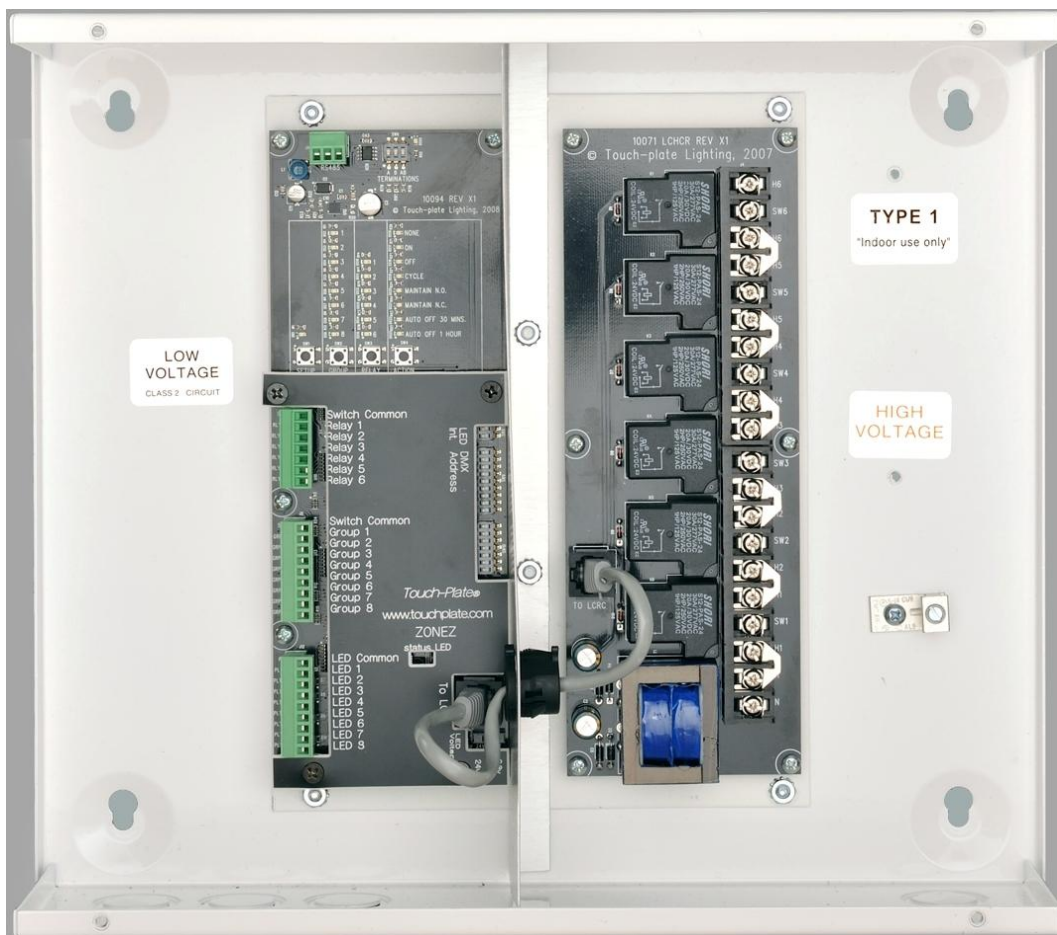


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**\*\*\*IF YOU HAVE A TIME-KEEPER® PLEASE USE THIS MANUAL & THE TIME-KEEPER® MANUAL FOR COMPLETE  
INSTALLATION INSTRUCTIONS\*\*\***

## Recommended Equipment

Screwdriver

Labeling tape

Wire Cutter and Strippers

Wire Tie (shown to the right)

Wire Tie adhesive back (Shown to the right)



## Removing an Old System

Before removing old relays label all existing wires, line and low voltage. **BE AWARE OF THE FOLLOWING IMPORTANT INFORMATION.** Each relay will have a switch wire and a relay common wire connected on the low voltage side and on the line voltage side a wire to the load and a wire to the breaker hot. The Transverter shown on Figure 3.1 (in blue) is no longer needed. When the transverter is removed, label the Hot and Neutral that fed it from the breaker panel. There will likely be many relay common wires inside the low voltage section, one from each switch station in the home; all will have eventually connected to the transverter low voltage side. Be sure to label them and its fine to keep them together. They will be re-connected to the low voltage relay board Switch Common terminals. When removing line voltage load wires it helps to use a number scheme in sequential order. If any existing switches have an indicator light on the switch, the pilot transformer will also need to be removed. The low voltage side of the transformer will need the LED common wire labeled and the LED number labeled (this corresponds to the appropriate relay being on at the switch). Line voltage wires connected to the Pilot Light Transformer are no longer needed. When everything is labeled, the old relays can be removed.

