



Emergency Lighting Load Controls Relay

Relay CU Series

DLCS-ALCR-217

Features

- ALCR: Automatic Load Controls Relay
- ESR: Emergency Shunt Relay
- Feedback / Dimmer Contact
- Remote Test Input
- Local Test Button
- Normal Power LED
- Universal Input Voltage: 100 - 277Vac
- Compliance With UL STD. 924

Emergency Load Relay Specification

- Two (2) SPDT Continuous Duty Coil
- 1 Million Cycles Minimum Mechanical Lifetime
- Switching Time: 15mS
- Max. Switching Load Current: 8A @ 120Vac
- Max. Switching Load Power: 1385VA @ 175 - 277Vac

Signal Relay Specification

- One (1) SPST Continuous Duty Coil
- 1 Million Cycles Minimum Mechanical Lifetime
- Switching Time: 3mS
- Maximum Switching Load Voltage: 250Vac / 30Vdc
- Maximum Switching Load Current: 1A

UL924 / 8 AMP AUTOMATIC LOAD CONTROLS RELAY
TWO SPDT RELAYS, UNIVERSAL 100-277Vac 50/60Hz
0-10Vdc DIMMER OVERRIDE
DRY CONTACT FIRE ALARM INTERFACE



Intertek
5018360

CONFORMS TO UL
STD.924

CERTIFIED TO CSA
STD.C22.22 No.141



CAN ICES-5(B)/NMB-5(B)



IP24



Advantages

- Optional switch or controller to control Emergency Load under normal conditions and perform self-test.
- Class 2 Remote Test Input (N/O, dry contact input) for button, controller, or fire alarm panel.
- Local Test Button for installation test and wiring check.
- Feedback dry contact output can be used to monitor status of Normal Power.
- Dimmer dry contact output can be used to override 0-10V dimmer to full brightness by breaking the positive (+) leg.

Testing

Initial Test for Correct Wiring

Apply Emergency Power to the Emergency Power Input and Normal Power to the Normal Power Input.
(If using the Wall Switch Input, apply Normal Power to the switch also, but keep the switch OFF/OPEN.)

a. The Green LED (Normal Power available) should be ON.

Local Test Button

1. Turn switched circuit OFF. Emergency light should be OFF.
2. Press and hold "Local Test Button".
3. Emergency light should turn ON.
4. Release "Local Test Button" and emergency light should turn OFF

Remote Test Button

1. Connect the test switch on the remote test input line.
2. Turn switched circuit OFF. Emergency light should be OFF.
3. Press and hold "Remote Test Button".
4. Emergency light should turn ON.
5. Release "Remote Test Button" and emergency light should turn OFF

Wall Switch or Controller Contact

1. Turn ON switch if not already on.
2. Emergency light should turn ON.
3. Turn wall switch OFF.
4. Emergency light will remain on for two seconds before turning OFF.

Relay CU Series

Electrical Specifications

All parameters NOT specially mentioned are typical and measured at 230V input, rated current and at 25°C of ambient temperature.

Order Information

Product Code	DLCS-ALCR-217
Product Name	Emergency Lighting Load Control Relay CU

Input Information

Rated Supply Voltage	100 - 277Vac
Mains Current at Full Load	0.03A max.
Frequency	50 / 60Hz
AC Voltage Range	90 - 300Vac
Typical Input Power	2W
Startup Time	< 0.5s
Inrush Current	Cold start < 25A @ 277Vac (twidth=200us measured at 10% Ipeak), per NEMA 410

Relay Information

Load Relay Current	8A, Elect. Ballast @ 120Vac 6A, Elect. Ballast @ 230Vac 5A, Elect. Ballast @ 277Vac
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Environment & Approbation

Ingress Protection Rating	IP24
Ambient Temperature Range	-25°C - +70°C
Max. Case Temperature (tc)	81°C (please refer to tc point location)
Operating Condition	Damp and dry
Safety Standards	UL 924: 2016 Ed.10+R: 01 May 2018, CSA C22.2 # 141: 2015 Ed.5 IEC 61347-1, IEC 61347-2-13
EMC Emission	Compliance to FCC Part 15, CAN ICES-005, IEC 55015
EMC Immunity	Compliance to IEC 61000-4-2,6, IEC 61547
Audible Noise	< 24dB Class A

