

RIB Lighting Controls

Confidence & Peace of Mind in Every Box®

Functional
Devices, Inc.®

FEATURED PRODUCTS

4

UL924 EMERGENCY LIGHTING

AUTOMATIC LOAD CONTROL RELAYS: [16](#) | REMOTE TEST BUTTON: [21](#)
BYPASS/SHUNT RELAYS: [22](#) | EMERGENCY POWER INVERTERS: [32](#)

15

PHASE ANGLE DIMMER

35

GENERAL PURPOSE RELAYS

37

LATCHING RELAYS

SPUD MOUNT: [42](#) | DIN MOUNT: [46](#)

41

CLOSET LIGHT CONTROLLERS

120 VAC: [50](#) | 120-277 VAC: [51](#) | DELAY SETTING: [52](#) | ACCESSORY SWITCHES: [54](#)

49

TRANSFORMERS

STEPDOWN: [56](#) | AUTOTRANSFORMER: [57](#)

55

UNIVERSAL POWER PACK & SENSORS

POWER PACK: [60](#) | VACANCY / OCCUPANCY SENSORS: [61](#)

59

WIRELESS DEVICES

RELAY TRANSCIVERS & RECEIVERS: [68](#) | PHASE ANGLE DIMMER: [71](#)
TRANSMITTERS: [72](#) | VACANCY / OCCUPANCY SENSORS: [73](#)

66

INDEX & HOUSING GUIDE

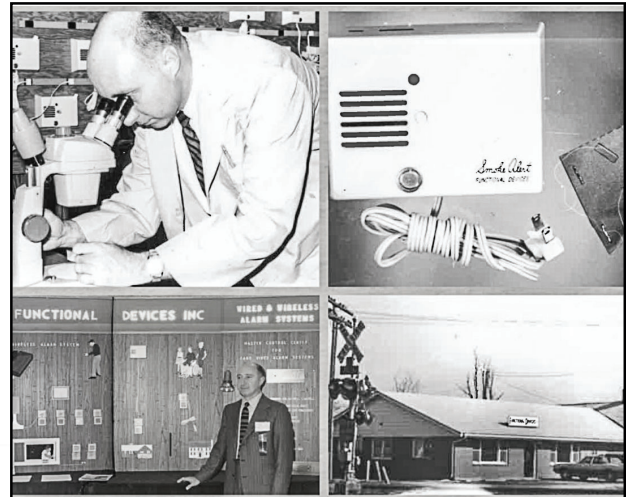
HOUSING GUIDE: [76](#) | INDEX: [77](#)

75

Functional Devices, Inc.®

Functional Devices was incorporated on July 28, 1969 by Albert Rittmann, an engineer with a love for tinkering with electronics. The factory opened in September 1969 in Russiaville, Indiana.

Our first day at a second building, now the Company Headquarters, was in September of 2012 when shipping and power supplies manufacturing moved into the facility in Sharpsville, Indiana. Our office and administrative employees transitioned in November 2014. We finalized our move with all production employees and production support moving in December 2015.



Functional Devices Begin Manufacturing Operations

Functional Devices, Inc., a newly established manufacturing firm located at the south end of Russiaville, in the building formerly known as Rodgers Lumber Company, is now in production.

The plant, opened in September and owned by Albert Rittmann, produces smoke and heat detectors under the trade name, "Smoke Alert".

Rittmann expects to market the device by franchised direct sales in the midwest and by wholesale outlets in the east.

There are two different models of Smoke Alert manufactured by the firm. One, a non-transmitter type is similar to a competitive model. It emits a loud warning signal when it senses smoke or heat. The second model, a transmitter, in addition to signalling by noise, sends the warning signal over AC house wiring to a plug-in receiver the size of a large multiple outlet socket which can be located anywhere on the electric system or even in adjacent houses so long as they are all on the same Public Service

transformer. Both types of instrument are solid state units with no tubes to burn out.

The Smoke Alert detector should be installed six to 12 inches from the ceiling in the room in which it is placed, Rittmann advised. The room designated might be the kitchen, furnace room or garage, or wherever high temperature and incidence of fire is great. The device works at a temperature of 132 degrees F, plus or minus five degrees F. The detector operates very efficiently, utilizing a heat element which, due to design, creates what is referred to as a "chimney effect" that is, it causes a steady flow of air through the instrument thereby detecting a very weak concentration of smoke, Rittmann explained.

All the instruments are aged and tested before leaving the plant, Rittmann stated.

Rittmann presently employs three persons, Mrs. Howard (Giles) Laughner, Danny Snyder, and Larry Egelhoff.

Vol. 122, No. 11



New Plant

Outside view of Functional Devices Inc. plant.

Russiaville, Indiana 46773

(OBSERVER PHOTO)

Friday, March 13, 1970



Russiaville, Indiana 46773

Manufacturing Firm Begins Production at Russiaville

RUSSEVILLE — A newly established manufacturing firm, Functional Devices, Inc., located at the south end of Russiaville is now in production. Albert Rittmann, owner of the plant which opened in September, produces smoke and heat detectors under the trade name "Smoke Alert." He expects to market the device by franchised direct sales in the midwest and by wholesale outlets in the east.

The firm manufactures two different models of Smoke Alert. One, a non-transmitter type is similar to a competitive model. It emits a loud warning signal when it senses smoke or heat. The second model, a transmitter, in addition to signalling noise, sends the warning signal over AC house wiring to a plug-in receiver the size of a large multiple outlet socket which can be located anywhere on the electric system or even in adjacent houses so long as they are all on the same transformer. Both types of instruments are solid state units.

The Smoke Alert detector would be installed six to 12 inches from the ceiling in the room in which it is placed, Rittmann advised. The room designated might be the kitchen, furnace room or garage, or wherever high temperature and incidence of fire is great. The device works at a temperature of 132 degrees F, plus or minus five degrees F. The detector utilizes a heat element which, due to design, creates what is referred to as a "chimney effect", that is, it causes a steady flow of air through the instrument thereby detecting a very weak

concentration of smoke, Rittmann explained.

All the instruments are aged and tested before leaving the plant, Rittmann stated.

Three persons are presently employed at the plant, Mrs. Howard Laughner, Danny Snyder and Larry Egelhoff.





Functional Devices was inducted into the 2022 Manufacturers Hall of Fame by the Indiana Manufacturers Association for recognizing our commitment to the Indiana manufacturing community!



Functional Devices Appoints CEO

Functional Devices was pleased to announce the promotion of Mark Fernandes to Chief Executive Officer in 2022.

Mark Fernandes joined the Company in 2003 as an engineer. During his tenure at the Company, he has held numerous leadership positions, including Engineering Manager and Vice President of Manufacturing and Engineering. In 2014, Mark assumed the role of President and has overseen several strategic initiatives that have increased productivity, shortened time to market for new products, and maintained Functional Devices' reputation as the leader in product quality.

Named One of Best Places to Work in Manufacturing

We were proud to be recognized on the list of 2022 Best Places to Work in Manufacturing, along with 12 other Indiana manufacturers. This



inaugural program was initiated by the Indiana Chamber of Commerce for companies that stand out within the manufacturing

industry for creating an outstanding workplace for their employees.



Functional Devices CEO, Mark Fernandes, was appointed to the Continental Automated Buildings Association (CABA) Board of Directors, an international not-for-profit industry association dedicated to the advancement of connected home and intelligent building technologies.



Confidence & Peace of Mind in Every Box®

UL924

EMERGENCY LIGHTING AUTOMATIC LOAD CONTROL RELAYS & INVERTER APPLICATIONS



Our **UL924 Emergency Lighting Automatic Load Control Relays and Inverters** are designed for applications that require an **emergency load to be switched on during a loss of normal power**. These economically priced relays are available prepackaged in their own NEMA 1 enclosure.

Functional Devices, Inc.®

UL924 AUTOMATIC LOAD CONTROL RELAYS FEATURE A SLIM ENCLOSURE

IDEAL FOR LINEAR LIGHTING APPLICATIONS

These **ALCR models**, created with a **slim enclosure**, allow for the sleek transition into **linear lighting or anywhere fixture mount opportunities are available**. These devices offer the same robust quality as our existing automatic load control relays but now include an **isolated relay** specific for use of our **0-10 Vdc and DALI dimming options**.



**Ballast Mount
Automatic Load
Control Relays**

ESRLBC & ESRLBCND

Features

- 120-277 Vac Universal Voltage
- Contact Ratings - SPST
 - 5 Amp Electronic/LED Ballast @ 277 Vac
 - 5 Amp Ballast @ 120-277 Vac
- 0-10V and DALI Dimmable Loads - Form C Relay
 - 1 Amp Resistive @ 30 Vdc
- Fire Alarm and Remote Test Button Option
- Dimensions - 1.40"H x 5.63"W x 1.00"D
- Available with or without 2.0 Sec Daily Self-Test
- UL Listed, UL924, C-UL, CE, RoHS Approval

UL924 ALCR WITH TWO SECOND DELAY TEST & DRY CONTACT FOR FIRE ALARM AND/OR REMOTE TEST



ESRN-1

- Normal control of emergency lighting
- Coil input range: 120 Vac through 277 Vac
- 20 Amp magnetic ballast at 277 Vac
- 16 Amp electronic ballast at 277Vac
- LED indicators for normal and emergency voltage, including test status
- Local test button for install purposes
- Spud mount



FOR MORE PRODUCT INFORMATION, SEE PAGES 18 & 24-25.

UL924 EMERGENCY POWER INVERTERS NOW AVAILABLE

We are excited to announce our latest **UL924 Emergency Power devices**, the **EMPS Series**. This new series contains our **Mini, Micro, and Midsize Power Inverters** with **output power ranging from 20W - 600 Watts**, with a **minimum of 90 minutes of backup power**.



Micro Inverters



Mini Inverters



Midsize Inverters

Product Features

- Universal 120-277 Vac, 60 Hz, Input/Output
- Made for powering incandescent, fluorescent, and LED fixtures
- True sinusoidal AC Pulse with Modulation – PWM
- LED system indicators
- UL924 Listed, NFPA 101 – Life Fire & Safety, NFPA 70 – NEC, OSHA, Plenum rated UL2043 meeting Chicago's CCEA requirements
- Mounting options: Surface, Recessed, or T-Grid

Benefits

- Lower installation costs by using existing lighting fixtures
- Lower maintenance cost with single power source for emergency illumination
- Efficiency rated, 98% at full rated load, line
- 5 year limited warranty
- One stop shop for both UL924 Inverters & Relays

MICRO			MINI			MIDSIZE		
MODEL #	WATTS	VA	MODEL #	WATTS	VA	MODEL #	WATTS	VA
EMPS20W	20	60	EMPS55125	55	125	EMPS375	375	425
EMPS32W	32	60	EMPS110125	110	125	EMPS600	600	680
EMPS35W	35	60	EMPS110250	110	250			
EMPS55W	55	60	EMPS220250	220	250			

MORE MODELS AVAILABLE – SEE PAGE 33.

PHASE ANGLE DIMMER FOR THEATRICAL & COMMERCIAL APPLICATIONS

This phase angle dimming device is **powered by 120 Vac** and has a **dimmed line voltage (120 Vac) output**. The output can go to **one light or a branch of lights** to control the lighting level. This dimmer can handle **up to 600 Watts of lighting at 120 Vac**. The dimming level is **controlled by a 0-10 Vdc analog signal**. The device can be configured for **Leading Edge or Trailing Edge Dimming** as well as a **Sinking or Sourcing 0-10 Vdc Inputs**.

- Input Power: 120 Vac
- 120 Vac Phase Angle Dimming
- Dim up to 600 Watts on a lighting circuit
- Selectable dimming modes
- 0-10 Vdc input to control lighting level

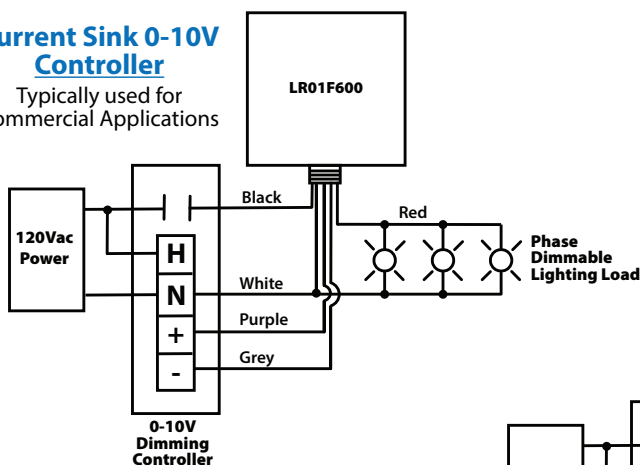
**Phase Angle
Dimmer**

LR01F600



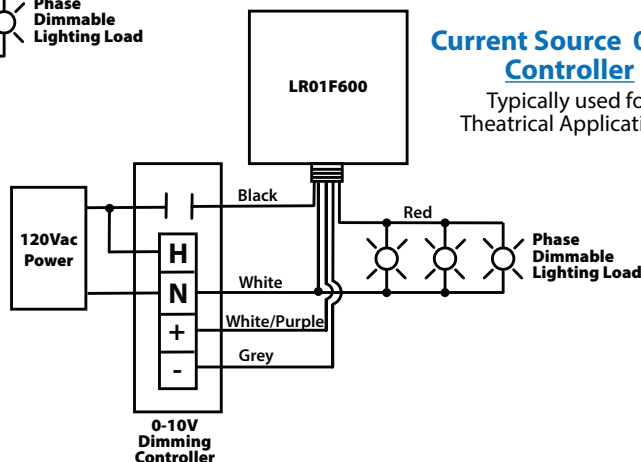
**Current Sink 0-10V
Controller**

Typically used for
Commercial Applications



**Current Source 0-10V
Controller**

Typically used for
Theatrical Applications



FOR MORE PRODUCT INFORMATION, SEE PAGE 36.