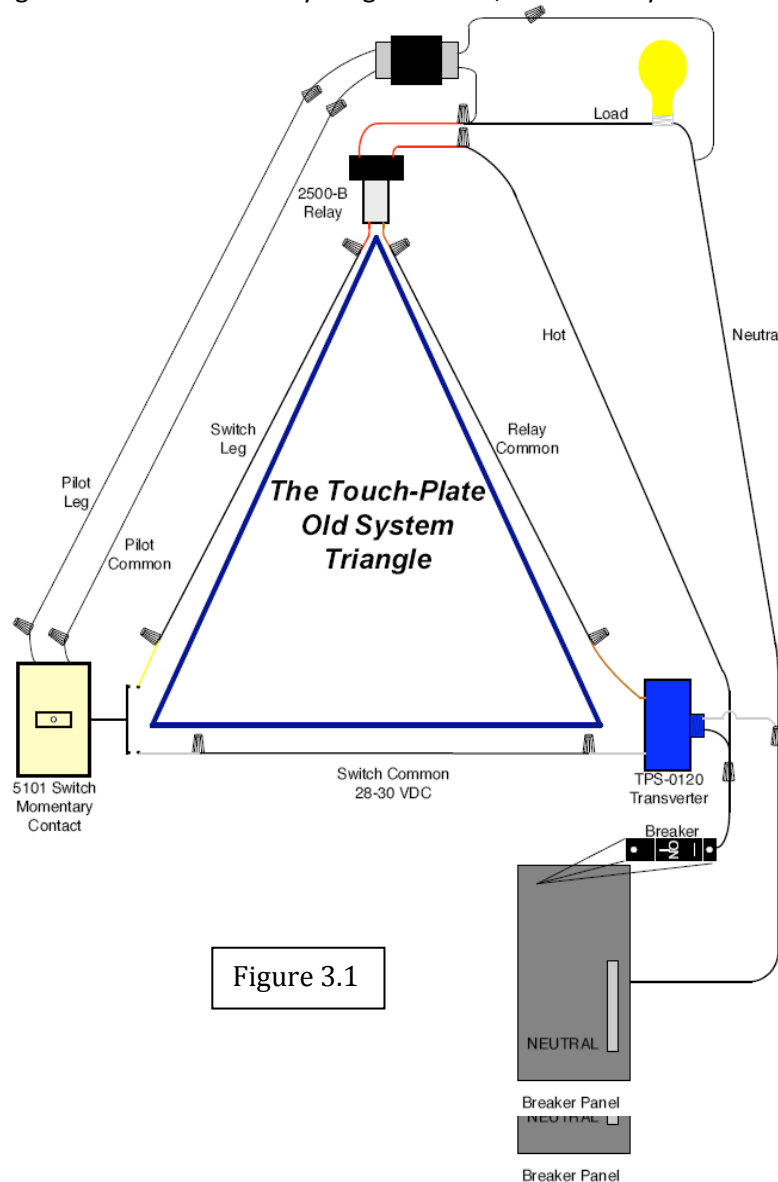


Figure 3.1

### Locating Items in the Panel

Figure 4.1 shows an entire panel with 6 relays. The Relay Board is either labeled 10071 or 10072. Each of these circuit boards has 6 relays on it and a power supply. The Low Voltage Relay Control Board will be labeled 10094 and it can control up to 6 relays and provides Grouping, LED control, Option for Time-Keeper® Networked System and Action functions. In the panel the Low Voltage Relay Control Boards are almost always on the left side of the panel and the Relay Boards are almost always on the right side of the panel.