Relay CU Series

Insulation

Insulation	AC Input	Emergency Load Relay	Signal Relay
AC Input	/	Basic	Double
Emergency Load Relay	Basic	/	Double
Signal Relay	Double	Double	/

Basic...represents basic insulation

Double...represents double or reinforced insulation

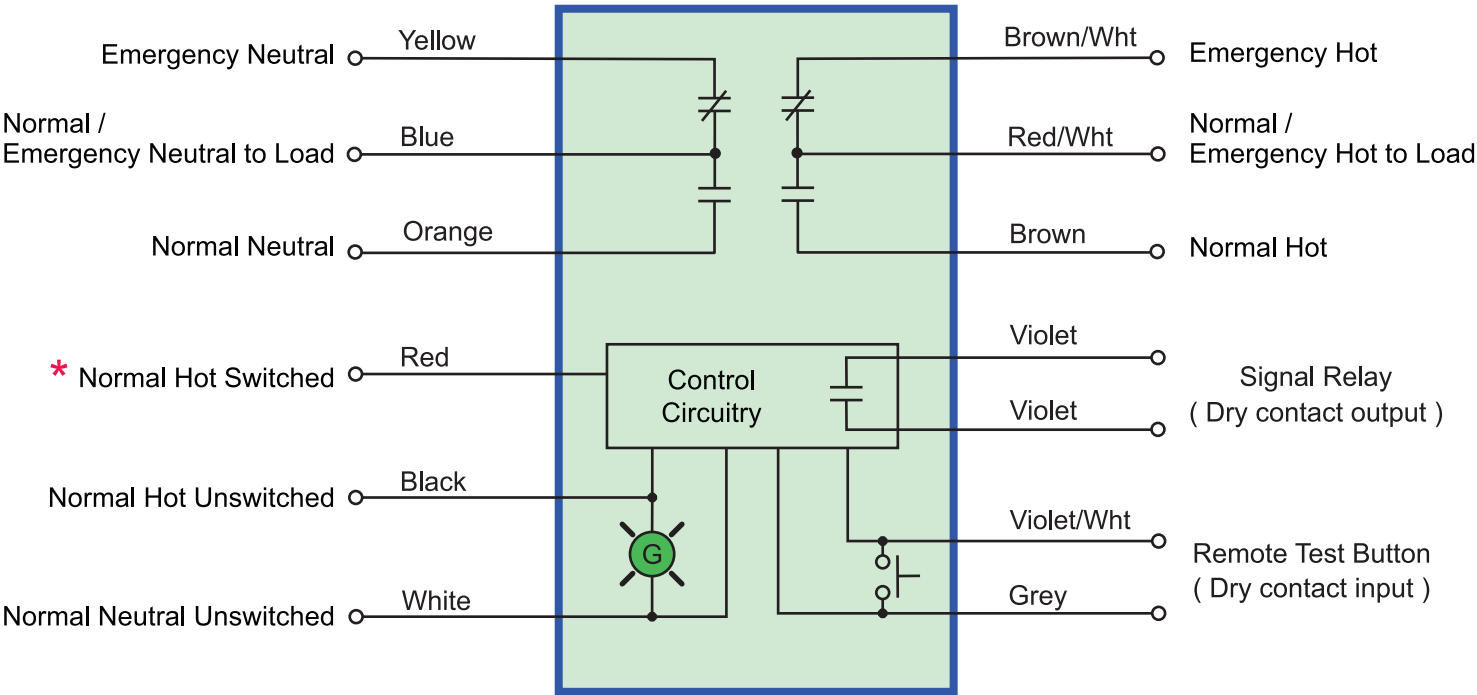
The emergency lighting relay is UL924 listed and suitable for shunting dimming signal in order to turn on emergency lighting in the event of loss of normal utility power.