RIB® GENERAL PURPOSE RELAYS

MAKE LIGHTING CONTROLS PROJECTS EASY



120 Vac Relay
LR2401B2G



277 Vac Relay
LR2402B2G

Many contractors and lighting specialists need general purpose relays when specifying or installing lighting control systems.

Functional Devices offers two general purpose relays built with the same quality and durability as our original RIB® relays, with every unit being tested before leaving our production floor. These products are commission-based and sold only through our Lighting Reps.

Features:

- Prepackaged: NEMA 1 enclosure, pre-wired, LED indicator
- 20 Amp General Purpose at 277 Vac
- 16 Amp Electronic Ballast at 277 Vac
- DPDT relay (if SPDT is needed, use only one set of contacts)
- 24 Vac/dc/120 Vac or 24 Vac/dc/208-277 Vac power input
- UL Listed

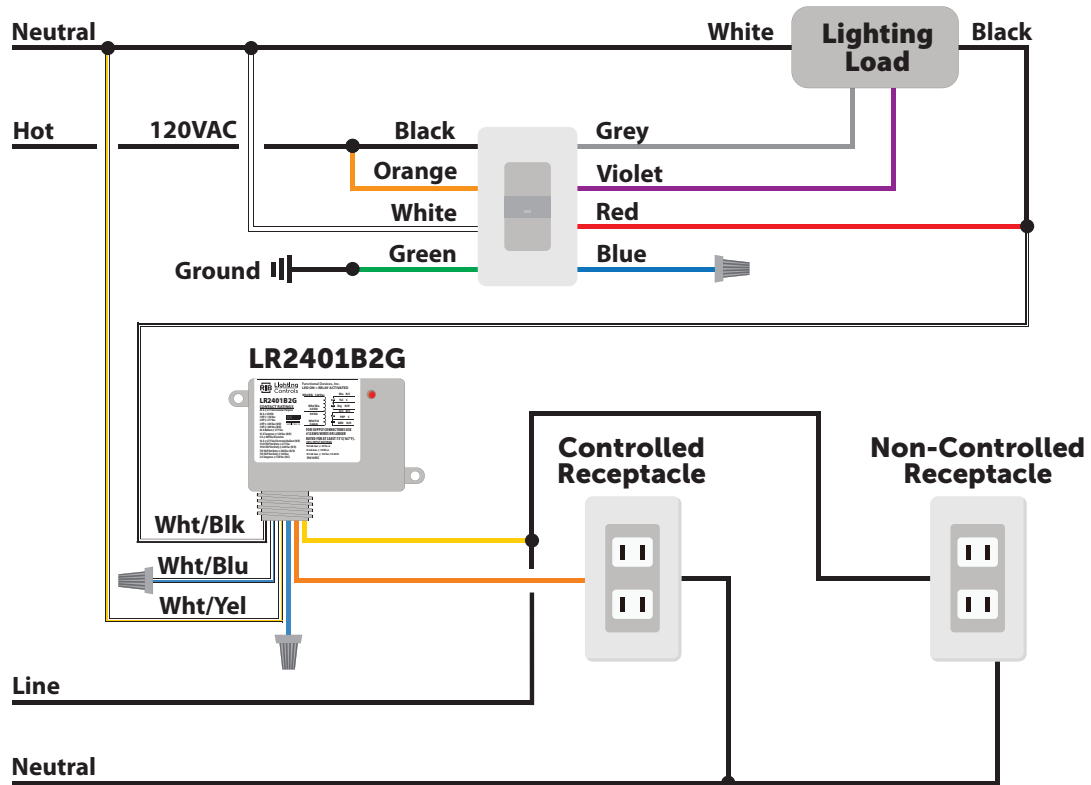


Applications and Uses:

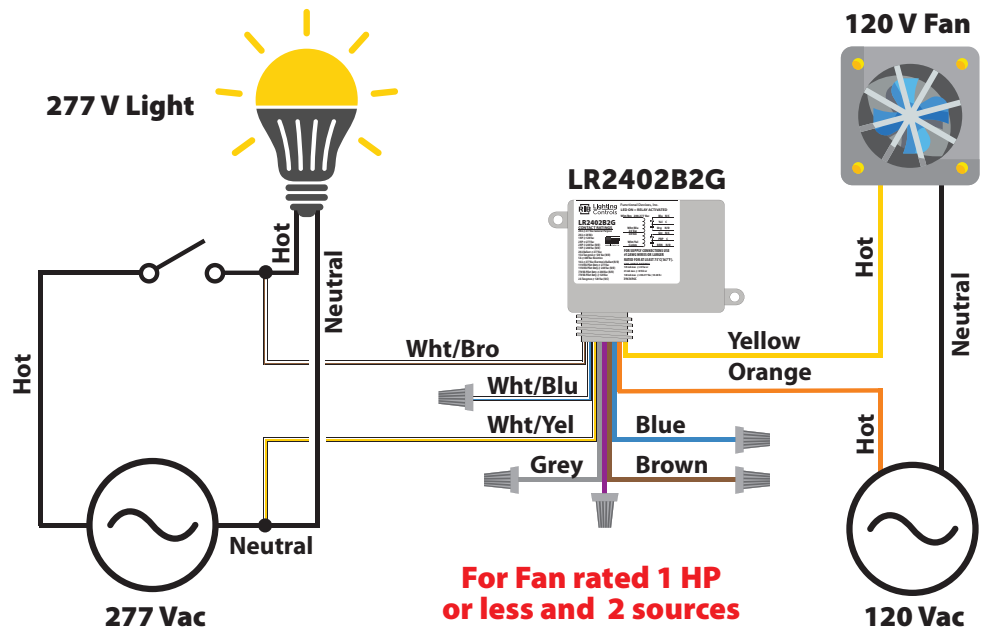
- General purpose lighting requirement where a relay is specified or needed
- Plug Load Control options
- Panel Load Control for switching
- Field relay control, cost savings

FOR MORE PRODUCT INFORMATION, SEE PAGE 38.

LR2401B2G APPLICATION



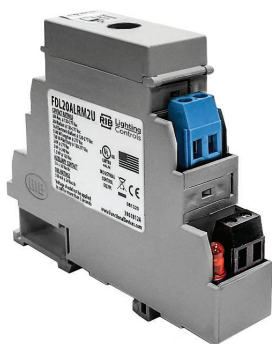
LR2402B2G APPLICATION



MECHANICALLY LATCHING RELAYS

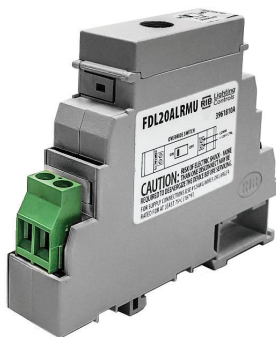
OFFER DIN MOUNT OPTION FOR LIGHTING CONTROL

Our DIN mount relays for lighting control feature a **mechanically latching output** with **24Vac/dc momentary pulse control**. The **20 Amp standard ballast**, with a **16 Amp electronic ballast rating**, provides **both on and off capabilities**. Our relay options offer flexibility for low voltage status, using either a **2-wire status report** or an **auxiliary contact output status report**. Model FDL20ALRMU is unique in that the status reporting comes from the contact output, not that of the control side. This gives you actual feedback that the load is active. Both models include an **override manual switch** for status control at the panel if required.



**2 Wire Status or Low Voltage
Auxiliary Contact Reporting**

FDL20ALRM2U



**2 Wire Load Side
Status Reporting**

FDL20ALRMU

- Control Input: 24 Vac/dc
- Relay Type: SPST Mechanically Latching
- Latch/Unlatch: Min 20 Vdc/22 Vac
- DIN rail mount
- Dimensions: 2.76"H x 3.88"W x 0.78"D
- Approval: UL508 Listed or UL508 Recognized, CE, RoHS
- FDL20ALRMU: A load drawing at least 0.3 Amps AC must be attached to the contacts to ensure correct reporting



FOR MORE PRODUCT INFORMATION, SEE PAGE 46.

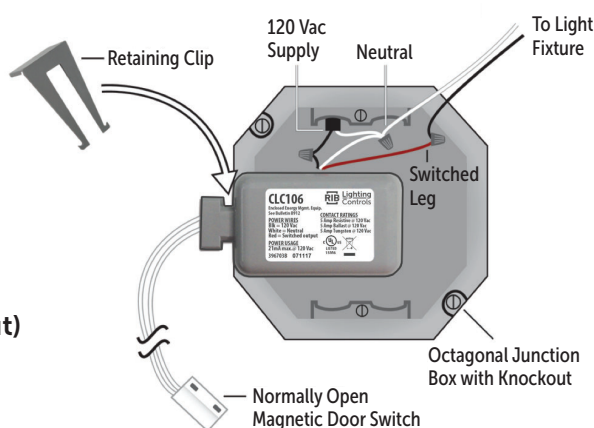
CLOSET LIGHT CONTROLLERS

FOR LIGHTING IN CLOSETS, CABINETS, WALK-INS, AND CABINETS

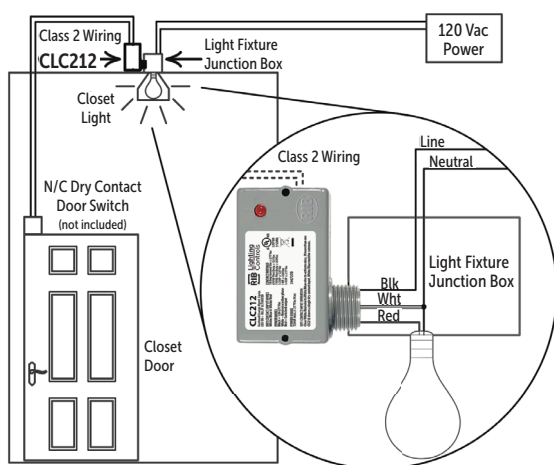
Our Light Controllers are designed to **switch lighting loads on and off** by the closing or opening of a variety of switches, including **door jamb, magnetic, and ball switches**. Models are available for **retrofit and new construction** jobs, with or without a **delay setting**.

Retrofits (CLC106)

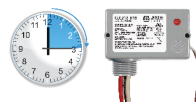
- 5 Amp relay
- 120 Vac power
- Fits easily inside junction box
- Includes retaining clip
- Includes magnetic door jamb switch
- No transformer needed (dry contact input)



New Construction (CLC212)



15 Minute Delay CLC212-D15



60 Minute Delay CLC212-D60



- 10 Amp N/O relay
- 120-277 Vac power
- No transformer needed (dry contact input)
- Light 18 AWG wire used to control relay, instead of armored cable
- Available with time delay
- Switch sold separately
(models ACLCMAGSM & ACLCMAGDJ)

FOR MORE PRODUCT INFORMATION, SEE PAGES 50 & 51.

STEP-DOWN & AUTO TRANSFORMERS

OFFER COMPLETE PROJECT SOLUTION

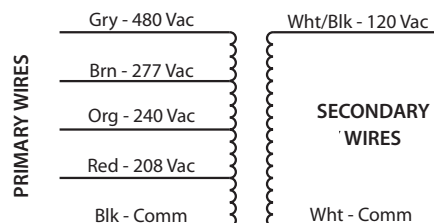
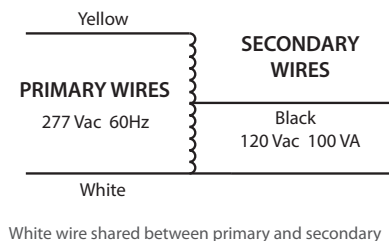


Model LTA100 is **similar to a conventional transformer** in that it has a **magnetic core**. However, this product has only **one winding** which is **common to both the primary and secondary circuits**.

Conventional Transformer
LT Series



The LT Transformer Series is **ideal for stepping down voltages** from **480/277/240/208 to 120Vac** or **277/240/208/120 to 24Vac**. These conventional transformers utilize split-bobbin construction, making them inherently isolated.



TRANSFORMERS

MODEL #	UL	VA RATING	OVER CURRENT PROTECTION	CLASS 2	PRIMARY VOLTAGE (VAC)	SEC. VOLTAGE (VAC)	FOOT MOUNT	HUBS	H	W	D
LT20-24	•	20VA	Inherent	•	277/240/208/120	24	•	2 Threaded	2.625"	1.890"	2.310"
LT50-120	•	50VA	Circuit Brkr.		480/277/240/208	120	•	2 Threaded	3.012"	2.510"	3.440"
LT150-120	•	150VA	Circuit Brkr.		480/277/240/208	120	•	2 Threaded	3.161"	3.786"	4.283"
LTA100	•	100VA			277	120	•	1 Threaded	1.500"	1.610"	6.760"

UL = UL Listed - see data sheet for specific Listing

FOR MORE PRODUCT INFORMATION, SEE PAGE 55.

