ETC Installation Guide

Automatic Load Control Relay

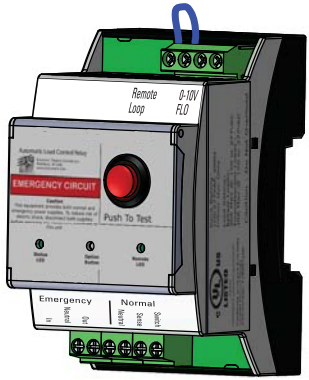
Overview

The Automatic Load Control Relay (ALCR) is a UL 924 listed device that is powered from an emergency source and provides power to emergency lighting load(s). The ALCR ensures a “lights on state” during loss of normal power while tracking the state of normal lighting loads during normal operation. The ALCR also assures a “lights on” override by utilizing a normally closed emergency contact closure which interfaces with fire alarm and emergency systems.

The ALCR is available in two models for installation convenience including Power Pack (ALCR-PP) and DIN-rail (ALCR-DIN).

ALCR-PP

ALCR-DIN



Electrical Specifications

Rated for indoor use only. UL, cUL listed Emergency Lighting and Power under UL 924 at line voltages of 120 and 277 VAC, 60 Hz.

- Load ratings include:
  - Ballast loads, 20A maximum at 120 or 277 VAC
  - Incandescent loads - 10A maximum at 120 or 277 VAC
- Provides remote activation by dry contact closure for connection to a fire alarm or building management system.
- ALCR-DIN model only provides auxiliary contact for 0-10 Vdc/ Fluorescent ballasts.

WARNING: ***Risk of electric shock! The ALCR utilizes high voltage and should only be installed by a qualified installer or electrician. Follow all local codes for installation and follow the proper lockout/tag out procedures per NFPA Standard 70E.***

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Installation Requirements

WARNING: ***Before terminating the AC power wiring verify the breakers for the normal power and emergency power are in the off position and follow the proper lockout/tag out procedures per NFPA Standard 70E.***

Important Safeguards

When using electrical equipment always follow basic safety precautions, including:

- READ AND FOLLOW ALL SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS.
- Install this unit to an approved electrical enclosure only. This emergency device must be installed in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than intended use.

Installation

The ALCR-PP (Power Pack) model is designed for permanent installation directly to an electrical junction box or panel at the electrical lighting load or before the load in the circuit. Reference *"Installation and Termination of the ALCR-PP"*.

The ALCR-DIN (DIN-rail) model is designed to be permanently installed on a consumer DIN rail 35mm (complies with DIN43880 and EN60715). Reference *"Installation and Termination of the ALCR-DIN"* on page 4.

Note: *The ALCR-DIN must be mounted in a suitably insulated or grounded enclosure, such that live terminals are not accessible.*

Once installation of the Automatic Load Control Relay is complete, reference *"Configuration of Time Delay" on page 6*.

Installation and Termination of the ALCR-PP

The ALCR-PP mounts directly to an electrical junction box or electrical enclosure at the electrical lighting load or before the load(s) in the circuit. The ALCR-PP is fitted with a 1/2” nipple (standard 1/2” knockout).

Two sets of wire bundles are provided on the unit. One set is for emergency power input and the other set is for sensing normal power. In addition, a single loop jumper is provided for connection to a remote triggering device (normally closed, maintained dry contact closure for fire alarms, etc.).

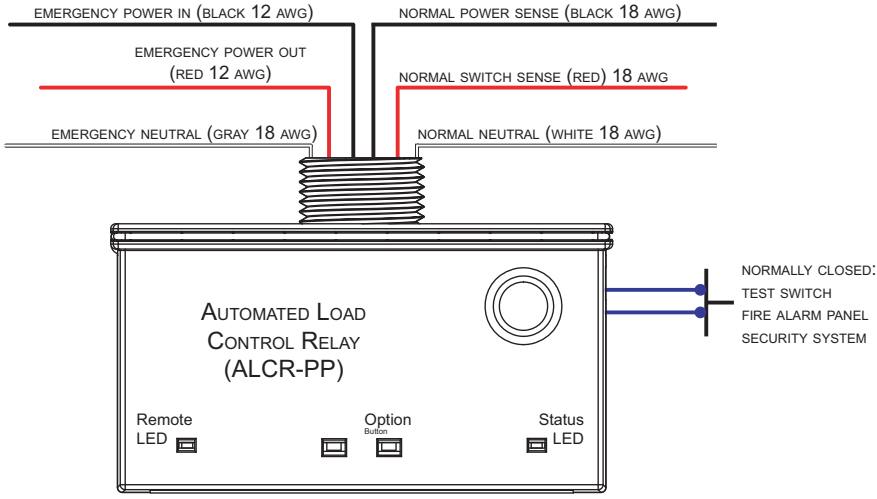
WARNING: ***For indoor use only! Must install in an electrical junction box or wire way. Follow local codes and restrictions.***

Automatic Load Control Relay

Step 1: Locate the normal and emergency circuit breaker panels and turn off the power to the circuits.