When normal power is present, the relay coil is activated and the emergency panel is fed from normal power. The lighting load can be controlled by dimming signal normally.

When normal power drops out, the relay coil is deactivated and N/C contact falls closed.

The automatic transfer switch changes over to backup (generator) power, and the lighting load is illuminated regardless of the controller scheme.

Typical Applications

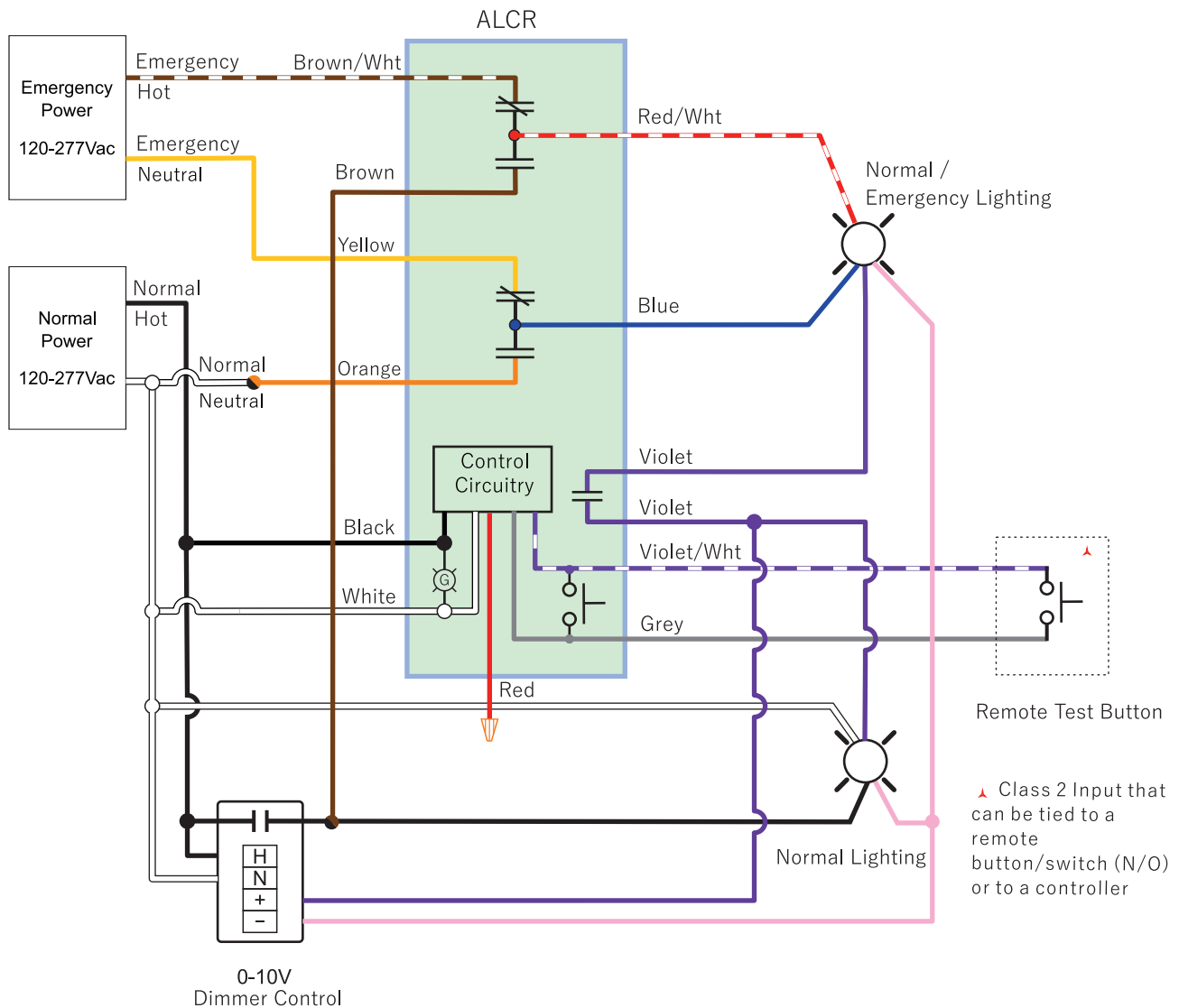


* NOTES:

1. The Red wire ("Normal Hot Switched") must be on the same branch circuit as the Black wire ("Normal Hot Unswitched").
2. Connecting Red wire ("Normal Hot Switched") after wall switch makes manual override control of the emergency load relay is possible when utility power is available.
3. The Red wire ("Normal Hot Switched") signal has no effect on the contacts of signal relay.