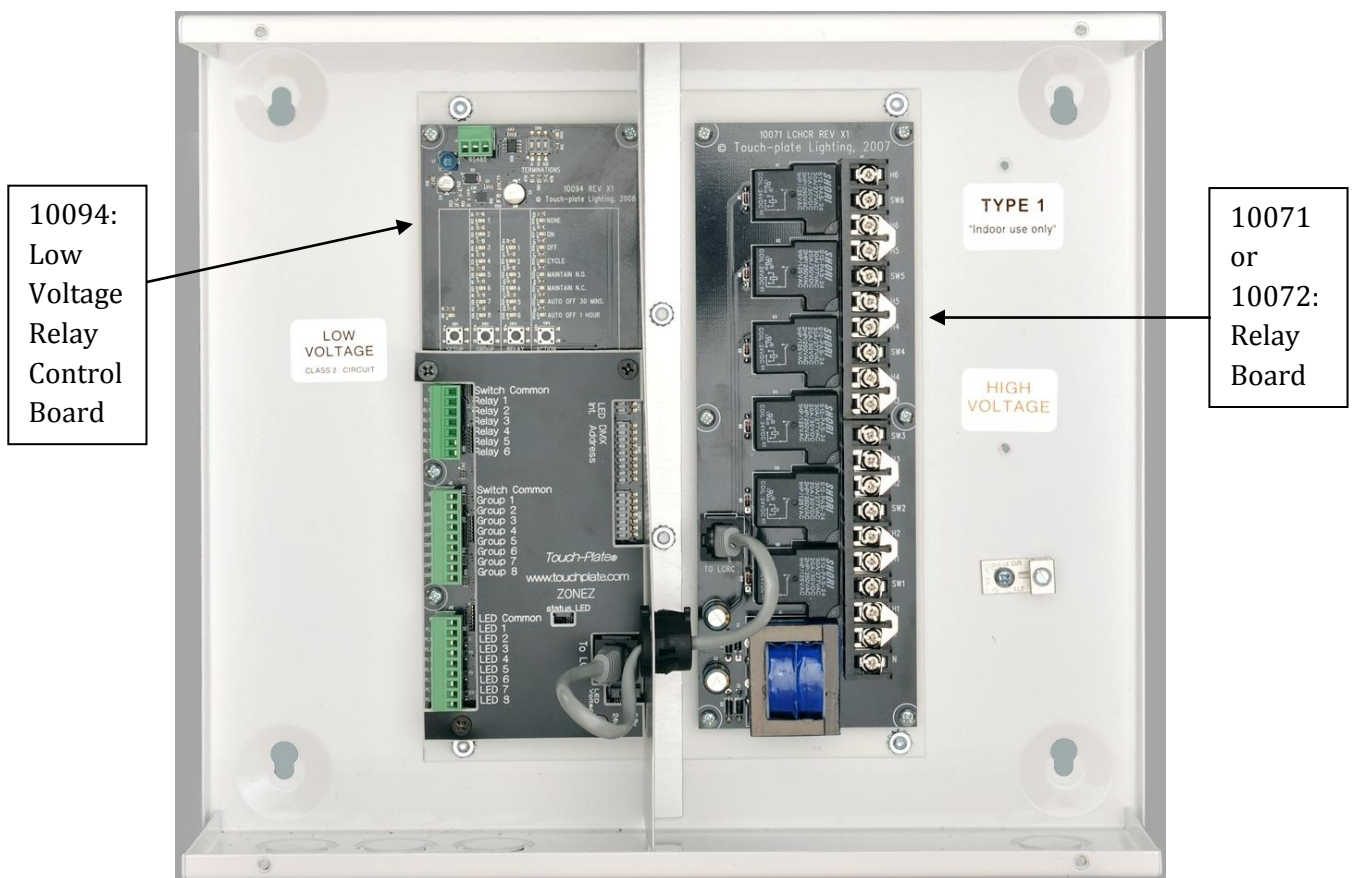


Figure 4.1

## Introduction to the Low Voltage Relay Control Board (10094)

Figure 5.1 shows a Low Voltage Relay Control Board labeled 10094. The low voltage Switch control portion is comprised of a 7 position Green connector. The Grouping control portion is comprised of a 9 position Green connector. The LED control portion is comprised of a 9 position Green connector also. If a Time-Keeper® is included, it is comprised of a 3 position Green connector at the top of the 10094 board.

The switch control Green connector is for the individual Switch Inputs for relays 1 through 6. This connector is the top one on the left side of the 10094 board. The board is labeled SC, RLY1, RLY2, RLY3, RLY4, RLY5, and RLY6 next to the switch control Green connector. See figure 5.1 for a visual description.

The Grouping control Green connector is for grouping inputs for Relays 1 through 6. This connector is underneath the switch control connector on the left side of the 10094 board. The board is labeled SC, GRP1, GRP2, GRP3, GRP4, GRP5, and GRP6 next to the grouping control Green connector. See figure 5.1 for a visual description.

