

Touch-Plate® Lighting Controls

ACES 3 & 6 Module System Manual

A.C.E.S. Series

ACES 3 & 6 MODULE PANELS

System Manual



Touch-Plate® Lighting Controls

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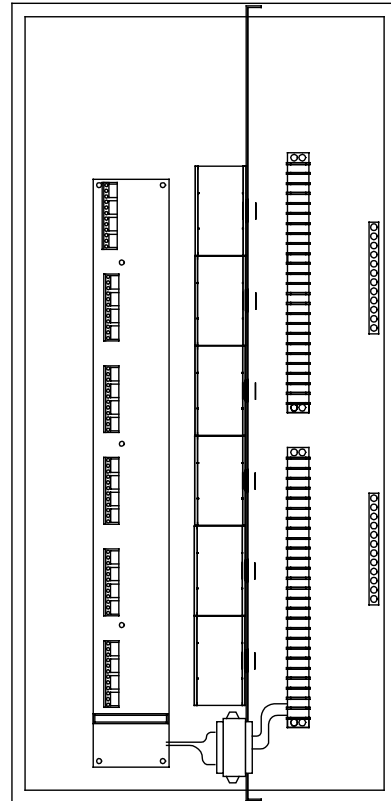
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● Overview

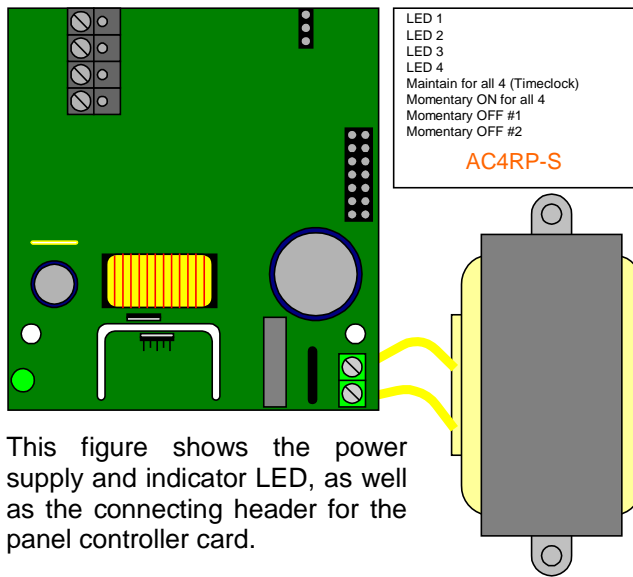
The ACES line of panels provides a modular, cost effective means for controlling lighting in any home.

- Each panel may contain a variety of different modules and may be upgraded in the future with new ACES modules.
- All modules may be wired to accommodate multiple switches using 22 AWG wire for control from separate locations.
- The ACES panel provides a means of controlling lighting loads via low voltage control stations. This allows multiple switches to control a single or group of lights without complicated wiring.
- Changes can be made to the system with very little work and often without additional wiring.
- The three (3) and the six (6) module cabinets have a built in "POWER ON" LED status, a backplane for attaching relay or dimmer modules and switch wiring, and an expansion adapter port.
- Switch wiring is connected to removable terminal blocks that allow easy changing of components in the system.
- A power connector is provided at the top of the backplane for powering approved external devices.
- Relay modules contain four (4) relays capable of 15 Amps each at 120 VAC.
- Each individual relay has a cycle input for control from multiple switches and switch stations.
- Each relay has its own status light output for displaying the condition of the controlled lights.
- Each standard module has one **master on** input, one **master maintain** input and two **master off** inputs. These four master inputs control all four relays at once.
- Dimmer modules contain two (2) channels rated at 600 Watts at 120 VAC each for incandescent and dimmable fluorescent loads.
- Each Dimmer module contains two (2) inputs that allow single switch or a group of switches to dim the lighting load.



- Each dimming channel has its own status light output for displaying the condition of the controlled lights.
- Six programmable scene inputs provide one touch 'mood lighting'.
- Dimmer modules contain an integrated temperature sensor that prevents the modules from overheating.
- Both the relay and the dimmer modules contain flash memory with a 10-year life to retain the states of each output when power is lost. Thus, when power is restored, the last state of the relay or dimmer level is returned automatically.