Relay CU Series

Built-in Automatic Transfer Switch Application



Description of operation:

When utility power is available:

The Relay CU is energized and the “N/O” of emergency load relay contacts are closed.

In this case, 0-10V dimming control signal passes through the Relay CU via the “N/O” contacts of signal relay and into the dimmable ballast / driver. Fixture will operate normally.

When utility power is NOT available:

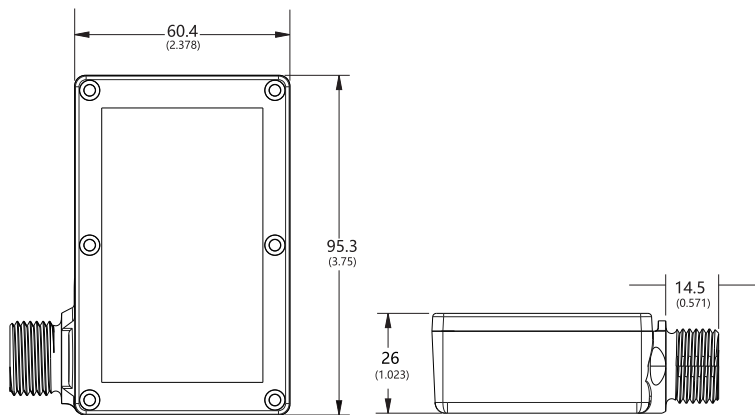
The Relay CU is NOT energized and will return to its default state.

The “N/O” contacts of emergency load relay are now open and the “N/C” contacts are closed.

In this case, 0-10V dimming control signal is now lost since the “N/O” contacts of signal relay are now open. Dimming is automatically set to full bright by default.

Relay CU Series

Dimensions & Weight

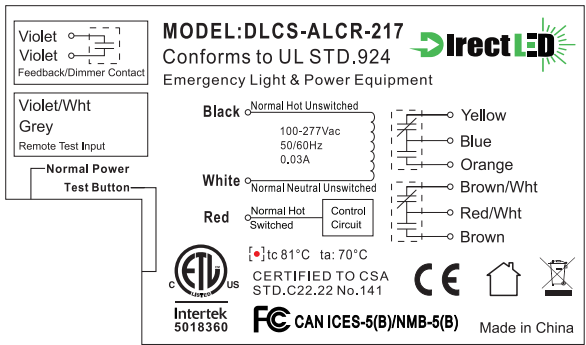


	inch	mm
Case Length	3.75"	95.3
Case Width	2.378"	60.4
Case Height	1.023"	26
Weight	0.55lb / 0.25Kg	

Wire Definition

Color	Cable	Length	Wire definition	Color	Cable	Length	Wire definition
Black	18AWG	12"/305mm	Normal Hot Unswitched	Violet	18AWG	12"/305mm	Signal Relay (N/O)
White	18AWG	12"/305mm	Normal Neutral Unswitched	Violet	18AWG	12"/305mm	Signal Relay (COM)
Red	18AWG	12"/305mm	Normal Hot Switched	Violet/Wht	18AWG	12"/305mm	Remote Test Input
Yellow	18AWG	12"/305mm	Load Relay 1 (N/C)	Grey	18AWG	12"/305mm	Remote Test Input
Blue	18AWG	12"/305mm	Load Relay 1 (C)				
Orange	18AWG	12"/305mm	Load Relay 1 (N/O)				
Brown/Wht	18AWG	12"/305mm	Load Relay 2 (N/C)				
Red/Wht	18AWG	12"/305mm	Load Relay 2 (C)				
Brown	18AWG	12"/305mm	Load Relay 2 (N/O)				