The LED control Green connector is for LED inputs for Relays 1 through 6 or Groups 1 through 8. This connector is underneath the grouping control connector on the left side of the 10094 board. The board is labeled PC, PLT1, PLT2, PLT3, PLT4, PLT5, and PLT6 next to the LED control Green connector. See figure 5.1 for a visual description.

The RS485 Green connector is for Time-Keeper® networking. This connector is at the very top of the 10094 board.

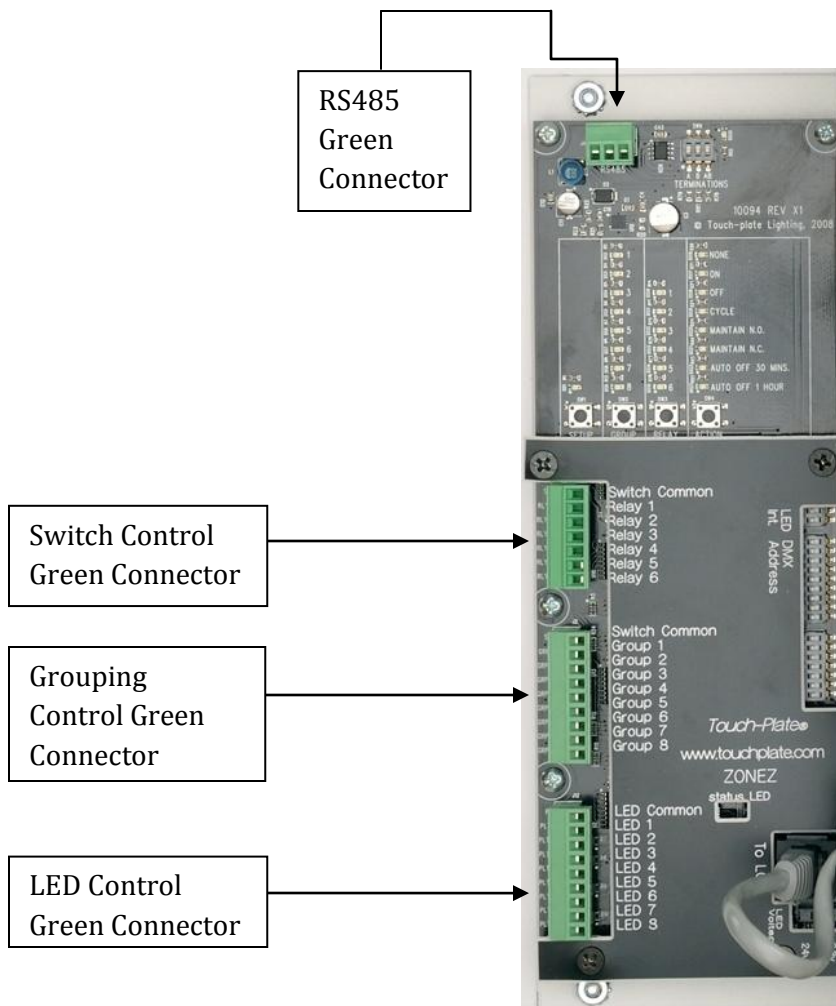


Figure 5.1

### Introduction to the Relay Board (10071 / 10072)

Figure 6.1 shows the 10071 Relay Board. The 10071 Relay Board has electronically held relays that are rated at 20AMPS. There are 6 relays per board and a transformer, which supplies power to the relay coils and the low voltage circuitry.

Figure 6.2 shows the 10072 Relay Board. The 10072 Relay Board has mechanically latching relays that are rated at 50AMPS. There are 6 relays per board and a transformer, which supplies power to the relay coils and the low voltage circuitry.



Figure 6.1

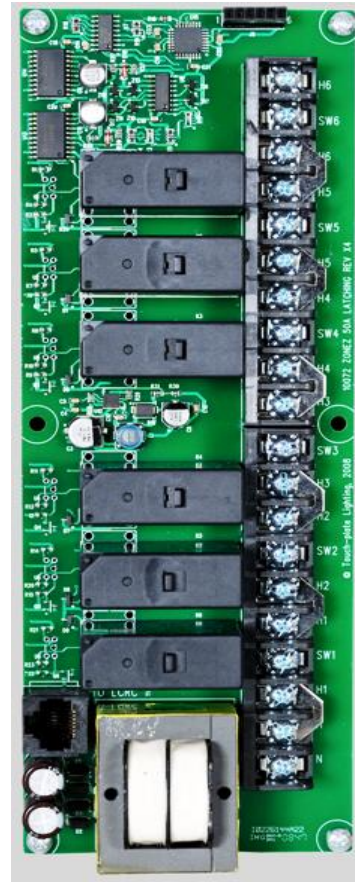


Figure 6.2

### Wiring the Low Voltage Relay Control Board (10094) – Switch Inputs

Locate the wires labeled Switch Common (SC) and Switches 1-6. The Low Voltage Relay Control Board uses a descending order for switch inputs (Green connector).

