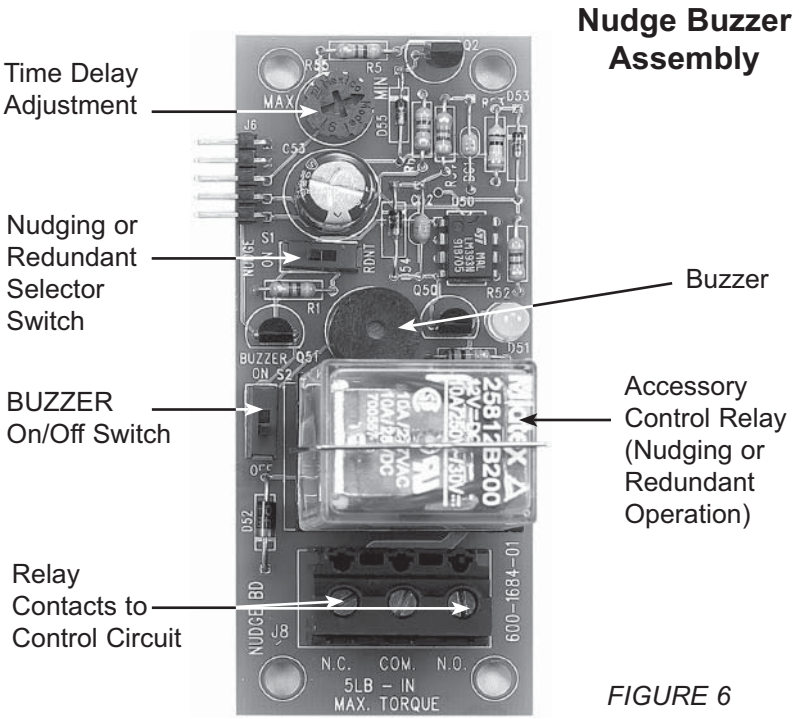


FIGURE 6

SYSTEMS OPERATION AND TROUBLESHOOTING

ARRAY INDICATORS

Systems operation can be monitored by observing the status of the LED Indicators located on the Light Source Array and the Receiver Array. ***(See Figure 7)***

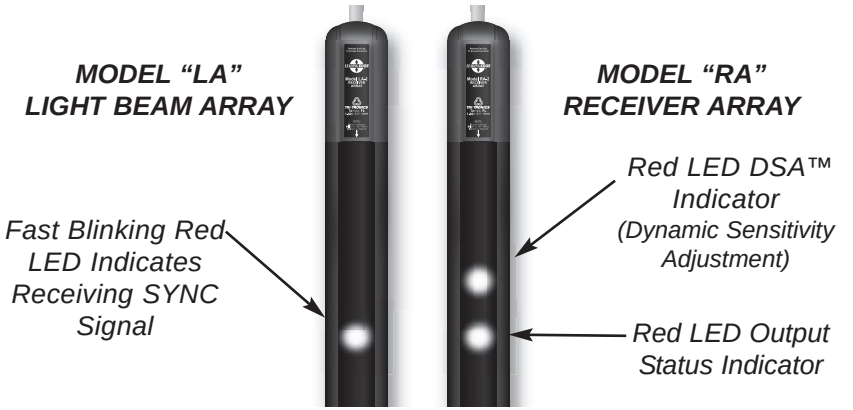


FIGURE 7

MODEL "RA" RECEIVER ARRAY INDICATORS

1. DSA™ INDICATOR

The Dynamic Sensitivity Indicator will flash "ON" as the door(s) are moving. The short duration pulse indicates the system is automatically adjusting the sensitivity of the system as it moves. This assures that a small object such as a hand will break the beam(s) and the door(s) will stop closing.

NOTE: *This indicator will turn on continuously when the gap between the arrays is less than 2-1/2" or when the system requires maximum gain.*

2. OUTPUT STATUS INDICATOR

The Output Status Indicator is used to ensure alignment and monitor the actual output of the RA (Receiver Array). This indicator will be lit when the arrays are aligned and there is no obstruction blocking the beams. The LED will go off when an object breaks one (or more) of the light beams. The Output Status Indicator should also go off when testing the system by pressing the **"SYSTEM TEST"** switch located on the Power Supply/Controller PC assembly.

MODEL "LA" LIGHT BEAM ARRAY INDICATOR

1) When power is applied, a red LED continuously flashes rapidly, which indicates receiving sync signal.

POWER SUPPLY/CONTROLLER INDICATORS

(See Figure 9)

1. POWER STATUS INDICATOR

Green LED Power Status Indicator will be lit when AC Power is applied and the DC Power Supply is functioning. If Green LED is **NOT** lit, check power supply connections and verify with A.C. Voltmeter.