Label



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DLCS-ALCR-217

Installation & Safety Instructions

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

ALL SERVICING SHOULD BE PERFORMED BY QUALIFIED PERSONNEL

- This product is intended for use with lighting fixtures controlled by an Emergency panel. Any switching between Backup Power and Utility Power also can be done with this device.
- All wiring connections and mounting styles must be in accordance with the National Electrical Code (NEC), National Fire Protection Association (NFPA), National Electrical Safety Code, state and local codes, and any other regulations set forth by the local Authority Having Jurisdiction (AHJ).
- Per NFPA 70E, the use of Personal Protective Equipment (PPE) may be required. Check state and local codes.
- To reduce the risk of electrical shock, fire, and injury to persons:
 1. Disconnect all sources of power before servicing,
 2. Mount this device in locations and at heights where it will not be readily accessible to tampering by unauthorized personnel,
 3. Do not mount near gas or electric heaters,
 4. Do not let any wires touch hot surfaces, and
 5. Do not use outdoors (NEMA 1 rating only)
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this device for other than intended use.

Maintenance

No routine maintenance is required for this device. Occasionally, this device should be tested to ensure that it works correctly in accordance with national and local codes.

SAVE THESE INSTRUCTIONS

Specifications

ELECTRICAL SPECIFICATIONS

Normal Power Supply Voltage Normal Power Current Draw Normal Power Operating Frequency	120-277Vac 30mA max 50/60Hz
Remote Test Input (Class 2, Dry Contact)	Switching method ^{1,2}
Feedback/Dimmer Contact Switching Capability (Dry Contact Output)	1A Resistive @ 30Vdc
Relay Contact SPDT	5A Electronic Ballast @ 277Vac 1385VA Tungsten @ 277Vac 8A Tungsten @ 120Vac

- Switching methods should be rated for at least 24Vdc. External voltage should not be supplied to this input. No specific current rating is required.
- To maintain Class 2, a maximum of 45 total test inputs can be wired in parallel per Test Switch.

MECHANICAL SPECIFICATIONS

Housing:	UL accepted for use in Plenum, NEMA 1
Wire:	13.5" 600V Rated
Operating Temperature:	-13° to 158° F (-25° to 70° C)
Humidity Range:	5 to 95% (noncondensing) Rated for dry and damp locations only
Approvals:	ETL listed, Conforms to UL STD.924

Installation

ALL INSTALLATIONS & WIRING SHOULD BE DONE BY QUALIFIED PERSONNEL

Steps

- Remove all sources of power.
- Remove wiring compartment cover.
- Mount DLCS-ALCR-217 (a couple of mounting options are shown in Figures A and B).
- Wire the DLCS-ALCR-217 using an illustration from the "Typical Applications" section on page 3 or similar setups for different application.
- Install the wiring compartment cover.
- Apply all sources of power to the fixture.
- Test the DLCS-ALCR-217 using the "Test Procedure" on page 4.