Panel Power Supply Wiring



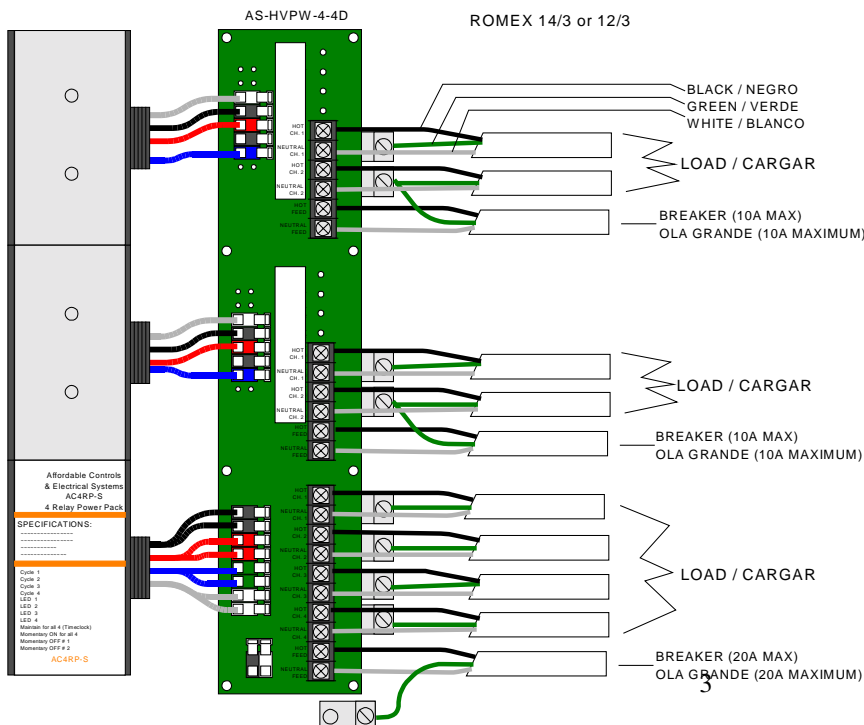
This figure shows the power supply and indicator LED, as well as the connecting header for the panel controller card.

Install the cabinet by placing the enclosure level and straight against the wall and secure it with four screws in the corners of the panel. If the panel is to be mounted flush with the wall, secure with screws in the mounting holes in the side of the panel. Install the trim ring after the wall is finished.

All 120 VAC wiring must be contained on the right side of the steel barrier. Screw terminals are provided to attach supply and load wires. Screw terminals may be used with solid or stranded wire ranging from 16 AWG to 12 AWG. A neutral bar is supplied to simplify wiring in the six module panels. Panels with only three modules have integral line voltage wiring boards.

The six-module panel must be powered with 120 VAC connected to the bottom two terminals. A hot conductor should be connected to the black wire of the transformer at the terminal labeled **120 VAC**. A neutral conductor should be connected to the white wire of the transformer at the terminal labeled **NEUTRAL**. The three-module panel is powered from the feed to the first module. A grounded conductor must be connected to the ground lug located in the lower right hand corner of the panel.

Before beginning to wire the ACES panel the load schedule for the appropriate panel should be completed. The schedules can be found in the back of this manual. This schedule should be followed when wiring loads to relays and dimmers in the ACES panel.



The connected load to each relay or dimmer should not be more than that specified by the electrical code for your area.

The power from one breaker can be spread over more than one relay or dimmer module as long as the above requirements are met.

Note: For proper dimming performance fluorescent lamps must be operated at full intensity for 100 hours prior to dimming.

Warning: Dimmer modules may be warm to the touch when operating. This is normal for high wattage loads. Dimmed lighting loads may also hum when operating at levels less than 100%. Dimmers should not be installed where this sound is objectionable.