UNIVERSAL VOLTAGE POWER PACK & OCCUPANCY/VACANCY SENSORS

Our **Universal Voltage Power Pack and Relay** combination provides **low voltage control** for your **lighting load applications**. This device can be used with our **Occupancy/Vacancy Sensors** or other control devices to provide an easy and reliable solution.



Universal Power Pack & Relay

LR21BPP5

- Universal voltage: 120-277 Vac; 50-60Hz
- 24 Vdc, UL Class 2 rated output
- SPDT relay with momentary switch
- Load ratings up to 20 Amp
- Can be used with our occupancy/vacancy sensors or other control devices



**Daylight Harvesting
On/Off Photocell**

LSDHPDC



**Large Motion 360°
PIR, Acoustic, Low Voltage**

LSDUALC2



**Small Motion 360°
PIR, Low Voltage**

LSPIRC

FOR MORE PRODUCT INFORMATION, SEE PAGES 60-64.



UL924 EMERGENCY LIGHTING

UL924
EMERGENCY
LIGHTING

Our **UL924 Emergency Lighting Automatic Load Control Relays** are designed for applications that require an **emergency load to be switched on during a loss of normal power**. These economically priced relays are available **prepackaged in a NEMA 1 enclosure**. Enclosures are available in two form factors.

- ½" Knockout Spud Mount
- Ballast Channel Mount



UL924 EMERGENCY LIGHTING AUTOMATIC LOAD CONTROL RELAYS

COIL VOLTAGE						TEST PROCEDURES						
MODEL #	UL	AC/DC	AC	CONTACTS	RESISTIVE	LOCAL TEST BUTTON	SELF TEST	REMOTE TEST	DIMMER OVERRIDE	BALLAST CHANNEL MOUNT	SPUD MOUNT	SPEC PAGE
ESRN	•		120-277	SPST	20 A	•	•	•	•		•	16
ESRN-1	•		120-277	SPST	20 A	•	•	•			•	18
ESRB	•		120-277	SPST	10 A	•	•	•	•	•		19
ESRBE01C	•		120	SPST	10 A					•		22
ESRBE277C	•		277	SPST	10 A					•		23
ESRLBC	•		120-277	SPST	5 A	•	•	•	• *	•		24
ESRLBCND	•		120-277	SPST	5 A	•		•	• *	•		25

UL = UL924; Emergency Lighting

* = Includes Form C contact dimmer override

UL924 EMERGENCY LIGHTING REMOTE TEST BUTTON

MODEL #	UL	DESCRIPTION	SPEC PAGE
ESRTB	•	REMOTE DRY CONTACT TEST BUTTON USED TO TEST MODELS ESRN, ESRN-1, ESRB, ESRLBC, AND ESRLBCND	21

UL = UL924; Emergency Lighting

- Mounts easily through ½" knockout or remotely on flat surfaces
- Multi-coil voltage input
- 10 Amp and 20 Amp contact ratings:
Up to 16 Amp Electronic Ballast rating
- Prepackaged and prewired for convenience

- LED indicator of utility power
- NEMA 1 enclosure
- Override capabilities for wiring verification and field inspection
- UL924 Listed



UL924 EMERGENCY LIGHTING BYPASS/SHUNT RELAYS

COIL VOLTAGE						TEST PROCEDURES						
MODEL #	UL	AC/DC	AC	CONTACTS	RESISTIVE	LOCAL TEST BUTTON	SELF TEST	REMOTE TEST	BALLAST CHANNEL MOUNT	SPUD MOUNT	LINE VOLTAGE/ 0-10 V SIGNAL BYPASS	SPEC PAGE
ESR2401B	•	24	120	SPDT	20 A					•		26
ESR2402B	•	24	208-277	SPDT	20 A					•		27
ESR2401D	•	24	120	DPDT	10 A					•	•	28
ESR2402D	•	24	208-277	DPDT	10 A					•	•	29
ESR01P	•		120	DPDT	20 A					•	•	30
ESR02P	•		208-277	DPDT	20 A					•	•	31

UL = UL924; Emergency Lighting

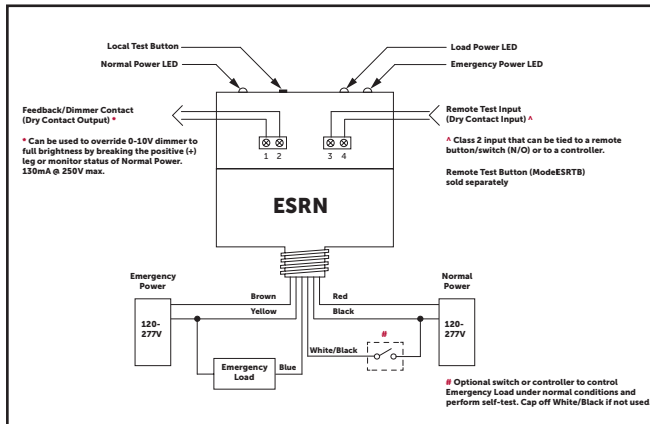
FOR UL924 INVERTER OFFERINGS, SEE PAGE 33.



ESRN

UL924 Emergency Lighting Automatic Load Control Relay, 20 Amp SPST, Universal 120-277 Vac, 0-10 Vdc Dimmer Override, Dry Contact Fire Alarm Interface

UL924
EMERGENCY
LIGHTING



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
LED: Green = Normal Power
 Red = Emergency Power
 Yellow = Load Power
Dimensions: 4.00"H x 4.00"W x 1.81"D with 0.50"NPT nipple
Housing Detail: See **Housing C** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override (Test Switch): Yes
Humidity Range: 5-95%(noncondensing)

Coil Current:
 Normal Power = 24 mA max
 Emergency Power = 118 mA max

Coil Voltage Input:
 Emergency Input: 120-277 Vac (50/60 Hz)
 Normal Input: 120-277 Vac (50/60 Hz)

Contact Ratings:
 20 Amp Magnetic Ballast @ 277 Vac
 16 Amp Electronic Ballast @ 277 Vac
 10 Amp Tungsten @ 120 Vac

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.)

- The Red LED (Emergency Power available) should be ON.
- The Green LED (Normal Power available) should be ON.
- The Yellow LED (Load Status) should be OFF.
- The Load should be OFF.
- The Feedback/Dimmer Contact should be CLOSED.

Local Test Button

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

Remote Test Button (Model ESRTB - sold separately)

- Turn switched circuit OFF. Emergency light should be OFF.
- Press and hold "Remote Test Button"
- Emergency light should turn ON.
- Release "Remote Test Button" and emergency light should turn OFF.

Wall Switch or Controller Contact

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

BYPASS/SHUNT RELAYS & DIMMING OVERRIDE APPLICATION

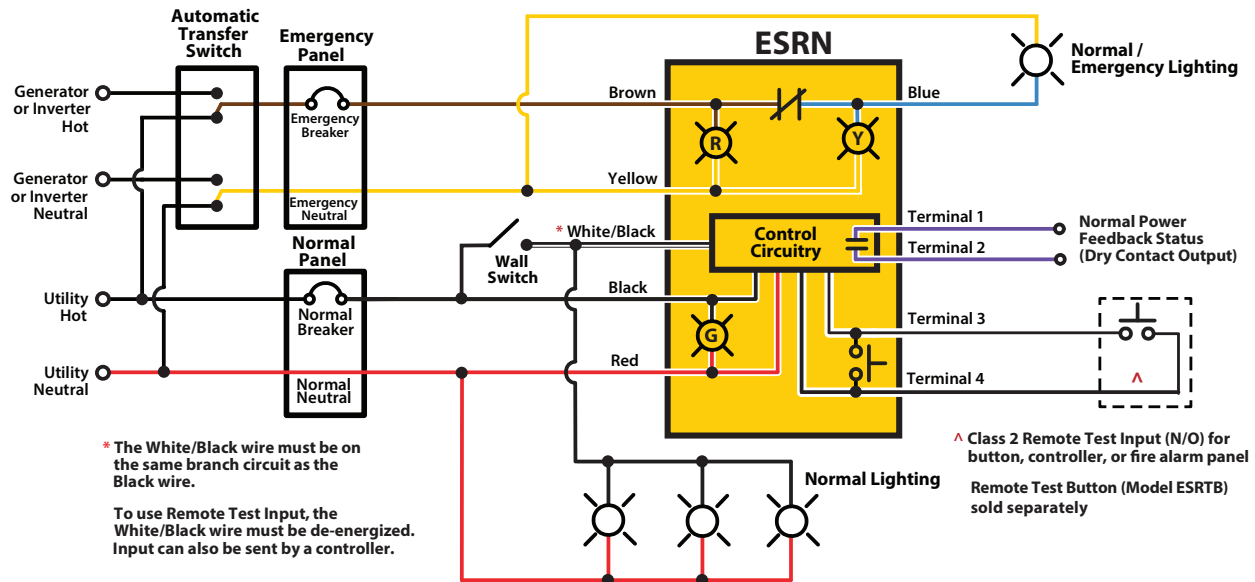
Our Bypass/Shunt Relays are UL924 Listed and suitable for shunting around wall switches and/or lighting control panel circuits, in order to turn on emergency lighting when normal utility power is lost.

TROUBLESHOOTING

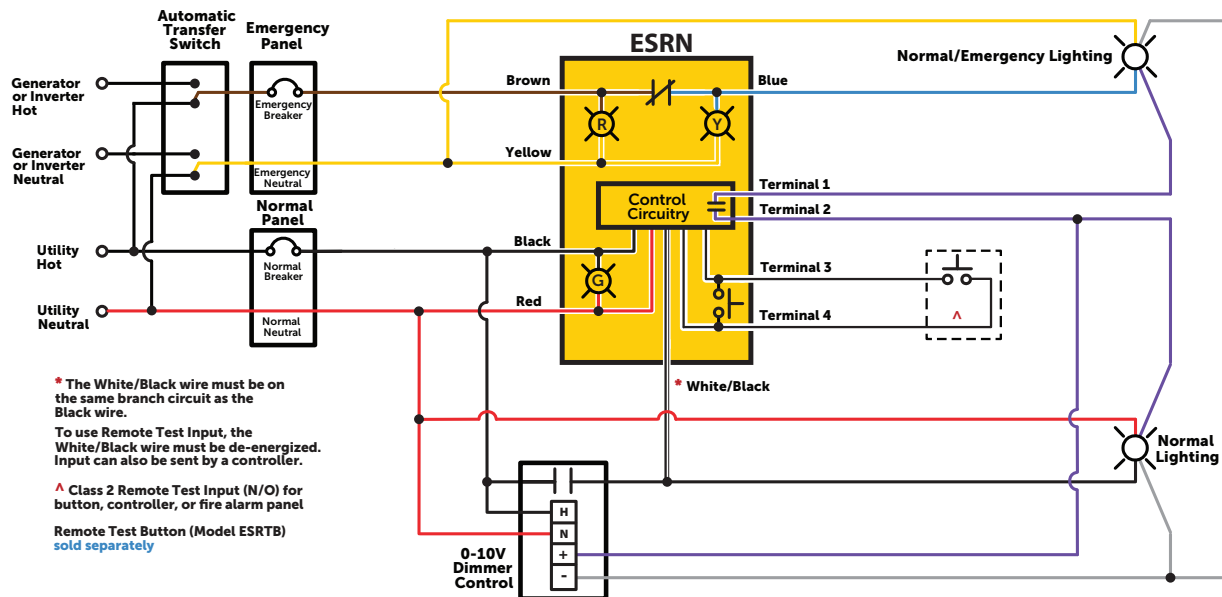
CONDITION	ACTION
Red LED is OFF	Check Emergency Power Input wiring (BROWN and YELLOW wires) and voltage.
Green LED is OFF	Check Normal Power Input wiring (BLACK and RED wires) and voltage.
Yellow LED is ON but Load is OFF	- Check Load wiring (BLUE wire and Load's neutral). - Verify Load's operating voltage is the same as the Emergency Power Input Voltage. - Check bulbs and ballast. - Replace unit.
Load is ON but Yellow LED is OFF	Replace unit.
Yellow LED and Load do 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.
Yellow LED and Load will not turn OFF	- Verify status of Normal Power Input. - Open Wall Switch Input. - Verify that no test inputs are stuck closed. (i.e. Remote Test Input is not closed).

Typical Applications

USING EMERGENCY LIGHTING AS NORMAL LIGHTING



OVERRIDING A 0-10VDC DIMMER

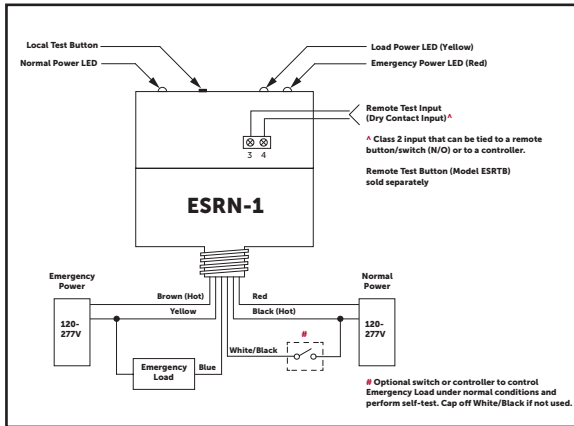


ESRN-1

UL924 Emergency Lighting Automatic Load Control Relay, 20 Amp SPST, Universal 120-277 Vac Coil Input, Dry Contact Fire Alarm Interface



UL924
EMERGENCY
LIGHTING



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
LED: Green = Normal Power
 Red = Emergency Power
 Yellow = Load Power
Dimensions: 4.00"H x 4.00"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing C** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override (Test Switch): No
Humidity Range: 5-95%(noncondensing)

Coil Current:
 Normal Power = 24 mA max
 Emergency Power = 118 mA max
Coil Voltage Input:
 Emergency Input: 120-277 Vac (50/60 Hz)
 Normal Input: 120-277 Vac (50/60 Hz)
Contact Ratings:
 20 Amp Magnetic Ballast @ 277 Vac
 16 Amp Electronic Ballast @ 277 Vac
 10 Amp Tungsten @ 120 Vac

TESTING & TROUBLESHOOTING

Initial Test

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.)