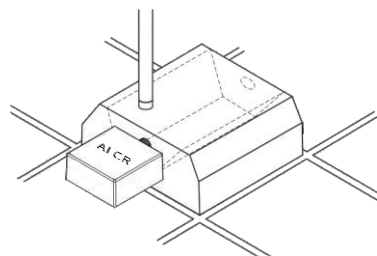


FIGURE A

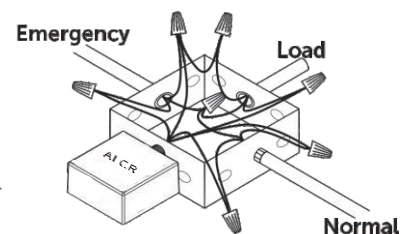
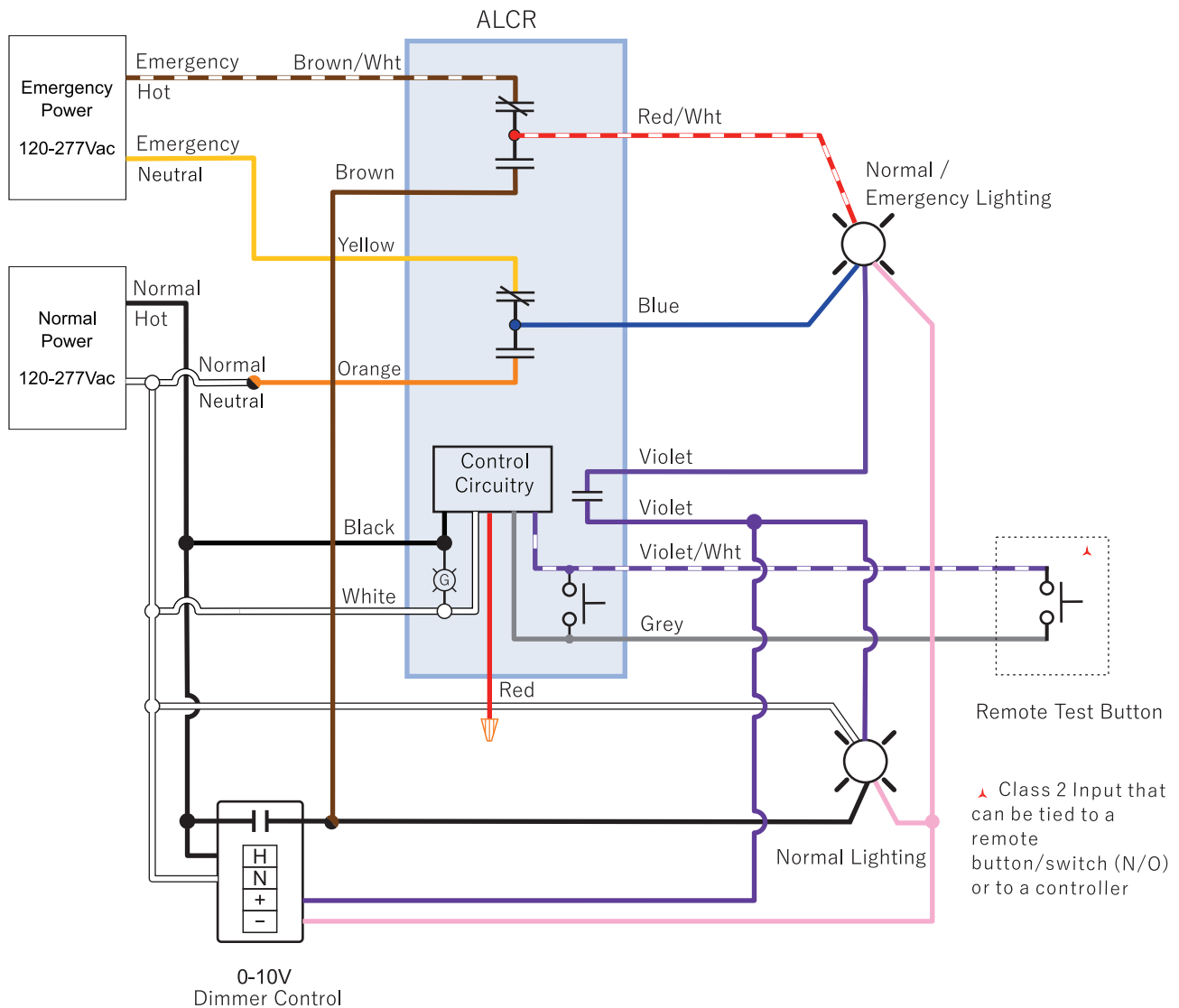


FIGURE B

Operation

The DLCS-ALCR-217 will activate an Emergency lighting load automatically upon the loss of Normal Power. If Normal Power is absent, the status of the load cannot be overridden. However, if the Normal power is present, the Emergency lighting load can be controlled by other means in order to use it as a Normal Lighting load, depending on the wiring setup. When used as Normal Lighting, a two second delay will keep the Load on, even after the Wall Switch is turned off, to perform a Self-Test on the unit. When Normal Power is present, the N/O status contact will automatically close. Therefore, when Normal Power is absent, the N/O status contact will open (perfect for 0 - 10V dimming controls). A Green LED indicates that Normal Power is present.