Unplug the Green relay connector and use the screwdriver to open the screw on each of the terminals. See figure 7.1 for visual description.

Remove the connector and notate where the SC goes on the connector (board says SC – match this up to the connector). All switch commons can be put in the terminal associated with SC. A wire nut can be used to connect them altogether. Once there is one wire, it can be placed in the terminal corresponding to SC. See figure 7.2 for visual description.

Find the wire which was labeled switch 1 and screw it to the terminal labeled RLY1, which is underneath the SC terminal with the common wire(s). See figure 7.3 for visual description.

Follow the above pattern for all switches. When finished landing all the switch wires, plug the connector back into the slot.

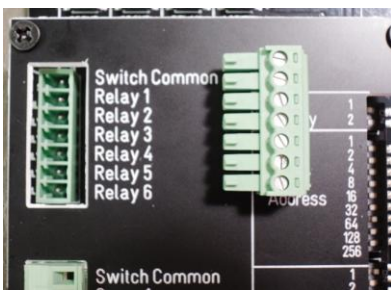


Figure 7.1



Figure 7.2

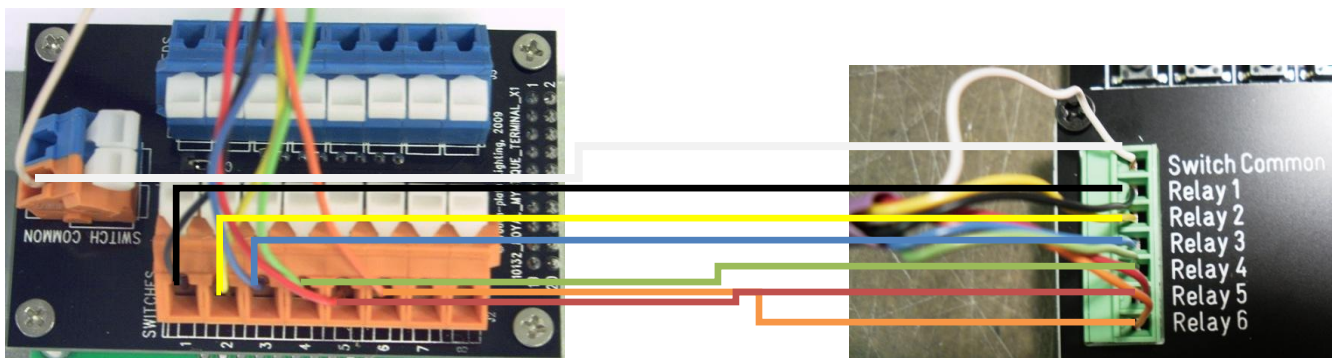


Figure 7.3

### Wiring the Low Voltage Relay Control Board (10094) – LED Inputs

Locate the wires labeled LED Common or it could be labeled Pilot Common (PC) and LED wires 1-6. The Low Voltage Relay Control Board uses a descending order for LED inputs (Green connector).

Unplug the Green LED connector and use the screwdriver to open the screw on each of the terminals. See figure 8.1 for visual description.

Remove the connector and notate where the PC goes on the connector (board says PC – match this up to the connector). All LED commons can be put in the terminal associated with PC. A wire nut can be used to connect them altogether. Once there is one wire, it can be placed in the terminal corresponding to PC. See figure 8.2 for visual description.

Find the wire which was labeled LED 1 and screw it to the terminal labeled PLT1, which is underneath the PC terminal with the common wire(s). See figure 8.3 for visual description.

Follow the above pattern for all LEDs. When finished landing all the LED wires, plug the connector back into the slot.