- The Red LED (Emergency Power available) should be ON.
- The Green LED (Normal Power available) should be ON.
- The Yellow LED (Load Status) should be OFF.
- The Load should be OFF.

Test Button

- Turn switched circuit OFF. Emergency light should be OFF.
- Press and hold "Local Test Button" or "Remote Test Button"
- Emergency light should turn ON.
- Release Test Button and emergency light should turn OFF.

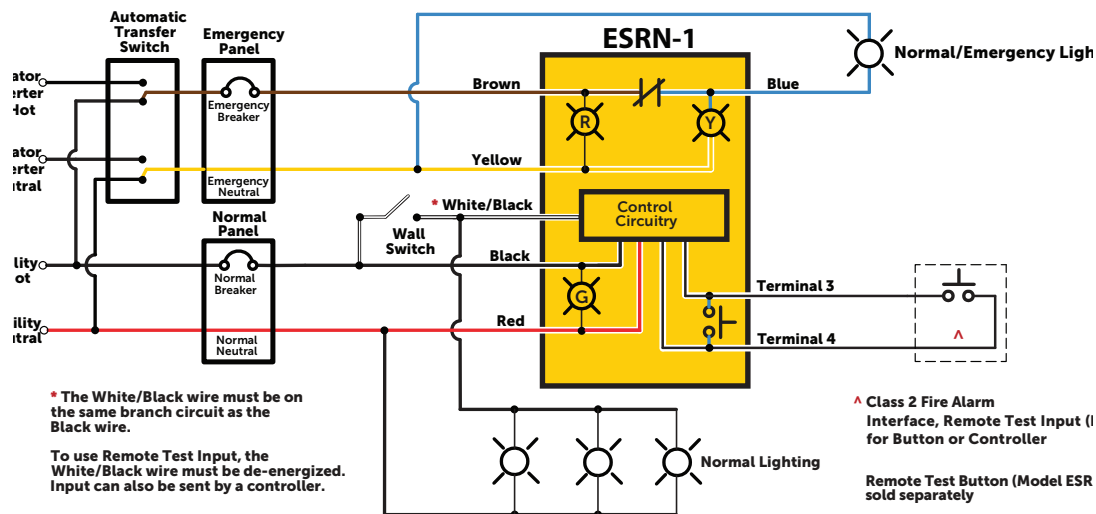
Wall Switch or Controller Contact

- Turn ON switch if not already on.
- Emergency light should turn ON.
- Turn wall switch OFF.
- Emergency light will remain on for two seconds before turning off.

BYPASS/SHUNT RELAY APPLICATION

Our Bypass/Shunt Relays are UL924 Listed and suitable for shunting around wall switches and/or lighting control panel circuits, in order to turn on emergency lighting when normal utility power is lost.

USING EMERGENCY LIGHTING AS NORMAL LIGHTING

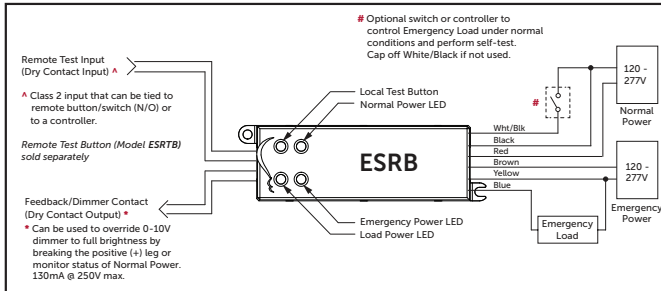


ESRB

UL924 Emergency Lighting Automatic Load Control Relay, 10 Amp SPST, Universal 120-277 Vac, 0-10 Vdc Dimmer Override, Dry Contact Fire Alarm Interface



UL924
EMERGENCY
LIGHTING

**SPECIFICATIONS**

- # Relays & Contact Type:** One (1) SPST Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
LED: Green = Normal Power
 Red = Emergency Power
 Yellow = Load Power
Dimensions: 1.68"H x 5.50"W x 1.32"D
Housing Detail: See **Housing G** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Gold Flash: No
Override (Test Switch): Yes
Humidity Range: 5-95%(noncondensing)
- Coil Current:**
 Normal Power = 24 mA max
 Emergency Power = 118 mA max
- Coil Voltage Input:**
 Emergency Input: 120-277 Vac (50/60 Hz)
 Normal Input: 120-277 Vac (50/60 Hz)
- Relay Contact Ratings:**
 10 Amp Magnetic Ballast @ 277 Vac
 10 Amp Electronic Ballast @ 277 Vac
 10 Amp Tungstun @ 120V
- Feedback/Dimmer Override Contact:**
 130 mA @ 250V Max

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 [Wht/Blk wire], apply Normal Power to the switch also, but keep the switch OFF/OPEN.)
- The Red LED (Emergency Power available) should be ON.
 - The Green LED (Normal Power available) should be ON.
 - The Yellow LED (Load Status) should be OFF.
 - The Load should be OFF.
 - The Feedback/Dimmer Contact should be CLOSED.

Local Test Button

- Turn wall switch OFF. Emergency light should be OFF.
- Press and hold "Local Test Button"
- Emergency light should turn ON.
- Release "Local Test Button" and emergency light should turn OFF.

Remote Test Button (Model ESRTB - sold separately)

- Turn wall switch OFF. Emergency light should be OFF.
- Press and hold "Remote Test Button"
- Emergency light should turn ON.
- Release "Remote Test Button" and emergency light should turn OFF.

Wall Switch or Controller Contact

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

AUTOMATIC LOAD CONTROL RELAYS & DIMMING OVERRIDE APPLICATION

With our Automatic Load Control Relays (ALCR), you will complete your emergency lighting application as specified. Designed specifically for applications that require emergency load to be switched during a loss of normal power, creating a path to illuminate your emergency fixture.

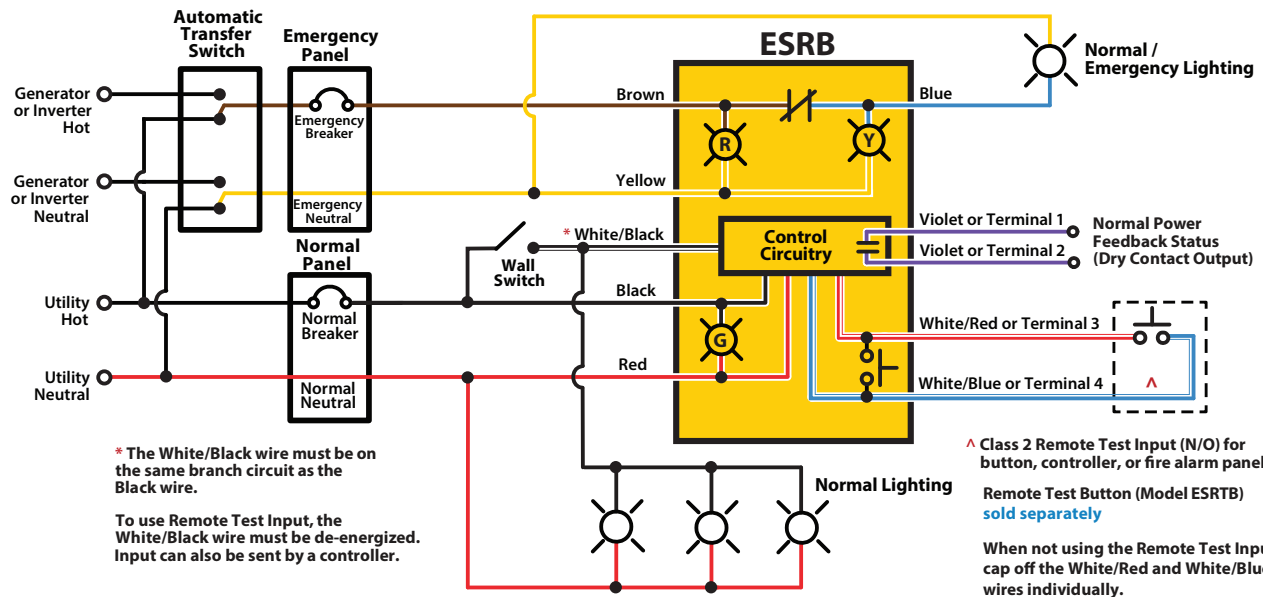
TROUBLESHOOTING

CONDITION	ACTION
Red LED is OFF	Check Emergency Power Input wiring (BROWN and YELLOW wires) and voltage.
Green LED is OFF	Check Normal Power Input wiring (BLACK and RED wires) and voltage.
Yellow LED is ON but Load is OFF	- Check Load wiring (BLUE wire and Load's neutral). - Verify Load's operating voltage is the same as the Emergency Power Input Voltage. - Check bulbs and ballast. - Replace unit.
Load is ON but Yellow LED is OFF	Replace unit.
Yellow LED and Load do 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.
Yellow LED and Load will not turn OFF	- Verify status of Normal Power Input. - Open Wall Switch Input. - Verify that no test inputs are stuck closed. (i.e. Remote Test Input is not closed).

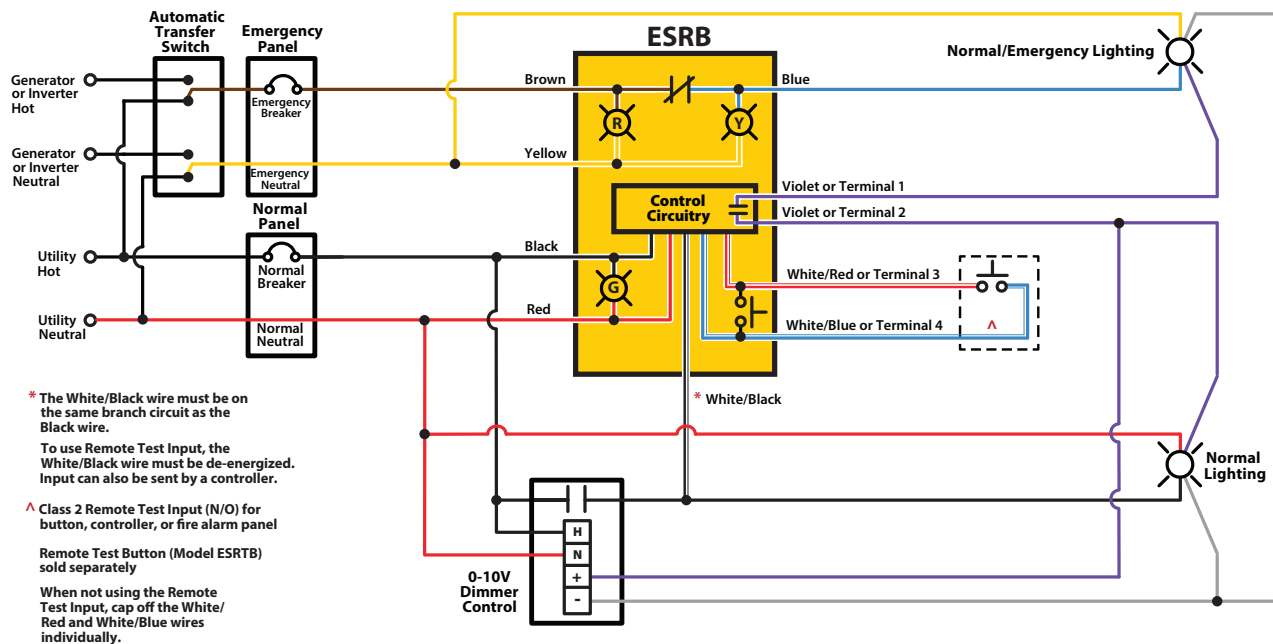
Typical Applications

UL924
EMERGENCY
LIGHTING

USING EMERGENCY LIGHTING AS NORMAL LIGHTING



OVERRIDING A 0-10VDC DIMMER



REMOTE TEST BUTTON

ESRTB

Remote Dry Contact Test Button Used to Test Models ESRN, ESRN-1, ESRB, ESRBLC, and ESRBLCND

Model ESRTB is a momentary pushbutton to be used to remotely test the ESRB, ESRN, ESRN-1, ESRBLC, & ESRBLCND Emergency Lighting Automatic Load Control Relays. It can either be installed directly to the ceiling or to a standard 4" x 4" round or octagonal Junction Box. The two wire terminations connect directly to the ESR's Class 2, dry contact "Remote Test Input."

WIRING SPECIFICATIONS

Acceptable Wiring: 18-24 AWG, Solid or Stranded with at least 1/4" stripped

Wiring Terminations: There are no screws to tighten or tabs to press in order to install the wiring. Wiring is done by inserting the wire through the hole on the circuit board.