Built-in Automatic Transfer Switch Application



Description of operation:

When utility power is available:

The Relay CU is energized and the “N/O” of emergency load relay contacts are closed.

In this case, 0-10V dimming control signal passes through the Relay CU via the “N/O” contacts of signal relay and into the dimmable ballast / driver. Fixture will operate normally.

When utility power is NOT available:

The Relay CU is NOT energized and will return to its default state.

The “N/O” contacts of emergency load relay are now open and the “N/C” contacts are closed.

In this case, 0-10V dimming control signal is now lost since the “N/O” contacts of signal relay are now open. Dimming is automatically set to full bright by default.

Wiring Descriptions

WIRE COLOR	DESCRIPTION	NOTES
Black	Normal Hot	N/A
Red	Wall Switch Input (Self-Test Input)	Must be from same branch circuit as Black and White. a two second delay will keep the Load on, even after the Wall Switch is turned off, to perform a Self-Test on the unit.
White	Normal Neutral or other Phase	N/A
Brown	Relay Output (N/O)	Typically Normal Hot
Brown/Wht	Relay Output (N/C)	Typically Emergency Hot
Red/Wht	Relay Output (C)	Typically Hot Switched to Load
Orange	Relay Output (N/O)	Typically Normal Neutral
Yellow	Relay Output (N/C)	Typically Emergency Neutral
Blue	Relay Output (C)	Typically Neutral Switched to Load
Violet/Wht Grey	Remote Test Input (Class 2, Dry Contact Input)	When wiring multiple units together, Grey must be shared common. Test is performed when Input is CLOSED.
Violet (N/O) Violet (C)	Feedback/Dimmer Contact (Dry Contact Output)	N/O is OPEN when Normal Power is Absent or Remote Test Input is CLOSED. N/O is CLOSED when Normal Power is Present or Remote Test Input is OPEN. Wall Switch Input does not test this output.

Troubleshooting

CONDITION	ACTION
Green LED is OFF	Check Normal Power Input wiring and voltage
Wall Switch Input is ON but Load is OFF	- Check bulbs and ballast - Check Load wiring (Blue wire, Red/Wht and Load's Hot and neutral) - Check Wall Switch Input wiring (Red wire) - Replace unit
Load does not turn on when being tested	- Check bulbs and ballast - Check wiring connections if using a remote test option - Press local test button on the unit - Replace unit
Load will not turn OFF	- Verify status of Utility Power Input. - Verify no test inputs are stuck closed.

Testing

There are 4 options to test the DLCS-ALCR-217 after installation. To test the DLCS-ALCR-217 periodically, repeat the appropriate Test Procedure below in accordance with national and local codes.

Initial Test for Correct Wiring

Apply Emergency Power to the Emergency Power Input and Normal Power to the Normal Power Input. (If using the Wall Switch Input, apply Normal Power to the switch also, but keep the switch OFF/OPEN)

- A) The Green LED (Normal Power available) should be ON.
- B) The Load should be OFF.
- C) The Feedback/Dimmer Contact (N/O) should be CLOSED.

Local Test Button

- 1) Turn switched circuit OFF. Emergency light should be OFF.
- 2) Press and hold "Local Test Button".
- 3) Emergency light should turn ON.
- 4) Release "Local Test Button" and emergency light should turn off.

Wall Switch

- 1) Turn ON wall switch if not already on.
- 2) Emergency light should turn ON.
- 3) Turn wall switch OFF.
- 4) Emergency light will remain on for two seconds.

Remote Test Button

- 1) Turn switched circuit OFF. Emergency light should be OFF.
- 2) Press and hold "Remote Test Button".
- 3) Emergency light should turn ON.
- 4) Release "Remote Test Button" and emergency light should turn off.