Step 2: Remove face plates and other hardware from the junction box, gaining access to the high voltage wiring.

Step 3: The ALCR-PP mounts to the exterior of the junction box or panel with the 1/2" threaded nipple. Attach the unit to the junction box.



Reference *"Examples of Use" on page 8* for possible installation layouts.

Note: *Follow all local code requirements for terminating wiring. Notice the harness wires on the controller unit are pre-stripped for your installation convenience.*

Step 4: Connect the Emergency power wiring leads.

a: Connect the Emergency Power In and Power Out wiring leads (Black 12 AWG and Red 12 AWG) on the ALCR-PP with the emergency lighting loads as shown in the above wiring diagram.

b: Connect the Emergency Neutral (Gray 18 AWG) for the emergency circuit to the Emergency Neutral lead as shown.

Step 5: Connect the Normal sense wiring leads.

a: Connect the Normal Power Sense (Black 18 AWG) and Normal Switch Sense (Red 18 AWG) wiring leads to the normal lighting circuit as shown.

Note: *To ensure the emergency lighting in the controlled area turns On in the event of a power loss, you must connect the Normal Power Sense wires on the line side of (before) any switched control device for the normal lighting loads.*

b: Connect the Normal Neutral (White 18 AWG) lead to the normal Neutral for the lighting loads.

Step 6: Proceed to *"Initial Test" on page 7*.

Step 7: If you are installing a remote triggering device to remotely activate the emergency circuit, refer to *"Installing a Remote Activation Input to the ALCR-PP"* for wiring instructions.

Installing a Remote Activation Input to the ALCR-PP

The ALCR-PP offers a normally closed, dry contact input to accommodate connection to fire alarm panels, security systems, and test switch. This input ships from the factory with a blue wire loop off the right side of the unit, this complete loop disables remote activation. Do not cut this jumper unless you are installing a remote triggering device.

The remote device that triggers the Emergency circuit “On” must provide a normally closed, maintained dry contact closure for fire alarms, etc. When the remote device is activated, the contact closure opens and the contacts force the ALCR-PP into the emergency “On” state.

Note: *The remote triggering device, a test switch or an emergency system (fire alarm panel or security system) must be installed within 1,000 feet of the ALCR when using 18AWG wire.*

Note: *ETC highly recommends that you power up and test your system before connecting to a remote device.*

Do not cut the factory installed jumper unless you are installing a remote triggering device.

Step 1: Cut the blue wire loop in the middle of the wire lead. Doing this provides two leads which are the connection point for both the contact input and contact output connections to a remote triggering device.

Step 2: Connect the two leads to the normally closed single pole contacts on the remote device or test switch.

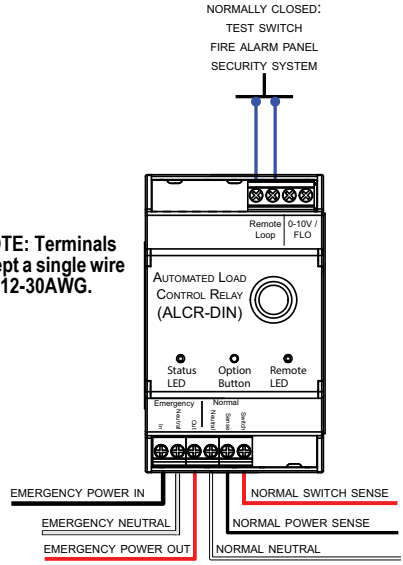
Step 3: Continue to *"Remote Activation Test" on page 7*.

Installation and Termination of the ALCR-DIN

The ALCR-DIN is designed to attach to lighting control panels or electrical enclosures that are fitted with DIN-rail (compatible with DIN43880 and EN60715).

- Screw terminal connectors are provided on the unit for connection of normal sense and emergency power wires.
- Another screw terminal connector is provided on the bottom of the unit including four screw terminals:
  - A wire loop (jumper) is factory installed into two terminals and allows connection to a remote triggering device (dry contact, normally closed for fire alarms, test switch, etc.). When the normally closed contact is triggered, the contact input will open, activating the emergency lighting On.
  - The remaining two screw terminals allow termination of 0-10V / Fluorescent lighting control.

Step 1: Snap the unit onto the installed DIN-rail in the upright position at least 2” (5cm) away from any heat-generating devices. Refer to the label text as a guide. Tension clips on the unit provide an audible click that can be heard when the unit is installed properly.