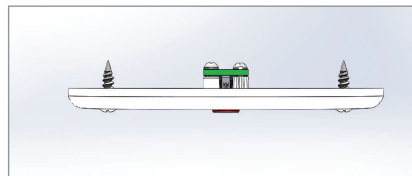
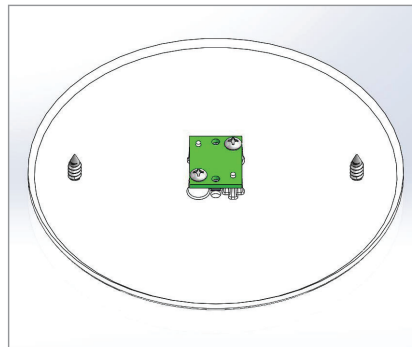
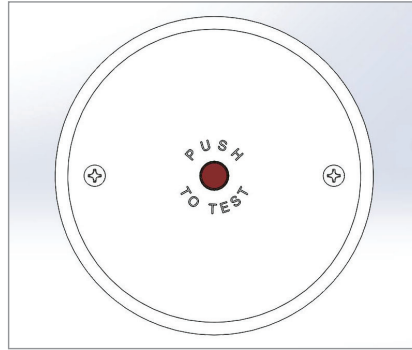
Wiring Contact Degradation: After 5 cycles

MOUNTING SPECIFICATIONS

Direct-mount to Ceiling (fig. 1): Mount directly to surface by cutting appropriate sized wiring hole (1 1/2" square or round hole minimum; 2 1/2" square or round hole maximum.) Screw ESRTB to the surface using the provided screws or other screws of installer's choice.

Junction Box (fig. 2): 4" round or 4" x 4" octagonal with #8 cover plate screw holes. Cover plate screw holes must be 3 1/2" apart.

Included Hardware: Two (2) #8 self-drilling screws. Screws have white oval Phillips heads and 1/4" grip.



Model ESRTB



UL924
EMERGENCY
LIGHTING

Note: The ESRTB is only to be used with models ESRB, ESRN, ESRN-1, ESRBLC, & ESRBLCND Emergency Lighting Automatic Load Control Relays.

MOUNTING SPECIFICATIONS

Actuator: Red momentary pushbutton

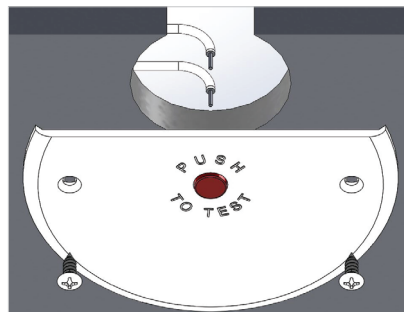
Color: White

Overall Diameter: 4 3/8"

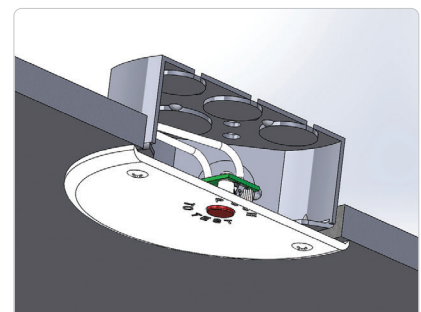
Operating Actuator Force: 160 gf (1.57N)

Expected Life: 200,000 cycles minimum

Approvals: UL924



(fig. 1)

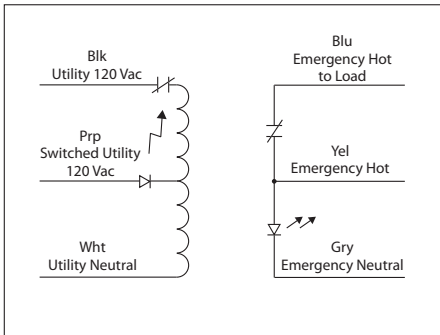


(fig. 2)

ESRBE01C

UL924 Emergency Lighting Automatic Load Control Relay, 10 Amp SPST-NC, 120 Vac and Switched Utility Detection

UL924
EMERGENCY
LIGHTING



Ballast Size Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST-NC Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 50 ms
Relay Status: Red LED On = Activated
Emergency Power Present: Yellow LED On = Transfer Power Present
Dimensions: 1.68"H x 4.58"W x 1.18"D
Housing Detail: See **Housing E** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16.00", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Gold Flash: No

Contact Ratings:
 10 Amp Magnetic Ballast @ 277 Vac (N/C)
 2 Amp Electronic Ballast @ 120 Vac (N/C)

Coil Current:
 100 mA @ 120 Vac

Coil Voltage Input:
 120 Vac ; 50-60 Hz

Notes:

- Control input on purple wire detects wall switch, allowing emergency light to be used as normal lighting.
- Smaller design to fit inside ballast housing of fluorescent light fixture.

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power, Transfer Power, and Wall Switch.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Light should illuminate.
4. Energize Normal Power. Emergency Light will turn OFF.
5. Turn ON Wall Switch. Emergency Light should illuminate.

FIELD INSPECTION

1. Ensure Normal Power and Transfer Power are energized.
2. Turn OFF Wall Switch. Light will turn OFF.
3. Red LED and Yellow LED will be illuminated.
4. Turn OFF Normal Power. Red LED will turn OFF. Emergency Light will illuminate.

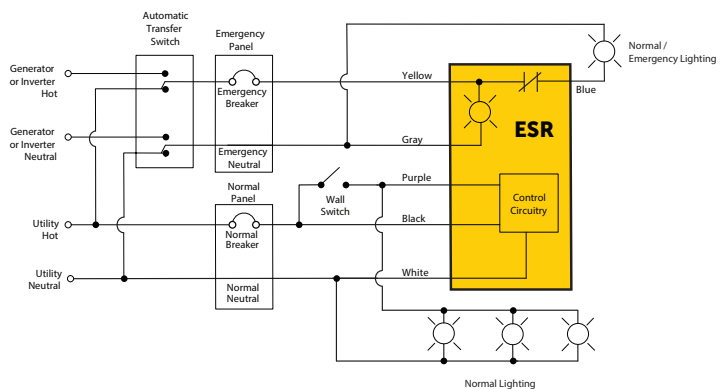
USE OF NORMAL LIGHT AS EMERGENCY LIGHT

Our Emergency Bypass / Shunt Relays are UL924 Listed and suitable for shunting around wall switches in order to turn on emergency lighting in the event of loss of normal utility power.

When the Emergency Light is needed as a Normal Light as well, this application can be applied using this specific relay.

When Normal Power is present, the ESR relay coil is activated and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using the existing wall switch.

When Normal Power drops out, the ESR coil is deactivated and N/C contact falls closed. The Automatic Transfer Switch changes over to backup (generator) power, and the Emergency Light remains illuminated, regardless of the position of the existing wall switch, while the Normal Lighting is off.

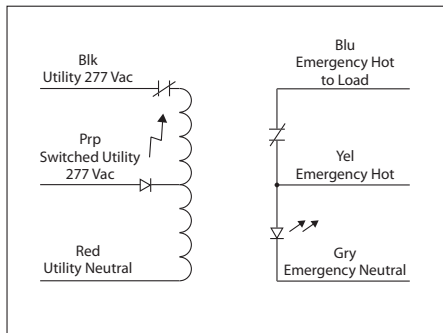


ESRBE277C

UL924 Emergency Lighting Automatic Load Control Relay, 10 Amp SPST-NC, 277 Vac and Switched Utility Detection



UL924
EMERGENCY
LIGHTING



Ballast Size Housing

SPECIFICATIONS

Relays & Contact Type: One (1) SPST-NC Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 50 ms
Relay Status: Red LED On = Activated
Emergency Power Present: Yellow LED On = Transfer Power Present
Dimensions: 1.68"H x 4.58"W x 1.18"D
Housing Detail: See **Housing E** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16.00"; 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Gold Flash: No

Contact Ratings:
 10 Amp Magnetic Ballast @ 277 Vac (N/C)
 2 Amp Electronic Ballast @ 120 Vac (N/C)

Coil Current:
 150 mA @ 277 Vac

Coil Voltage Input:
 277 Vac ; 50-60 Hz

Notes:

- Control input on purple wire detects wall switch, allowing emergency light to be used as normal lighting.
- Smaller design to fit inside ballast housing of fluorescent light fixture.

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power, Transfer Power, and Wall Switch.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Light should illuminate.
4. Energize Normal Power. Emergency Light will turn OFF.
5. Turn ON Wall Switch. Emergency Light should illuminate.

FIELD INSPECTION

1. Ensure Normal Power and Transfer Power are energized.
2. Turn OFF Wall Switch. Light will turn OFF.
3. Red LED and Yellow LED will be illuminated.
4. Turn OFF Normal Power. Red LED will turn OFF. Emergency Light will illuminate.

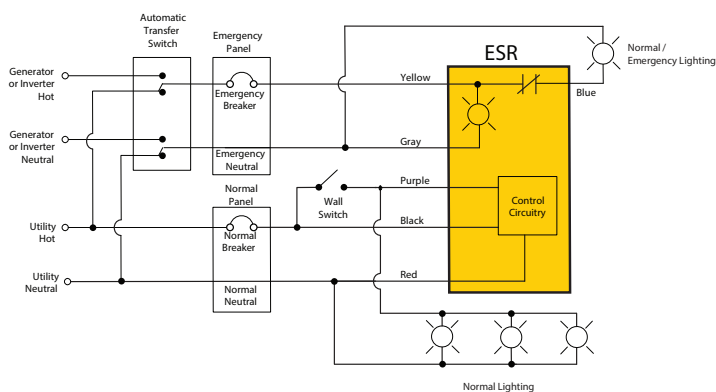
USE OF NORMAL LIGHT AS EMERGENCY LIGHT

Our Emergency Bypass / Shunt Relays are UL924 Listed and suitable for shunting around wall switches in order to turn on emergency lighting in the event of loss of normal utility power.

When the Emergency Light is needed as a Normal Light as well, this application can be applied using this specific relay.

When Normal Power is present, the ESR relay coil is activated and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using the existing wall switch.

When Normal Power drops out, the ESR coil is deactivated and N/C contact falls closed. The Automatic Transfer Switch changes over to backup (generator) power, and the Emergency Light remains illuminated, regardless of the position of the existing wall switch, while the Normal Lighting is off.

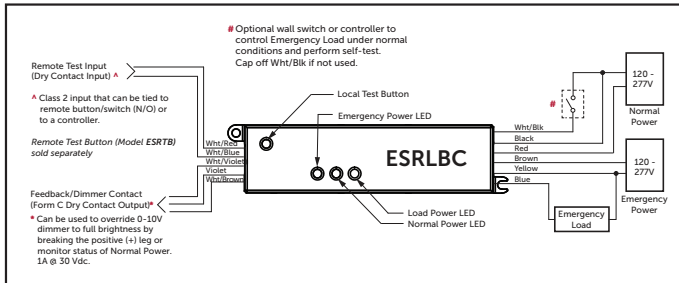


ESRLBC

UL924 Emergency Lighting Automatic Load Control Relay, 5 Amp SPST, Universal 120-277 Vac, 0-10 Vdc Dimmer Override, Dry Contact Fire Alarm Interface, DALI Dimmable Loads, Daily Self Test



UL924
EMERGENCY
LIGHTING



Ballast Size Housing

SPECIFICATIONS

Relays & Contact Type: One (1) SPST Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
LED: Green = Normal Power
 Red = Emergency Power
 Yellow = Load Power
Dimensions: 1.40"H x 5.63"W x 1.00"D
Housing Detail: See **Housing F** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Gold Flash: No
Override (Test Switch): No
Humidity Range: 5-95%(noncondensing)

Coil Current:
 Normal Power = 38 mA max
 Emergency Power = 88 mA max

Coil Voltage Input:
 Emergency Input: 120-277 Vac (50/60 Hz)
 Normal Input: 120-277 Vac (50/60 Hz)

Relay Contact Ratings:
 5 Amp Electronic/LED Ballast @ 277 Vac
 5 Amp Ballast @ 120-277 Vac

Feedback/Dimmer Override Contact:
 1Amp Resistive @ 30 Vdc

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 [Wht/Blk wire], apply Normal Power to the switch also, but keep the switch OFF/OPEN.)

- The Red LED (Emergency Power available) should be ON.
- The Green LED (Normal Power available) should be ON.
- The Yellow LED (Load Status) should be OFF.
- The Load should be OFF.
- The N/O Feedback/Dimmer Contact should be CLOSED.

Local Test Button

- Turn wall switch OFF. Emergency light should be OFF.
- Press and hold "Local Test Button"
- Emergency light should turn ON.
- Release "Local Test Button" and emergency light should turn OFF.

Remote Test Button (Model ESRTB - sold separately)

- Turn wall switch OFF. Emergency light should be OFF.
- Press and hold "Remote Test Button"
- Emergency light should turn ON.
- Release "Remote Test Button" and emergency light should turn OFF.

Wall Switch or Controller Contact

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

AUTOMATIC LOAD CONTROL RELAYS & DIMMING OVERRIDE APPLICATION

With our Automatic Load Control Relays (ALCR), you will complete your emergency lighting application as specified. Designed specifically for applications that require emergency load to be switched during a loss of normal power, creating a path to illuminate your emergency fixture.