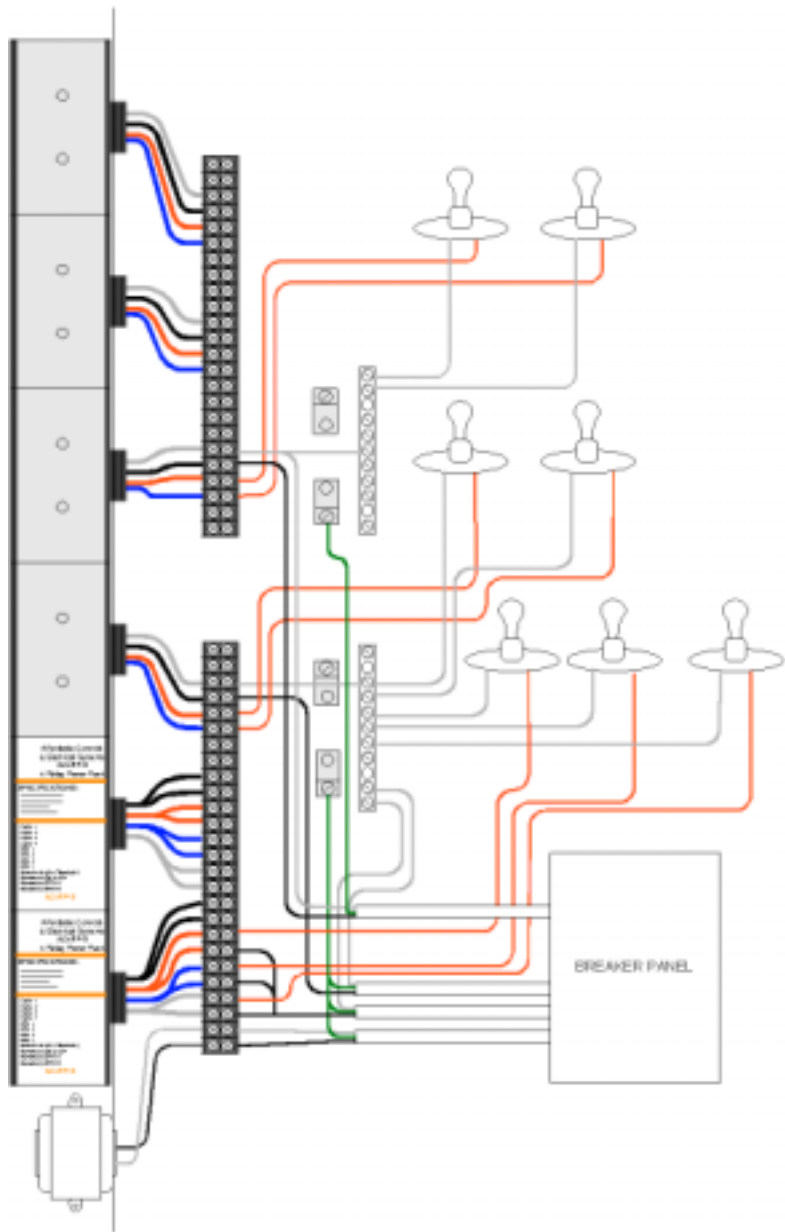
- **Three & Six Module Panels**

Relay Module:

Each relay has a matching colored pair of wires. One of the wires must be connected to the 120 VAC conductor feed from a circuit breaker rated for **not more than 15 Amps**. The other matching colored and labeled terminal must be connected the load circuit scheduled for that relay.

Dimmer Module:

Each dimmer module has four high voltage connections. The terminal labeled **LINE** must be connected to a 120 VAC conductor feed capable of supply power for both load circuits. The terminal labeled **NEUTRAL** must be connected to a neutral conductor. Terminals labeled DIMMER 1 and DIMMER 2 should be connected to the two load circuits that are to be dimmed.



• Module Wiring – Low Voltage

All switch wiring terminates on the backplane. Each module has its own dedicated terminal strip for inputs, pilot outputs and common. Note that all commons are tied together. Inputs and outputs are labeled and numbered only.

Since the switch wires carry very little current, smaller gauge wire can be used. A minimum of 22-gauge wire is necessary to ensure that the wire is strong enough to be pulled through conduits and other tight spaces. Use 22-gauge wire for distances of up to 1000 feet. Longer distances require thicker wire. Use shielded wire for long runs in areas with strong radio signals or electromagnetic fields (EMF) from AC lines. In conduit, control wires running next to current-carrying conductors can induce sufficient voltage in the switch wires causing random switching.

WARNING: DO NOT USE TWISTED-PAIR CABLE FOR THE WIRING TO THE SWITCH STATIONS. SIGNALS INDUCED IN THE SYSTEM, AS A CAUSE OF THIS WIRE, MAY CAUSE ERRATIC BEHAVIOR.