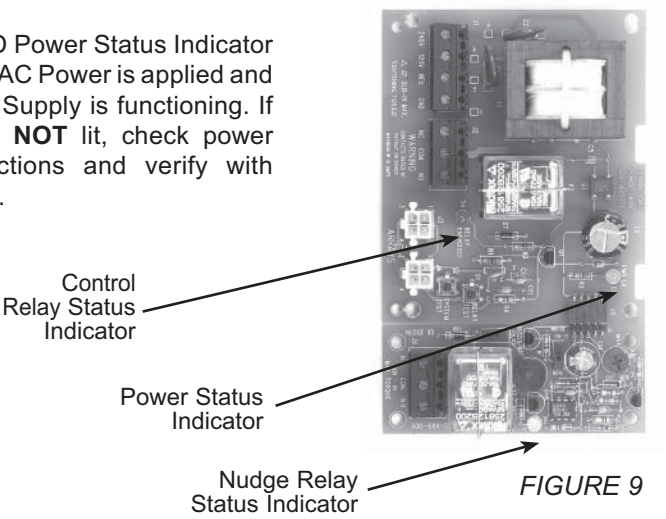


FIGURE 9

2. CONTROL RELAY STATUS INDICATOR

Red LED Control Relay Status Indicator will be lit when Control Relay is energized. The Control Relay will be energized when no obstructions are detected. The Control Relay and its LED Indicator can be energized as a test by pressing the ***"RELAY TEST"*** switch. When the LED is lit, the Control Relay is energized and the door should close.

3. NUDGE RELAY STATUS INDICATOR

Yellow LED Nudge Relay Status Indicator will be lit when Nudge Relay is energized. The Nudge Relay will energize if and when an obstruction occurs for over the adjustable (5 to 45 seconds) timed period. The Nudge Relay and its LED Indicator can be energized as a test by pressing the ***"SYSTEM TEST"*** switch.

TROUBLESHOOTING

1) Verify the correct AC Supply Voltage is available at the Power Supply/Controller.
2) If “PWR OK” Green LED is OFF, verify the correct AC source power is available at input terminals(Fig.5b). If yes, replace the Power Supply/Controller.
3) Check to ensure the connectors on the cables are securely plugged into the Power Supply/Controller. Also, check to see if a wire is broken or pulled loose from the connectors.
4) If all lights on both arrays are OFF and the “Power OK” LED is ON:
   A. Unplug both arrays from the Power Supply/Controller and disconnect the AC source power for 2 minutes to allow the resettable fuse to reset.
   B. Reconnect AC power and look for “Power OK” then plug in the RA. Check for “DSA” is ON, “Output Status” is OFF.
   C. If no, replace cable or RA. If yes, plug in the LA and check for the fast blinking red LED and on the RA the “Output Status” is ON. If no, replace LA cable or LA.
5) If the cables and plugs are okay, the next step is to identify which array is faulty.
6) Observe lights on RA and LA.
7) LA – Indicator OFF, very dim, or blinking slowly, and/or RA – all lights are OFF, replace RA Cable.
8) LA – Indicator is OFF,
   RA - “DSA” light is ON and “Output Status” is OFF, replace LA cable.
9) RA – “Output Status” is ON constantly, unplug LA Cable.
   If “Output Status” remains ON constantly, replace RA Cable.
10) If cable replacement does not solve the problem, we recommend that the RA (Receiver Array) be replaced first, followed by the LA (Light Source Array).

NOTE: *Cables can be individually replaced. Remove top cap of either array for access to the inline connector. (See Figure 8).*

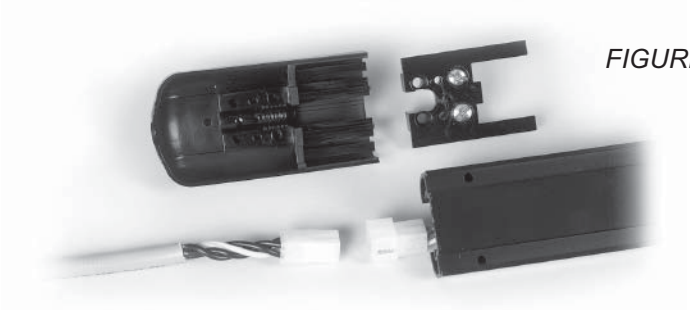


FIGURE 8

WIRING: LEADINGEDGE® ARRAYS TO MAGIC•EDGE™ OR OTHER 12 TO 30 VDC POWER SUPPLY/CONTROLLER

ECI-1 - Elevator Cable Interface

The Model ECI-1 allows simplified 3-wire connection of the ***LEADING*EDGE®** array cables to most power supply / controllers including the **MAGIC•EDGE ™** PSC-1 and PSC-2. Connect the Red to 24 VDC, the Black to Ground and the White to NPN.