TROUBLESHOOTING

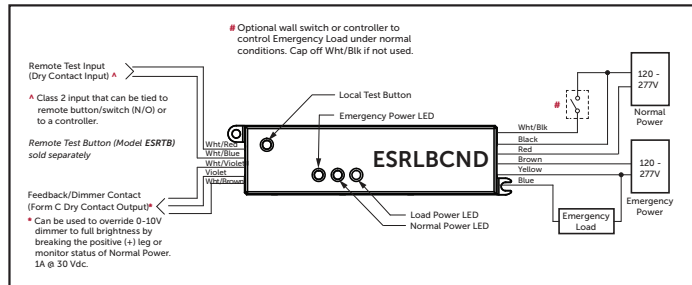
CONDITION	ACTION
Red LED is OFF	Check Emergency Power Input wiring (BROWN and YELLOW wires) and voltage.
Green LED is OFF	Check Normal Power Input wiring (BLACK and RED wires) and voltage.
Yellow LED is ON but Load is OFF	- Check Load wiring (BLUE wire and Load's neutral). - Verify Load's operating voltage is the same as the Emergency Power Input Voltage. - Check bulbs and ballast. - Replace unit.
Load is ON but Yellow LED is OFF	Replace unit.
Yellow LED and Load do 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.
Yellow LED and Load will not turn OFF	- Verify status of Normal Power Input. - Open Wall Switch Input. - Verify that no test inputs are stuck closed. (i.e. Remote Test Input is not closed).

ESRLBCND

UL924 Emergency Lighting Automatic Load Control Relay, 5 Amp SPST, Universal 120-277 Vac, 0-10 Vdc Dimmer Override, Dry Contact Fire Alarm Interface, DALI Dimmable Loads



UL924
EMERGENCY
LIGHTING



Ballast Size Housing

SPECIFICATIONS

Relays & Contact Type: One (1) SPST Continuous Duty Coil

Expected Relay Life: 10 million cycles minimum mechanical

Operating Temperature: -30 to 140° F

Operate Time: 18ms

LED: Green = Normal Power

Red = Emergency Power

Yellow = Load Power

Dimensions: 1.40"H x 5.63"W x 1.00"D

Housing Detail: See **Housing F** in housing guide for dimensions

Origin: Made of US and non-US parts

Wires: 16', 600V Rated

Approvals: UL Listed, UL924, C-UL, CE, RoHS

Gold Flash: No

Override (Test Switch): No

Humidity Range: 5-95%(noncondensing)

Coil Current:

Normal Power = 38 mA max

Emergency Power = 88 mA max

Coil Voltage Input:

Emergency Input: 120-277 Vac

(50/60 Hz)

Normal Input: 120-277 Vac

(50/60 Hz)

Relay Contact Ratings:

5 Amp Electronic/LED Ballast @ 277 Vac

5 Amp Ballast @ 120-277 Vac

Feedback/Dimmer Override Contact:

1 Amp Resistive @ 30 Vdc

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 [Wht/Blk wire], apply Normal Power to the switch also, but keep the switch OFF/OPEN.)

- The Red LED (Emergency Power available) should be ON.
- The Green LED (Normal Power available) should be ON.
- The Yellow LED (Load Status) should be OFF.
- The Load should be OFF.
- The N/O Feedback/Dimmer Contact should be CLOSED.

Local Test Button

- Turn wall switch OFF. Emergency light should be OFF.
- Press and hold "Local Test Button"
- Emergency light should turn ON.
- Release "Local Test Button" and emergency light should turn OFF.

Remote Test Button (Model ESRTB - sold separately)

- Turn wall switch OFF. Emergency light should be OFF.
- Press and hold "Remote Test Button"
- Emergency light should turn ON.
- Release "Remote Test Button" and emergency light should turn OFF.

AUTOMATIC LOAD CONTROL RELAYS & DIMMING OVERRIDE APPLICATION

With our Automatic Load Control Relays (ALCR), you will complete your emergency lighting application as specified. Designed specifically for applications that require emergency load to be switched during a loss of normal power, creating a path to illuminate your emergency fixture.

TROUBLESHOOTING

CONDITION	ACTION
Red LED is OFF	Check Emergency Power Input wiring (BROWN and YELLOW wires) and voltage.
Green LED is OFF	Check Normal Power Input wiring (BLACK and RED wires) and voltage.
Yellow LED is ON but Load is OFF	- Check Load wiring (BLUE wire and Load's neutral). - Verify Load's operating voltage is the same as the Emergency Power Input Voltage. - Check bulbs and ballast. - Replace unit.
Load is ON but Yellow LED is OFF	Replace unit.
Yellow LED and Load do 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.
Yellow LED and Load will not turn OFF	- Verify status of Normal Power Input. - Open Wall Switch Input. - Verify that no test inputs are stuck closed. (i.e. Remote Test Input is not closed).

UL924 / 20 AMP BYPASS / SHUNT RELAY

ESR2401B

UL924 Emergency Lighting Bypass/Shunt Relay, 20 Amp SPDT, 24 Vac/dc/120 Vac Coil, NEMA 1 Housing

Coil Current:

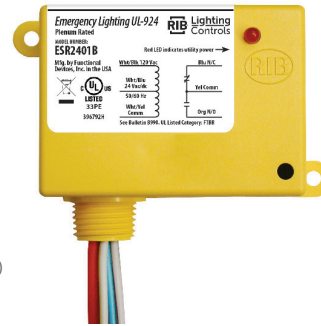
50 mA @ 18 Vac
83 mA @ 24 Vac
47 mA @ 120 Vac
33 mA @ 22 Vdc
35 mA @ 24 Vdc
47 mA @ 30 Vdc

Coil Voltage Input:

24 Vac/dc ; 120 Vac ; 50-60 Hz
Drop Out = 2.1 Vac / 3.8 Vdc
Pull In = 18 Vac / 22 Vdc

Contact Ratings:

20 Amp Resistive @ 277 Vac
20 Amp Ballast @ 277 Vac
16 Amp Electronic Ballast @ 277 Vac (N/O)
10 Amp Tungsten @ 120 Vac (N/O)
770 VA Pilot Duty @ 120 Vac
1,110 VA Pilot Duty @ 277 Vac
2 HP @ 277 Vac
1 HP @ 120 Vac



SPECIFICATIONS

Relays & Contact Type: One (1) SPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
Relay Status: LED On = Normal power present
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override (Test Switch): No

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power and Transfer Power.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Light should illuminate.
4. Energize Normal Power. Emergency Light will turn OFF.
5. Turn ON Wall Switch. Emergency Light should illuminate.

FIELD INSPECTION

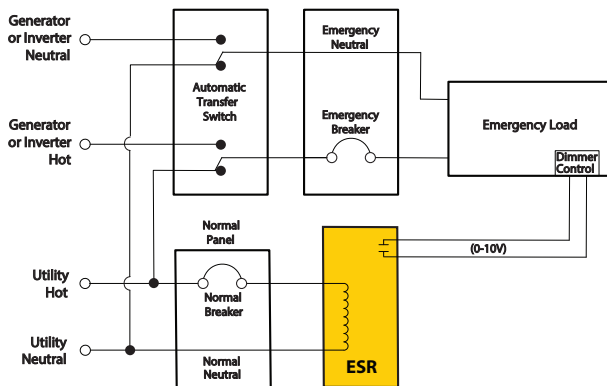
1. Ensure Normal Power and Transfer Power are energized.
2. Turn OFF Wall Switch. Light will turn OFF.
3. Red LED will be illuminated.
4. Turn OFF Normal Power. Red LED will turn OFF.
Emergency Light will illuminate.

BYPASS/SHUNT RELAYS & DIMMING OVERRIDE APPLICATION

Our Bypass/Shunt Relays are UL924 Listed and suitable for shunting around wall switches and/or lighting control panel circuits, in order to turn on emergency lighting when normal utility power is lost. In certain applications where a designated emergency light is desired for dimmed normal lighting, our UL924 relays will open the dimming control and override the switch position or 0-10 Vdc controller output to provide full illumination when normal utility power is lost.

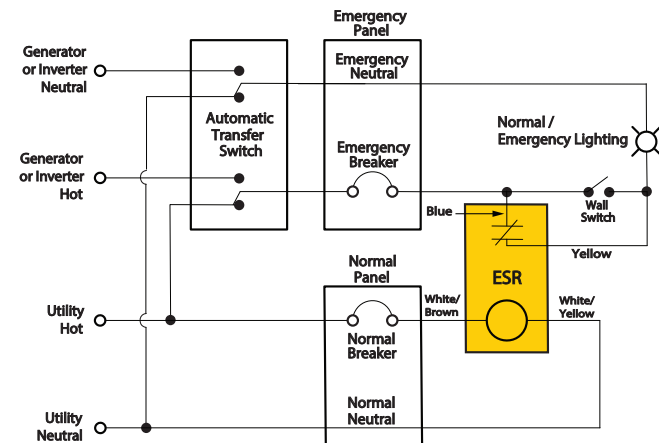
DIMMING OVERRIDE LOW VOLTAGE APPLICATION

When Normal Power is present, the ESR coil is activated and the N/O contacts are closed, allowing for the 0-10 Vdc to control the dimming of the load. When Normal Power is lost, the N/O contacts open, breaking the 0-10 Vdc dimming control, bringing the light load to full brightness.



BYPASS/SHUNT APPLICATION

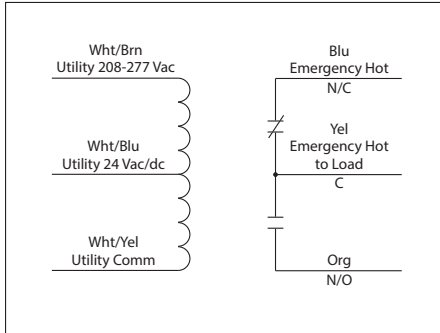
When Normal Power is present, the ESR Bypass/Shunt relay coil is activated (contacts N/O), and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using an individual wall switch. When normal power drops out, the ESR coil is deactivated and N/C contact falls closed.



UL924 / 20 AMP BYPASS / SHUNT RELAY

ESR2402B

UL924 Emergency Lighting Bypass/Shunt Relay, 20 Amp SPDT, 24 Vac/dc/208-277 Vac Coil, NEMA 1 Housing



Coil Current:

50 mA @ 18 Vac
83 mA @ 24 Vac
69 mA @ 208-277 Vac
33 mA @ 22 Vdc
35 mA @ 24 Vdc
47 mA @ 30 Vdc

Coil Voltage Input:

24 Vac/dc ; 208-277 Vac ; 50-60 Hz
Drop Out = 2.1 Vac / 3.8 Vdc
Pull In = 18 Vac / 22 Vdc

Contact Ratings:

20 Amp Resistive @ 277 Vac
20 Amp Ballast @ 277 Vac
16 Amp Electronic Ballast @ 277 Vac (N/O)
10 Amp Tungsten @ 120 Vac (N/O)
770 VA Pilot Duty @ 120 Vac
1,110 VA Pilot Duty @ 277 Vac
2 HP @ 277 Vac
1 HP @ 120 Vac



UL924
EMERGENCY
LIGHTING

SPECIFICATIONS

Relays & Contact Type: One (1) SPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
Relay Status: LED On = Normal power present
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override (Test Switch): No

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power and Transfer Power.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Light should illuminate.
4. Energize Normal Power. Emergency Light will turn OFF.
5. Turn ON Wall Switch. Emergency Light should illuminate.

FIELD INSPECTION

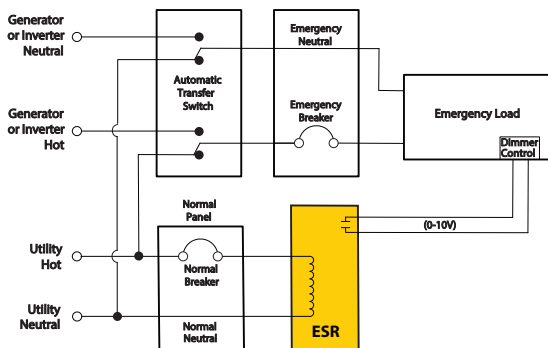
1. Ensure Normal Power and Transfer Power are energized.
2. Turn OFF Wall Switch. Light will turn OFF.
3. Red LED will be illuminated.
4. Turn OFF Normal Power. Red LED will turn OFF. Emergency Light will illuminate.

BYPASS/SHUNT RELAYS & DIMMING OVERRIDE APPLICATION

Our Bypass/Shunt Relays are UL924 Listed and suitable for shunting around wall switches and/or lighting control panel circuits, in order to turn on emergency lighting when normal utility power is lost. In certain applications where a designated emergency light is desired for dimmed normal lighting, our UL924 relays will open the dimming control and override the switch position or 0-10 Vdc controller output to provide full illumination when normal utility power is lost.

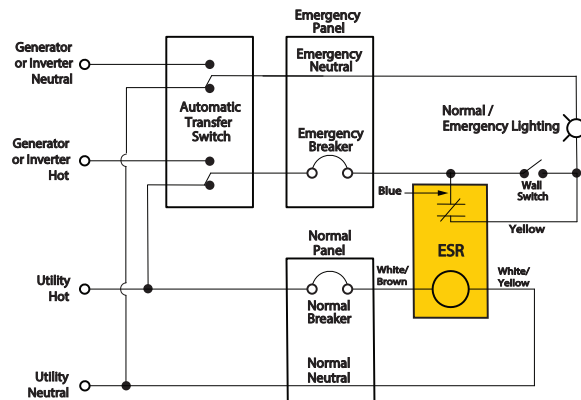
DIMMING OVERRIDE LOW VOLTAGE APPLICATION

When Normal Power is present, the ESR coil is activated and the N/O contacts are closed, allowing for the 0-10 Vdc to control the dimming of the load. When Normal Power is lost, the N/O contacts open, breaking the 0-10 Vdc dimming control, bringing the light load to full brightness.