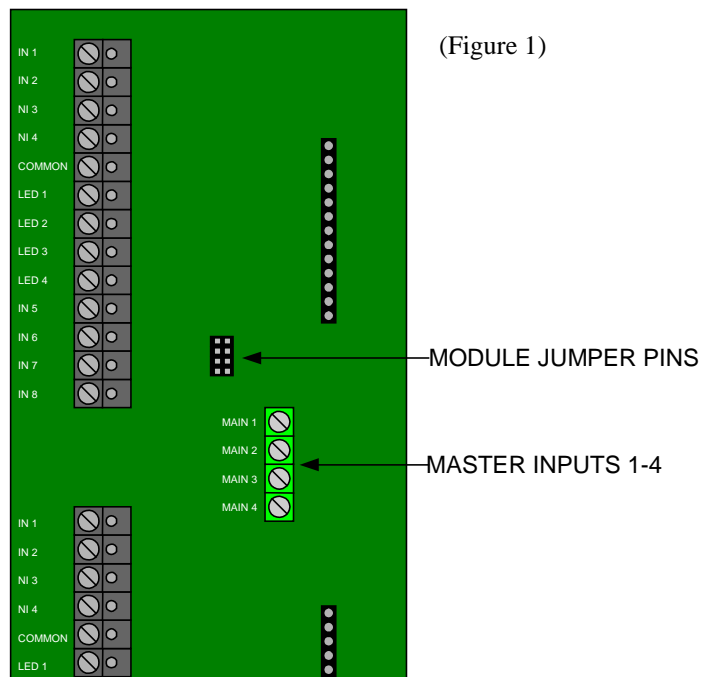
IMPORTANT! Never run control wires in the same conduit, or closer than twenty-four inches together when running in parallel, with high voltage wiring (110, 240, 277 AC or higher) even if the building code permits it. If high voltage wires and control wires must cross, they should cross at 90 degrees.

Master inputs:

The four master inputs (figure 1) route the input signal from the connected switch through diodes and jumpers to the last four inputs of the modules. To have the master input affect the module, insert the jumper at that module. Note that the function of the master input is controlled by the function of the module. It may be different for every module. Consult the label on each module for correct wiring.

Switches:

Each switch station will require one conductor for a common as well as one wire for each button and one wire for each LED. For example a six button Ultra switch will require thirteen conductors, one for switch and pilot common, six for the push buttons and six for LEDs. Note that the **switch common** and the **pilot common** are both wired to the same common in the ACES panel.



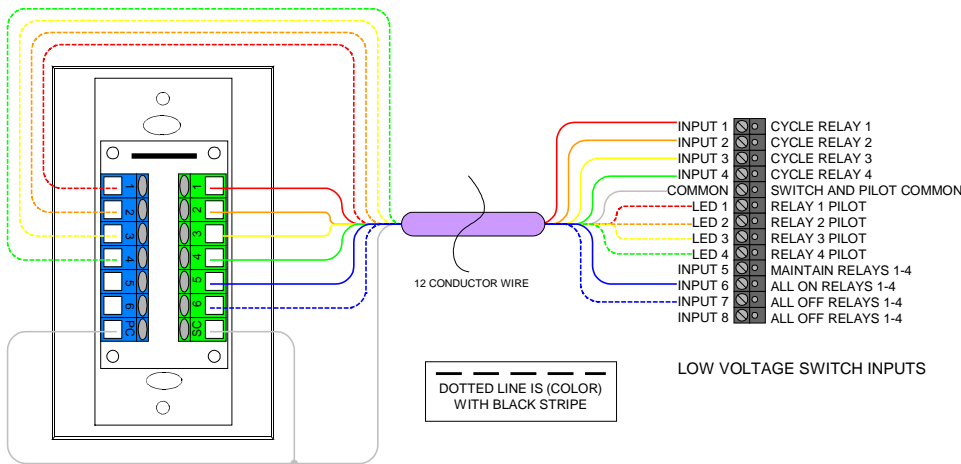
Grouping:

Multiple switch wires may be run to a single switch input for three and four way wiring. However, a single switch may only be wired in parallel to ON, OFF or SCENE inputs. This will allow the single button to control a group of relays and/or dimmers. Wiring a single switch to multiple cycle inputs will cause unwanted problems with lights not be synchronized.

Pilot lights on switches may only be wired to a single pilot light output. Grouping several pilot lights is not possible. If it is desired to have a pilot light for a group, one light must be chosen to be the indicator. Usually one light will be turned on more than the others in the group, this one should be selected to indicate if the group is on or off.

Relay Modules:

Each relay module has eight inputs. Inputs one through four are cycle inputs for relays one through four respectively. A switch connected to one of these inputs will cause the relay to toggle between on and off.