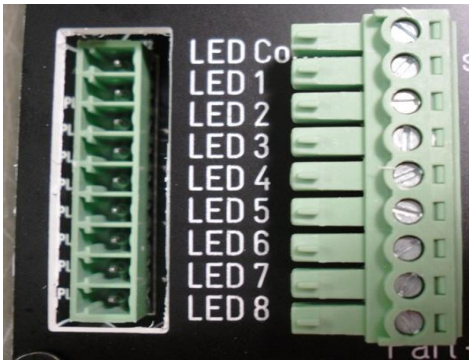


Figure 8.1

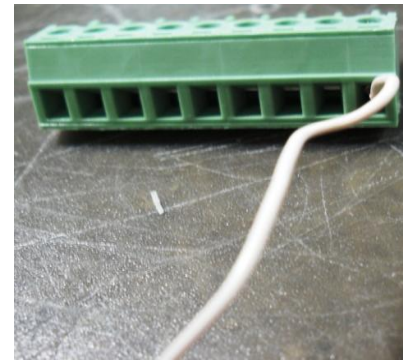


Figure 8.2

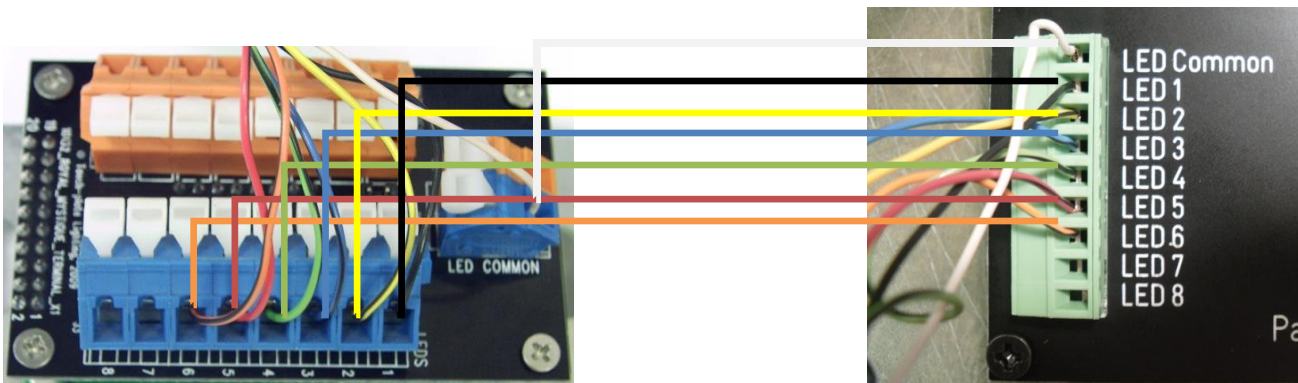


Figure 8.3

## Wiring the Low Voltage Relay Control Board (10094) – Group Functions

If Grouping or Action functions are desired, then follow the instructions below. Each switch can control all six outputs. Although the switches are hooked up to the Grouping connector (green), they still control relays. Locate the wires labeled Switch Common (SC) and Switch wires 1-6. The Low Voltage Relay Control Board uses a descending order for Grouping inputs (Green connector).

Unplug the Grouping connector (green) and use the screwdriver to open the screw on each of the terminals. See figure 9.1 for visual description.

Remove the connector and notate where the SC goes on the connector (board says SC – match this up to the connector). All switch commons can be put in the terminal associated with SC. A wire nut can be used to connect them altogether. Once there is one wire, it can be placed in the terminal corresponding to SC. See figure 9.2 for visual description.

Find the wire which was labeled Switch 1 and screw it to the terminal labeled GRP1, which is underneath the SC terminal with the common wire(s). See figure 9.3 for visual description.

Follow the above pattern for all switches. When finished landing all the switch wires, plug the connector back into the slot.

Once this step is finished, follow the instructions on the next page for programming the Low Voltage Relay Control Board.