BYPASS/SHUNT APPLICATION

When Normal Power is present, the ESR Bypass/Shunt relay coil is activated (contacts N/O), and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using an individual wall switch. When normal power drops out, the ESR coil is deactivated and N/C contact falls closed.

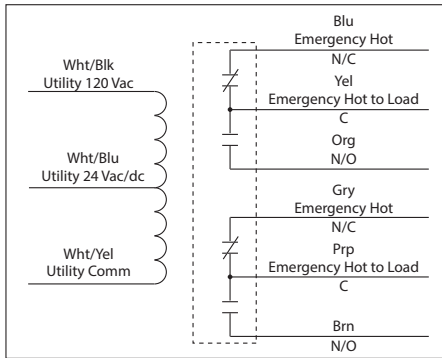


UL924 / 10 AMP BYPASS / SHUNT RELAY

ESR2401D

UL924 Emergency Lighting Bypass/Shunt Relay, 10 Amp DPDT, 24 Vac/dc/120 Vac Coil, NEMA 1 Housing

UL924
EMERGENCY
LIGHTING



Not rated for use as a
UL1008 Transfer Device



SPECIFICATIONS

Relays & Contact Type: One (1) DPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 8ms
Relay Status: LED On = Normal power present
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50"NPT nipple
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override (Test Switch): No

Contact Ratings:

10 Amp Resistive @ 30 Vdc
 10 Amp General Use @ 277 Vac
 1/2 HP @ 120/240 Vac (N/O)
 1/3 HP @ 120/240 Vac (N/C)
 B300 Pilot Duty
 120 Vac 30A Make 3A Break (360 VA)
 240 Vac 15 A Make 1.5A Break (360 VA)
 208 Vac 17.3A Make 1.73A Break (360 VA)
 277 Vac 13A Make 1.3A Break (360 VA)
 24 Vac 30A Make 5A Break (120 VA) 5A Max

Coil Current:

24 mA @ 18 Vac 20 mA @ 20 Vdc
 32 mA @ 24 Vac 24 mA @ 24 Vdc
 40 mA @ 30 Vac 36 mA @ 30 Vdc
 31 mA @ 120 Vac

Coil Voltage Input:

24 Vac/dc ; 120 Vac ; 50-60 Hz
 Drop Out = 3 Vac / 3.8 Vdc
 Pull In = 18 Vac / 20 Vdc

Notes:

• Not rated for use as a UL1008 Transfer Device.

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power and Transfer Power.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Lights should illuminate.
4. Energize Normal Power. Emergency Lights will turn OFF.
Red LED will turn ON.
5. Turn ON Wall Switches. Emergency Lights should illuminate.

FIELD INSPECTION

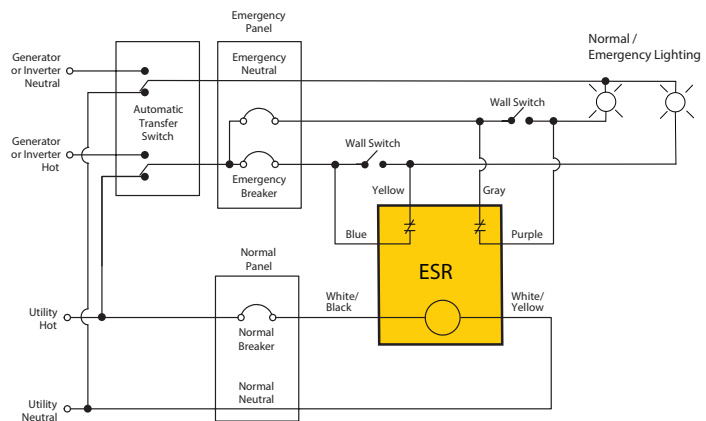
1. Ensure Normal Power and Transfer Power are energized.
2. Turn OFF Wall Switches. Lights will turn OFF.
3. Red LED will be illuminated.
4. Turn OFF Normal Power. Red LED will turn OFF. Emergency Lights will illuminate.

SHUNT RELAY APPLICATION

Our Bypass / Shunt Relays are UL924 Listed and suitable for shunting around wall switches in order to turn on emergency lighting in the event of loss of normal utility power.

When Normal Power is present, the ESR relay coil is activated and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using an individual wall switch.

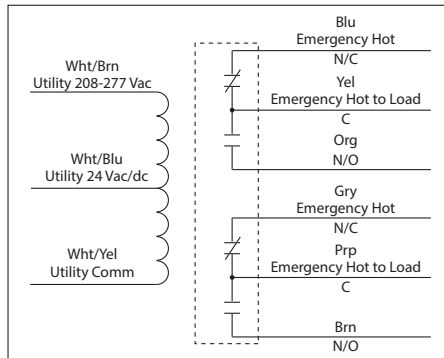
When Normal Power drops out, the ESR coil is deactivated and N/C contact falls closed. The Automatic Transfer Switch changes over to backup (generator) power, and the lighting load is illuminated regardless of the position of the wall switch or controller scheme.



UL924 / 10 AMP BYPASS / SHUNT RELAY

ESR2402D

UL924 Emergency Lighting Bypass/Shunt Relay, 10 Amp DPDT, 24 Vac/dc/208-277 Vac Coil, NEMA 1 Housing



Not rated for use as a UL1008 Transfer Device



UL924
EMERGENCY
LIGHTING

SPECIFICATIONS

Relays & Contact Type: One (1) DPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 8ms
Relay Status: LED On = Normal power present
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50"NPT nipple
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override (Test Switch): No

Contact Ratings:
 10 Amp Resistive @ 30 Vdc
 10 Amp General Use @ 277 Vac
 1/2 HP @ 120/240 Vac (N/O)
 1/3 HP @ 120/240 Vac (N/C)
 B300 Pilot Duty
 120 Vac 30A Make 3A Break (360 VA)
 240 Vac 15 A Make 1.5A Break (360 VA)
 208 Vac 17.3A Make 1.73A Break (360 VA)
 277 Vac 13A Make 1.3A Break (360 VA)
 24 Vac 30A Make 5A Break (120 VA) 5A Max

Coil Current:
 24 mA @ 18 Vac 20 mA @ 20 Vdc
 32 mA @ 24 Vac 24 mA @ 24 Vdc
 40 mA @ 30 Vac 36 mA @ 30 Vdc
 36 mA @ 208-277 Vac

Coil Voltage Input:
 24 Vac/dc ; 208-277 Vac ; 50-60 Hz
 Drop Out = 3 Vac / 3.8 Vdc
 Pull In = 18 Vac / 20 Vdc

Notes:
 • Not rated for use as a UL1008 Transfer Device.

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power and Transfer Power.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Lights should illuminate.
4. Energize Normal Power. Emergency Lights will turn OFF.
Red LED will turn ON.
5. Turn ON Wall Switches. Emergency Lights should illuminate.

FIELD INSPECTION

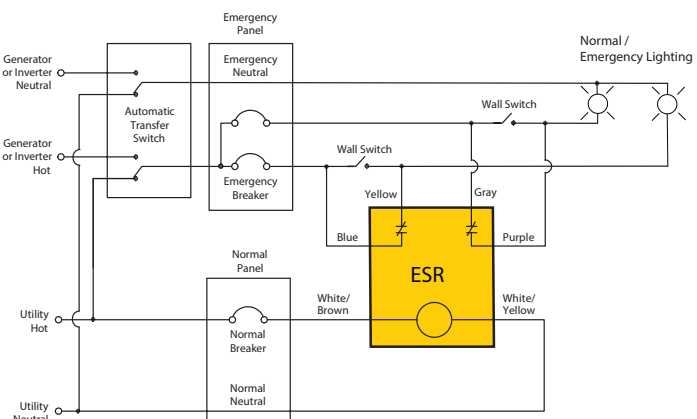
1. Ensure Normal Power and Transfer Power are energized.
2. Turn OFF Wall Switches. Lights will turn OFF.
3. Red LED will be illuminated.
4. Turn OFF Normal Power. Red LED will turn OFF. Emergency Lights will illuminate.

SHUNT RELAY APPLICATION

Our Bypass / Shunt Relays are UL924 Listed and suitable for shunting around wall switches in order to turn on emergency lighting in the event of loss of normal utility power.

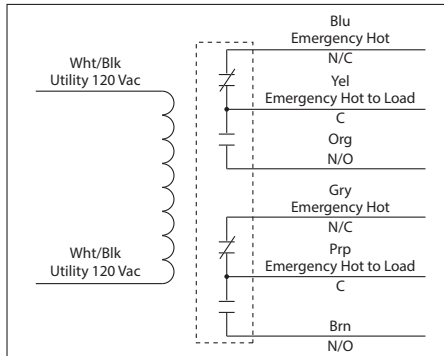
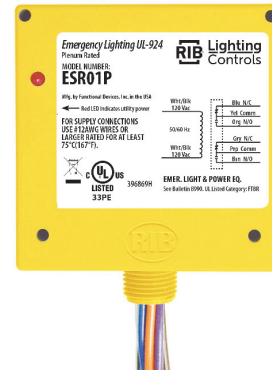
When Normal Power is present, the ESR relay coil is activated and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using an individual wall switch.

When Normal Power drops out, the ESR 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 position of the wall switch or controller scheme.



ESR01P

UL924 Emergency Lighting Bypass/Shunt Relay, 20 Amp DPDT, 120 Vac Coil, NEMA 1 Housing

UL924
EMERGENCY
LIGHTINGNot rated for use as a
UL1008 Transfer Device**SPECIFICATIONS**

Relays & Contact Type: One (1) DPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Operate Time: 18ms
Relay Status: LED On = Normal power present
Dimensions: 4.00"H x 4.00"W x 1.81"D with 0.50"NPT nipple
Housing Detail: See **Housing C** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: Yes
Override (Test Switch): No

Contact Ratings:
 20 Amp Resistive @ 300 Vac
 20 Amp Resistive @ 28 Vdc
 20 Amp Ballast @ 277-480 Vac
Not rated for Electronic Ballast
 15 Amp Resistive @ 600 Vac
 770 VA Pilot Duty @ 120 Vac
 1158 VA Pilot Duty @ 240 Vac
 1109 VA Pilot Duty @ 277 Vac
 1640 VA Pilot Duty @ 480 Vac
 3 HP @ 480-600 Vac
 2 HP @ 240-277 Vac
 1 HP @ 120 Vac

Coil Current:
 105 mA @ 120 Vac

Coil Voltage Input:
 120 Vac; 50-60 Hz
 Drop Out = 35 Vac
 Pull In = 85 Vac

Notes:
 • Not rated for use as a UL1008 Transfer Device.

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power and Transfer Power.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Light should illuminate.
4. Energize Normal Power. Emergency Light will turn OFF.
5. Turn ON Emergency Zone Controller. Emergency Light should illuminate.

FIELD INSPECTION

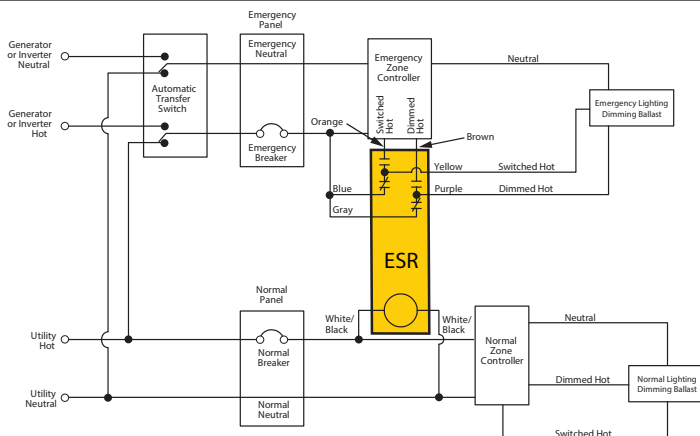
1. Ensure Normal Power and Transfer Power are energized.
2. Red LED will be illuminated.
3. Turn OFF Normal Power. Red LED will turn OFF. Emergency Light will illuminate.

SHUNT RELAY APPLICATION

Our Bypass / Shunt Relays are UL924 Listed and suitable for shunting around wall switches in order to turn on emergency lighting in the event of loss of normal utility power.

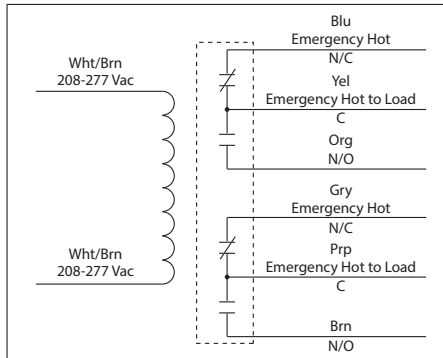
When Normal Power is present, the ESR relay coil is activated and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using an individual wall switch.

When Normal Power drops out, the ESR 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 position of the wall switch or controller scheme.