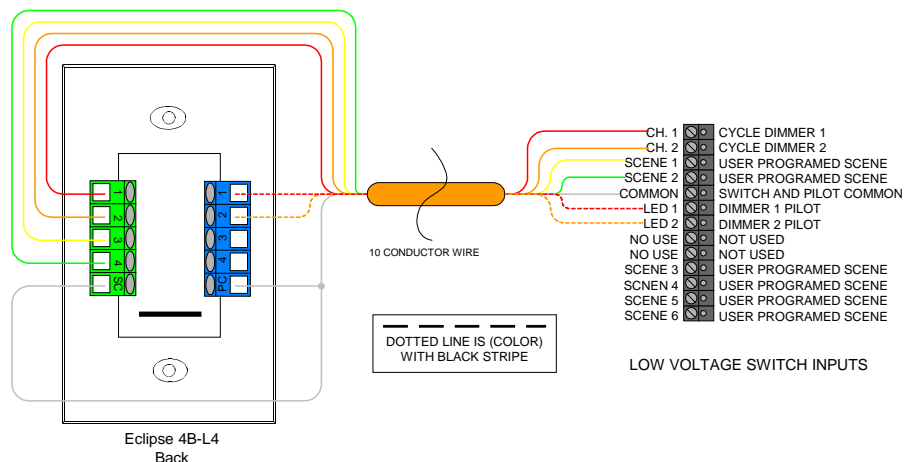
Note a single switch should never be connected to more than one cycle input to prevent synchronization problems between relays. The last four inputs are master inputs that control the four relays in the module as a group.

Generally there is one **ON**, one **MAINTAIN** and two **OFF** inputs. Other options are available, check the label on the module for a complete list of the proper list of inputs. Four example, an Ultra six button station can be wired to provide four **CYCLE** inputs, one **ALL ON** input and one **ALL OFF** input as shown.

FLASH inputs will cause the lights to toggle on and off every second so long as the input is active. If a smoke detector or security alarm panel is connected to the input, the lights will flash when the alarm is active. If a switch input is used the lights will only flash when the button is held down. When the button is released or the alarm is cleared, the lights will turn on and stay on until turned off manually. Pressing a **CYCLE** button may individually turn on flashing lights. The light will immediately stop flashing and remain on. A **FLASH** input may be tapped to turn the lights on. In this manner a **FLASH** input may be conveniently used as an **ON** input.

Dimmer Modules:

Each dimmer module has eight inputs. Inputs one and two are single button dimming inputs for channels



one and two respectively. A switch connected to one of these inputs will cause the channel to toggle between off and preset when tapped, and off and full on when double tapped. Holding these inputs will cause the dimmer channel to alternately ramp up and down. Note that a single switch should never be connected to multiple dimming input's to prevent synchronization problems between dimmer loads. Double tapping the button will turn the output on or off immediately. The last six inputs are scene inputs that control the two channels in the module as a group. Tapping the scene input will recall a scene. To record a scene, set dimmer channels to the desired levels and press and hold the appropriate scene button until the LEDS flash (about 10 seconds). Tap the scene button one, two, or three times quickly for a fast, medium or slow fade rate respectively. Afterward the LEDS will return to an on or off state and the scene is now recorded. As an example of switch wiring, an Eclipse four button station can be wired to provide two dim inputs, and two scene inputs as shown. A single button may be wired into scene inputs on multiple dimmer modules to create a scene with four or more lights. Usage and programming will be the same.

• Specifications

TRANSFORMER

Primary Input:

120VAC

Secondary Output:

20VAC at 2 amps

SWITCH WIRING

24 VDC, 0.4mA per input

1000 feet maximum 22 AWG copper wire

ENVIRONMENTAL

Operating Temperature Range: 0°C to +40°C

Storage Temperature Range: -10°C to +85°C

Relative Humidity: 20% to 90% non-condensing

• Class 2 Notice

Switch circuits are classified as Class 2 circuits. Unless otherwise specified, the voltages do not exceed 24 VDC. As Class 2 circuits, they comply with the requirements of NFPA 70. National Electrical Code (NEC). When installing and wiring from modules to switches, follow all applicable national and/or local wiring regulations. External circuits connected to input, output, EIA-232, EIA-485, and other communication terminals of ACES panels, must be supplied from a Listed Class 2 source.