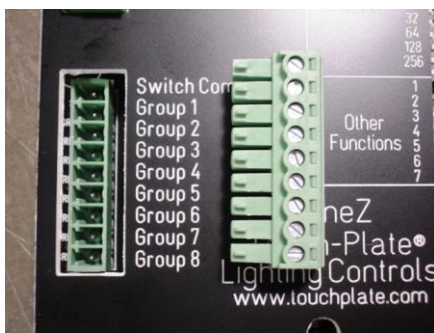


Figure 9.1

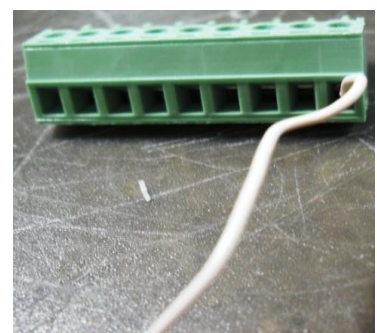


Figure 9.2

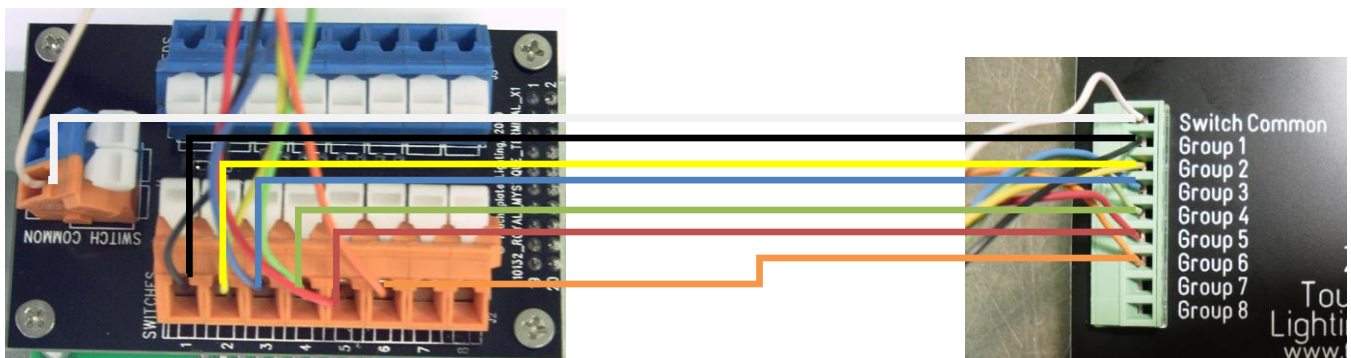


Figure 9.3

## Programming the Low Voltage Relay Control Board (10094) - Group Functions

Make sure that the Relay Board has been wired and power has been brought to the system before this step can take place. Each switch needs to be determined what Action it will perform before programming take place.

Once this has been decided, use the following steps to guide programming process.

1. Push the setup button once and the LED's at the top of the control board will light up.
2. Select which Group Input you want to program by pressing the Group button. Pressing the Group button over and over will scroll through each of the Group Inputs. Stop pressing the Group button on the Group number that is going to be programmed.
3. Press the Relay button to select the Relay that is going to be controlled. An Action can be set for each Relay. If it's desired that the Relay (load) is not to do anything, then press the Action button until the LED next to the word NONE is lit up. Press the Relay button again to program the next Relay and set the action for it. Continue for all 6 Relays.
4. Move to the next Group by pressing the Group button. Repeat this process for each Relay with that Group. 6 Groups can be programmed this way.
5. If using either the Maintain N.C. or Maintain N.O. action in the Groups. If multiple inputs are controlling the same thing, Maintain options can make the other programmed Actions not work.

See Figure 10.1 and 10.2 as two examples of programming the Grouping Inputs.



Figure 10.1



Figure 10.2

**Explanation of Action Meanings**

ACTION	MEANING
NONE	NO ACTION – RELAY WILL NOT DO ANYTHING
ON	THE RELAY WILL COME ON
OFF	THE RELAY WILL GO OFF
CYCLE	NORMAL FUNCTION FOR RELAY – TURNS OFF & ON
MAINTAIN N.O.	THE RELAY WILL BE NORMALLY OPEN – TYPICAL FOR A MOTION SENSOR
MAINTAIN N.C.	THE RELAY WILL BE NORMALLY CLOSED - TYPICAL FOR AN EMERGENCY SENSOR
AUTO OFF 30 MINS.	THE RELAY WILL TURN OFF AFTER 30 MINUTES
AUTO OFF 1 HOUR	THE RELAY WILL TURN OFF AFTER 1 HOUR

**Programming LED Inputs for Group Functions**

Since the Low Voltage Relay Control Board has the ability to control multiple things from one button (A Group), there may be an LED that corresponds to the Group. This can be done instead of just having the Relay correspond to the Group (which corresponds to the button location). Double press the Setup button and the Group LED will turn on. Select the LED number desired to turn on with each Group. Each Group is done separately and each LED is set separately. See Figure 11.1 for visual description.



Figure 11.1

### Wiring the Relay Board (10071 / 10072)

The Relay Board (either 10071 or 10072) connects to the low voltage relay control board via patch cable. All Relay Boards have an on-board transformer and 6 relays. Relay Board # 10071 uses 20-AMP electrically held relays. Relay Board # 10072 uses 50-AMP latching relays. The transformer is wired from the circuit breaker panel with a Hot and Neutral feed.