NOTE: Terminals accept a single wire 12-30AWG.

Reference *"Examples of Use" on page 8* for possible installation layouts.

Note: *Follow all local code requirements for terminating wiring.*

Step 2: Terminate the ALCR-DIN to the emergency lighting for the area controlled as shown in the wiring diagram on the previous page.

a: Connect Emergency Power In and Out wires to the screw terminals on the unit in series with the emergency lighting as shown.

b: Connect the Neutral for the emergency circuit to the Emergency Neutral screw terminal as shown.

Step 3: Connect the ALCR-DIN to the normal lighting and control device for the area controlled. Reference the wiring diagram on the previous page.

a: Connect the normal lighting circuit to the Normal Power Sense, Normal Switch Sense, and Normal Neutral screw terminals as shown.

Note: *To ensure the emergency lighting connected to the device turns On in the event of a power loss, you must connect the Normal Power Sense wire on the line side of (before) any control device for the normal lighting loads.*

Step 4: If you are connecting to 0-10 Vdc / Fluorescent lighting loads, connect to the provided terminals, labeled 0-10V/ FLO. Reference *"Examples of Use" on page 8*.

Step 5: Continue to *"Initial Test" on page 7*.

Step 6: If you are installing a remote triggering device to remotely activate the emergency circuit On, return to this *"Installing a Remote Activation Input to the ALCR-DIN"* for wiring instructions.

Installing a Remote Activation Input to the ALCR-DIN

The ALCR-DIN offers a normally closed, dry contact input to accommodate connection to fire alarm panels, security systems, and test switches. This input ships from the factory with a blue wire loop (jumper) off the bottom screw terminals. This complete loop disables remote activation.

Note: *ETC highly recommends that you power up and test your system before connecting to a remote device.*

Do not remove the factory installed jumper unless you are installing a remote triggering device.

The remote device that triggers the Emergency circuit “On” must provide a normally closed, maintained dry contact closure. When the remote device is activated, the contact closure is opened and the contacts force the ALCR into the emergency “On” state.

Note: *A remote device, such as a test switch or the external emergency system such as a fire alarm panel or security system must be installed within 1,000 feet of the ALCR-PP when using 18AWG wire.*

Step 1: Power up and test your system before installing a remote activation input to your ALCR. See *"Initial Test" on page 7*.

Step 2: Remove the factory installed jumper from the Remote Loop In and Remote Loop Out terminals.

Step 3: Connect the Remote Loop In and Remote Loop Out terminals on the ALCR-DIN to the single pole contacts on the remote device or test switch.

Step 4: Continue to *"Remote Activation Test"* section on page 7.

Configuration of Time Delay

The Automatic Load Control Relay features a user configurable delay time between regaining normal power and removing power from the emergency lighting. This delay time could be used to account for loads that may require a warm up time, for example HID lamps. The unit ships from the factory configured for 0 delay time. If a longer transition time is required follow the steps below for configuration:

Step 1: Press the **[Option Button]** located on the user interface of the ALCR. Both “Status” and “Remote” LEDs will blink to indicate the delay time that is configured.

Step 2: Press the **[Option Button]** to increment through the available settings.

Step 3: When the blink pattern matches your desired delay time, wait 10 seconds for the operation to time-out. The delay time setting will be saved to memory and the ALCR will return to normal operation.

Number of blinks	Delay time
1	no delay (default)
2	10 seconds
3	30 seconds
4	10 minutes
5	15 minutes

Note: *The time delay only applies to the main contact on the ALCR. It does not apply to the auxiliary contact on the DIN rail unit.*

Power Up and Test

Initial Test

Initial testing of the ALCR function should be done with the Remote Loop In and Remote Loop Out jumper installed on the ALCR-DIN and the blue loop uncut on the ALCR-PP.

Step 1: Turn On the circuit breaker in the emergency panel for the controlled circuit. The “Status LED” on the ALCR will illuminate red. With only the emergency circuit On (normal power should be Off) the emergency lighting should be activated “On”.

Step 2: Temporarily disconnect and cap the wire lead connected to the Normal Switch Sense terminal on the ALCR. This disables the normal control function and allows exclusive testing of the emergency On functionality.

Step 3: Turn On the circuit breaker in the normal panel for the controlled circuit. The “Status LED” on the ALCR illuminates green, indicating that normal power is present and emergency lighting is not required. The emergency output should be Off.

Step 4: Confirm the automatic emergency On functionality by turning Off the circuit breaker in the normal panel. The connected emergency lighting should immediately turn On again and the “Status LED on the ALCR will illuminate red.

Step 5: With the normal circuit breaker secured Off, reconnect the Normal Power Switch wire to the terminal.