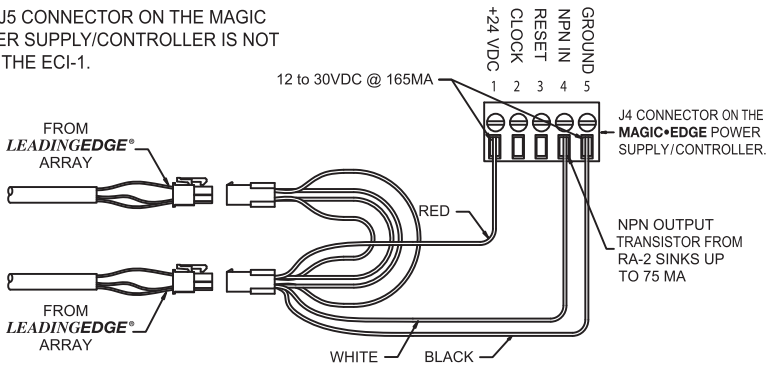
USING ECI-1

WIRE:	CONNECT TO RECEIVER ARRAY TERMINAL (J4)
Red	12 to 30 VDC
Black	Ground
White	NPN

NOT USING ECI-1
MANUAL WIRING OPTION

RA-2	LA-2	CONNECTION
1	1	Positive
2	2	Tie Together - clock
3	----------	NPN - N.O. DN
Earth---Ground		Ground, 0 Volts

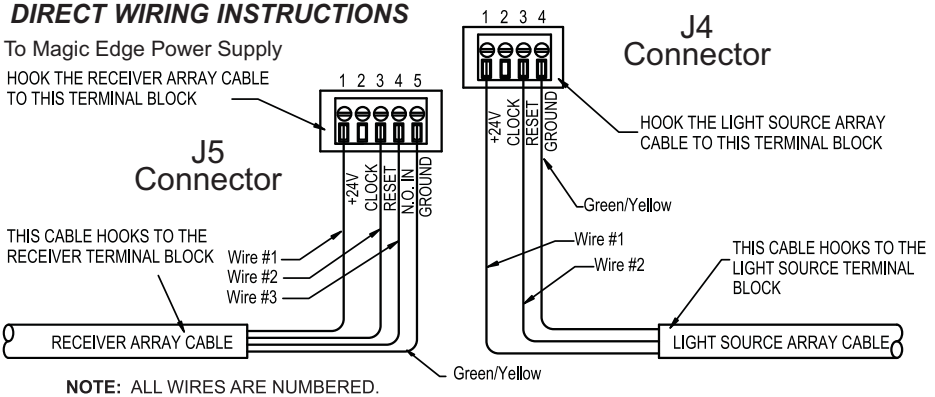
NOTE: THE J5 CONNECTOR ON THE MAGIC EDGE POWER SUPPLY/CONTROLLER IS NOT USED WITH THE ECI-1.



ECI-1

NOTE: MODEL LA-2 LIGHT SOURCE ARRAY AND MODEL RA-2 RECEIVER ARRAY ARE INTERCHANGEABLE.

DIRECT WIRING INSTRUCTIONS



NOTE: ALL WIRES ARE NUMBERED.

WIRING: GAL MOVFR TO LEADINGEDGE® EDGE-6 ARRAYS

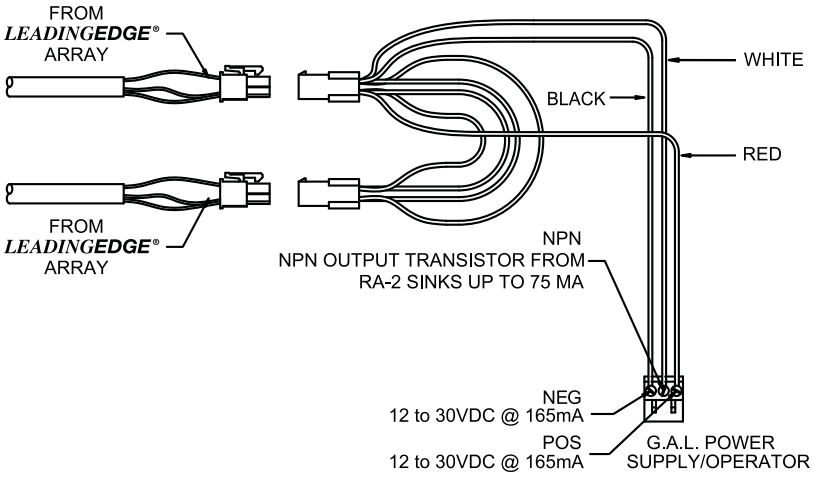
Interface Cable for use with the GAL MOVFR Operator

ECI-3 - Elevator Cable Interface

The Model ECI-3 allows simplified 3-wire connection of the *LEADINGEDGE®* array cables to a DC Power Supply / MOVFR Operator. The GAL Protection Enabling Chip #DPPC-000IN is required for plug & play compatibility with the ***TRI-TRONICS LEADINGEDGE®***.

WIRE:	**CONNECTIONS**
Red	12 to 30 VDC
Black	Ground
White	NPN

ECI-3 ELEVATOR INTERFACE CABLE HOOKUP
WITH TYPICAL POWER SUPPLY/ CONTROLLER



NOTE: MODEL LA-2 LIGHT SOURCE ARRAY AND MODEL RA-2 RECEIVER ARRAY ARE INTERCHANGEABLE.

DANGER WARNING DANGER

TRI-TRONICS® elevator door control products are designed for elevator door protection only. Our edges are not designed to be used in applications such as top of elevator cab protection, or in residential elevators in conjunction with scissor gates. Additionally, they are not designed to be used as machine safety light curtains commonly found in industrial robotic areas, or around machines that could pinch, grab, or cut person or persons in close proximity.

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