Each relay on the Relay Board has a designation of “H1”, “H2”, “H3”, “H4”, “H5”, or “H6”. “H” stands for “HOT” and this wire must come from the circuit breaker panel. The relays do not need to have neutral feeds. The “SW” designations are the Switched Leg of the relay. These are the terminals for the wire that goes to the light fixture being controlled. See figure 12.1 for visual description. There are duplicates of each Hot feed. This is to provide “Jumpers” (metal pieces under the screw terminals on the 10071 or 10072 Relay Board). This allows the same breaker to feed all 6 relays on one Relay Board. If the lighting load is too much, a new circuit can be added to separate the relays, by removing the “jumper”. See figure 12.1 for visual description.

The Relay Board is numbered opposite of the Low Voltage Control Board. The numbers ascend on the Relay Board with Relay # 1 (SW1) as the lowest relay on the board. See figure 12.1 for visual description.

Once the Relay board is wired bring power to the system. Programming the Low Voltage Relay Control Board can be done at this point.

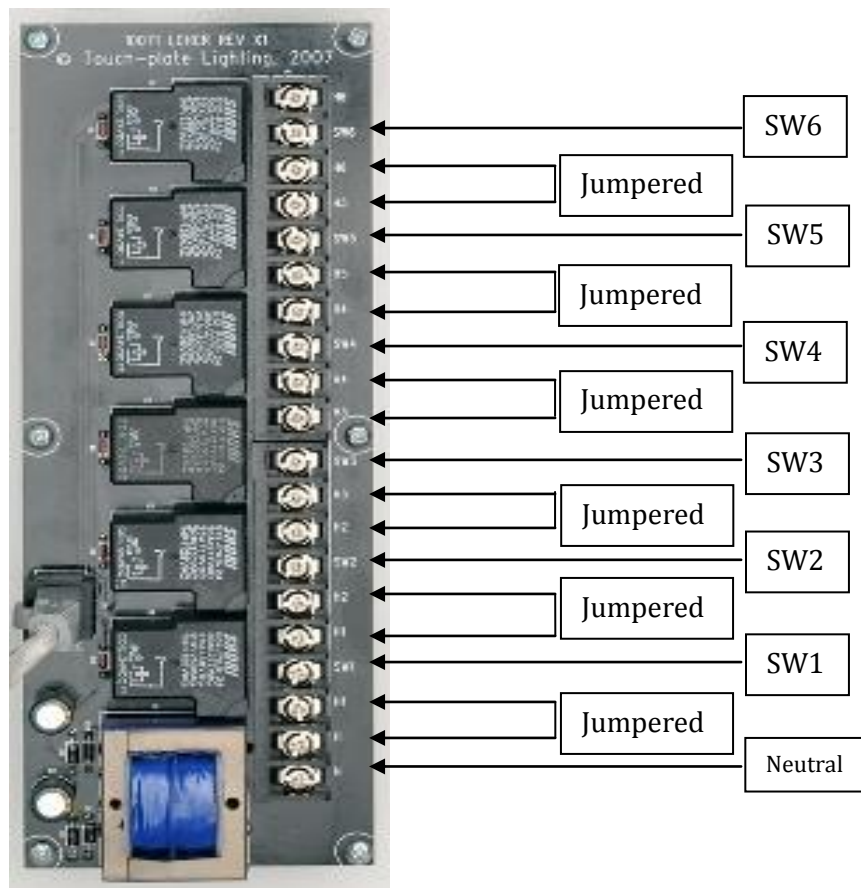


Figure 12.1

## Frequently Asked Questions

1. Grouping – What is it?
  - a. Grouping allows for one button on a switch to control multiple relays.
    - i. Ex. In most bathrooms there are lights above the sink and above the shower. If it is desired that both lights should turn on at the same time with the push of one button, Grouping makes this possible.
2. What are all these “Other Functions”, “DMX Address”, and “Pilot Voltage”?
  - a. Other Functions are for those that have a DMX Network hooked up to a ZoneZ-N panel.
  - b. DMX Address is a number in a line of specific addresses. This has to be done because everything has a unique address and has to be programmed to do so. In most cases a Time-Keeper will accompany the panels so it can recognize the DMX programming.
  - c. Pilot Voltage is set to 24V so it can send the correct voltage to the switches. This should never be changed as it is factory set for the switches that correspond to the ZoneZ-N panel.
3. What does “Termination” at the top of the board mean?
  - a. It is the DMX Line Terminations. This will only be important if DMX Networking connected to the ZoneZ-N panel. A = Pull-Up, B = Pull-Down, AB = Line to Line.