Step 6: Turn On the normal circuit breaker. The ALCR should now behave as described in the *"Examples of Use" on page 8*.

Step 7: If you are installing a remote activation input to the ALCR, refer back to the appropriate section for instructions to complete the wire terminations. Reference *"Installing a Remote Activation Input to the ALCR-PP" on page 4* or *"Installing a Remote Activation Input to the ALCR-DIN" on page 6*.

Remote Activation Test

Step 1: Connect the Remote In and Remote Out terminals on the ALCR to the single pole contacts on the remote device or test switch. Reference or *"Installing a Remote Activation Input to the ALCR-DIN"*. With the remote device in normal mode (contacts closed) the “Status LED” on the ALCR illuminates green and the unit operates as it did with the factory installed jumper.

Step 2: When the remote device activates, the “Status LED” will illuminate red, indicating a switch to emergency state. The ALCR activates emergency On mode and the “Remote LED” illuminates amber, indicating remote device control.

Local Test Button

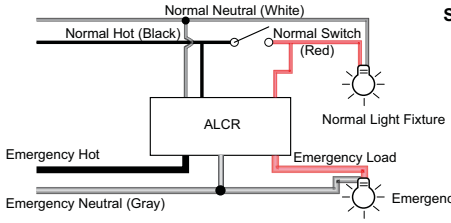
The Automatic Load Control Relay features a local button that allows manual switching of the load from normal to emergency power for test purposes.

Step 1: Press and hold the **[Press to Test]** button located on the front of the unit.

Step 2: Verify the emergency relay closes, this is apparent when the emergency loads illuminate according to your installation.

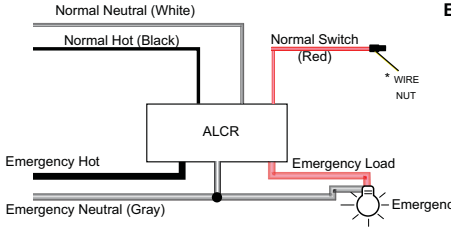
Step 3: Release the button to return to normal operation.

Examples of Use



Switch Control Arrangement

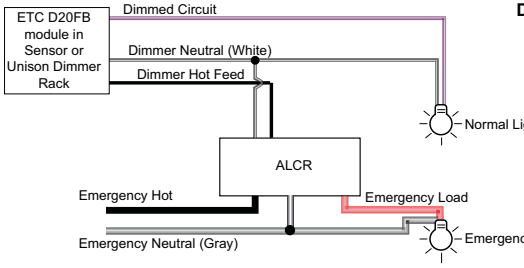
- When normal power is present, switch controls both the normal and emergency light fixtures
- When normal power is lost, the emergency light fixture(s) turn on regardless of the switch state



Backup Arrangement

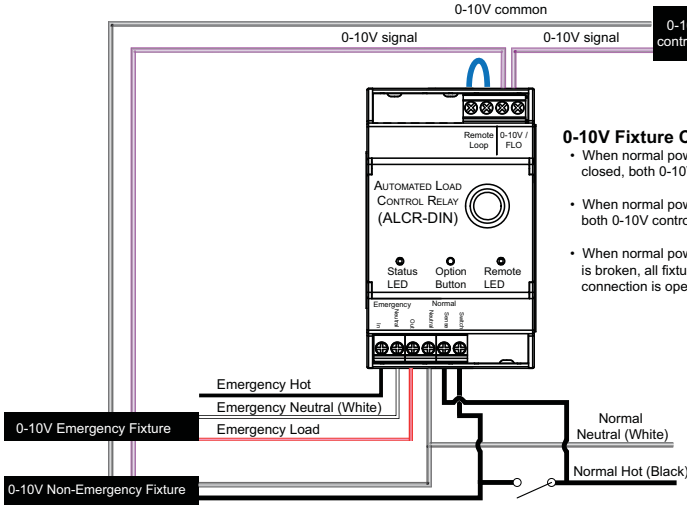
- When normal power is present, the emergency load is turned off
- When normal power is lost, the emergency load turns on

* Cap end with wire nut or other suitable method to prevent contact with bare wire.



Dimmer Control with D20FB

- When normal power is present, normal fixture(s) dim and emergency fixture(s) remain off
- When normal power is lost or dimmer circuit breaker trips, emergency fixture(s) turns on



0-10V Fixture Control (ALCR-DIN only)

- When normal power is present and switch is closed, both 0-10V controlled fixture(s) dim.
- When normal power is present and switch is open, both 0-10V controlled fixture(s) turn off.
- When normal power is lost or fire alarm connection is broken, all fixture(s) turn on to full - 0-10V connection is opened.