ESR02P

UL924 Emergency Lighting Bypass/Shunt Relay, 20 Amp DPDT, 208-277 Vac Coil, NEMA 1 Housing



Not rated for use as a
UL1008 Transfer Device



UL924
EMERGENCY
LIGHTING

SPECIFICATIONS

Relays & Contact Type: One (1) DPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140°F
Operate Time: 18ms
Relay Status: LED On = Normal power present
Dimensions: 4.00"H x 4.00"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing C** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL924, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: Yes
Override (Test Switch): No

Contact Ratings:
 20 Amp Resistive @ 300 Vac
 20 Amp Resistive @ 28 Vdc
 20 Amp Ballast @ 277-480 Vac
Not rated for Electronic Ballast
 15 Amp Resistive @ 600 Vac
 770 VA Pilot Duty @ 120 Vac
 1158 VA Pilot Duty @ 240 Vac
 1109 VA Pilot Duty @ 277 Vac
 1640 VA Pilot Duty @ 480 Vac
 3 HP @ 480-600 Vac
 2 HP @ 240-277 Vac
 1 HP @ 120 Vac

Coil Current:
 105 mA @ 208-277 Vac

Coil Voltage Input:
 208-277 Vac ; 50-60 Hz
 Drop Out = 60 Vac
 Pull In = 160 Vac

Notes:
 • **Not rated for use as a UL1008 Transfer Device.**

INITIAL WIRING VERIFICATION

1. Turn OFF Normal Power and Transfer Power.
2. Wire relay according to wiring diagram.
3. Energize Transfer Power. Emergency Light should illuminate.
4. Energize Normal Power. Emergency Light will turn OFF.
5. Turn ON Emergency Zone Controller. Emergency Light should illuminate.

FIELD INSPECTION

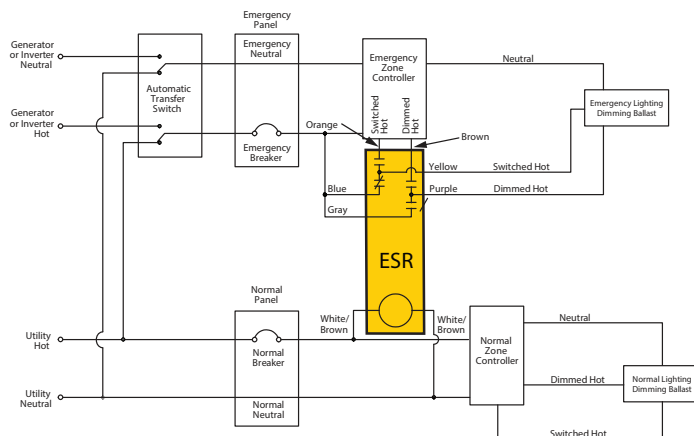
1. Ensure Normal Power and Transfer Power are energized.
2. Red LED will be illuminated.
3. Turn OFF Normal Power. Red LED will turn OFF. Emergency Light will illuminate.

SHUNT RELAY APPLICATION

Our Bypass / Shunt Relays are UL924 Listed and suitable for shunting around wall switches in order to turn on emergency lighting in the event of loss of normal utility power.

When Normal Power is present, the ESR relay coil is activated and the emergency panel is fed from Normal Power. The lighting load can be switched on/off using an individual wall switch.

When Normal Power drops out, the ESR 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 position of the wall switch or controller scheme.



UL924 EMERGENCY POWER INVERTERS

UL924
EMERGENCY
LIGHTING

We are excited to announce our latest **UL924 Emergency Power devices**, the **EMPS Series**. This new series contains our **Mini, Micro, and Midsize Power Inverters** with **output power ranging from 20W - 600 Watts**, with a **minimum of 90 minutes of backup power**.



Micro Inverters



Mini Inverters



Midsize Inverters

Product Features

- Universal 120-277 Vac, 60 Hz, Input/Output
- Made for powering incandescent, fluorescent, and LED fixtures
- True sinusoidal AC Pulse with Modulation – PWM
- LED system indicators
- UL924 Listed, NFPA 101 – Life Fire & Safety, NFPA 70 – NEC, OSHA, Plenum rated UL2043 meeting Chicago's CCEA requirements
- Mounting options: Surface, Recessed, or T-Grid

Benefits

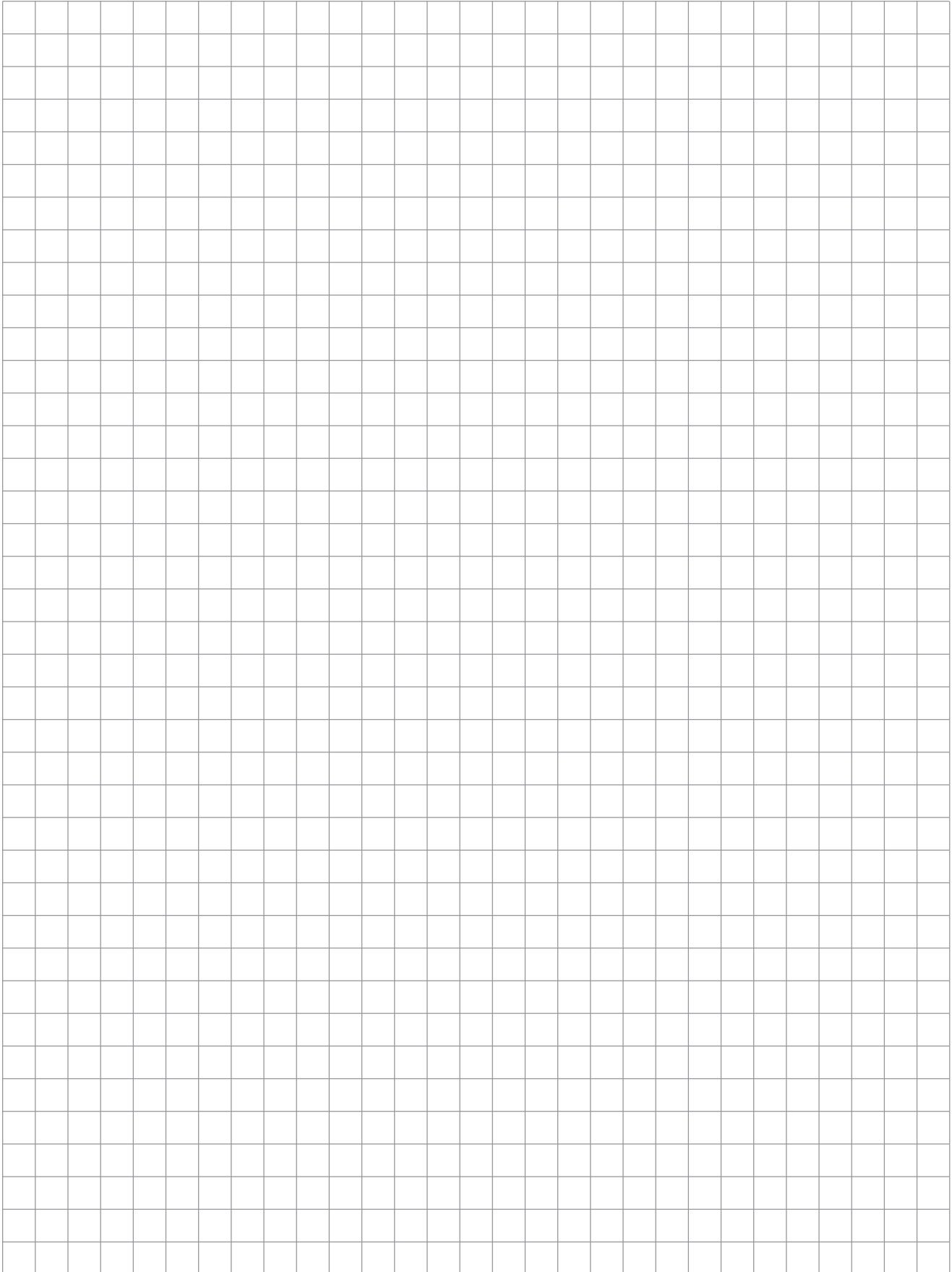
- Lower installation costs by using existing lighting fixtures
- Lower maintenance cost with single power source for emergency illumination
- Efficiency rated, 98% at full rated load, line
- 5 year limited warranty
- One stop shop for both UL924 Inverters and Relays

UL924 EMERGENCY LIGHTING POWER INVERTERS

90 MINUTE CAPACITY														
ITEM	UL	SERIES	WATTS	VA	INPUT/ OUTPUT	BATTERY TYPE	BATTERY VOLTAGE	SELF-TEST / SELF DIAG.	4 OUTPUT CIRCUIT SWITCHING	TITLE 20 COMPLIANT	MOUNTING TYPE	LENGTH	WIDTH	HEIGHT
EMPS20WR	•	Micro	20 W	20 VA	120/277 Vac	Lead-Calc	12 Vdc				Recess	16.25"	3.125"	8.875"
EMPS20WS	•	Micro	20 W	20 VA	120/277 Vac	Lead-Calc	12 Vdc				Surface	14.75"	3.125"	7.375"
EMPS20WT	•	Micro	20 W	20 VA	120/277 Vac	NiCad	12 Vdc				T-Grid	23.875"	6.188"	8.563"
EMPS32WR	•	Micro	32 W	32 VA	120/277 Vac	NiCad	12 Vdc				Recess	16.25"	3.125"	8.875"
EMPS32WS	•	Micro	32 W	32 VA	120/277 Vac	NiCad	12 Vdc				Surface	14.75"	3.125"	7.375"
EMPS32WT	•	Micro	32 W	32 VA	120/277 Vac	NiCad	12 Vdc				T-Grid	23.875"	6.188"	8.563"
EMPS35WR	•	Micro	35 W	35 VA	120/277 Vac	NiCad	12 Vdc				Recess	16.25"	4.375"	8.875"
EMPS35WS	•	Micro	35 W	35 VA	120/277 Vac	NiCad	12 Vdc				Surface	14.75"	4.375"	7.375"
EMPS35WT	•	Micro	35 W	35 VA	120/277 Vac	NiCad	12 Vdc				T-Grid	23.875"	6.188"	8.563"
EMPS55WR	•	Micro	55 W	55 VA	120/277 Vac	Lead-Calc	12 Vdc				Recess	16.25"	4.375"	8.875"
EMPS55WS	•	Micro	55 W	55 VA	120/277 Vac	Lead-Calc	12 Vdc				Surface	14.75"	4.375"	7.375"
EMPS55WT	•	Micro	55 W	55 VA	120/277 Vac	Lead-Calc	12 Vdc				T-Grid	23.875"	6.188"	8.563"
EMPS110125RSDTC	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•		•	Recess	18.125"	4.375"	13.125"
EMPS110125SSDTC	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•		•	Surface	16.75"	4.375"	11.75"
EMPS110125TSDTC	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•		•	T-Grid	23.875"	6.188"	8.563"
EMPS110125RSDT	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•			Recess	18.125"	4.375"	13.125"
EMPS110125S	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc				Surface	16.75"	4.375"	11.75"
EMPS110125SSDT	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•			Surface	16.75"	4.375"	11.75"
EMPS110125T	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc				T-Grid	23.875"	6.188"	8.563"
EMPS110125TSDT	•	Mini	110 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•			T-Grid	23.875"	6.188"	8.563"
EMPS110250SSDTC	•	Mini	110 W	250 VA	120/277 Vac	Lead-Calc	48 Vdc	•		•	Surface	16.75"	6.375"	11.75"
EMPS110250S	•	Mini	110 W	250 VA	120/277 Vac	Lead-Calc	48 Vdc				Surface	16.75"	6.375"	11.75"
EMPS110250SSDT	•	Mini	110 W	250 VA	120/277 Vac	Lead-Calc	48 Vdc	•			Surface	16.75"	6.375"	11.75"
EMPS220250SSDTC	•	Mini	220 W	250 VA	120/277 Vac	Lead-Calc	48 Vdc	•		•	Surface	16.75"	6.375"	11.75"
EMPS220250S	•	Mini	220 W	250 VA	120/277 Vac	Lead-Calc	48 Vdc				Surface	16.75"	6.375"	11.75"
EMPS220250SSDT	•	Mini	220 W	250 VA	120/277 Vac	Lead-Calc	48 Vdc	•			Surface	16.75"	6.375"	11.75"
EMPS55125RSDTC	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•		•	Recess	18.125"	4.375"	13.125"
EMPS55125SSDTC	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•		•	Surface	16.75"	4.375"	11.75"
EMPS55125TSDTC	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•		•	T-Grid	23.875"	6.188"	8.563"
EMPS55125R	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc				Recess	18.125"	4.375"	13.125"
EMPS55125RSDT	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•			Recess	18.125"	4.375"	13.125"
EMPS55125S	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc				Surface	16.75"	4.375"	11.75"
EMPS55125SSDT	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•			Surface	16.75"	4.375"	11.75"
EMPS55125T	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc				T-Grid	23.875"	6.188"	8.563"
EMPS55125TSDT	•	Mini	55 W	125 VA	120/277 Vac	Lead-Calc	24 Vdc	•			T-Grid	23.875"	6.188"	8.563"
EMPS3754AOSDT	•	Midsized	375 W	375 VA	120/277 Vac	Lead-Calc	60 Vdc	•	•		Surface	18"	8.25"	16.625"
EMPS3754CSDT	•	Midsized	375 W	375 VA	120/277 Vac	Lead-Calc	60 Vdc	•	•		Surface	18"	8.25"	16.625"
EMPS375	•	Midsized	375 W	375 VA	120/277 Vac	Lead-Calc	60 Vdc				Surface	18"	8.25"	16.625"
EMPS6004AOSDT	•	Midsized	600 W	600 VA	120/277 Vac	Lead-Calc	96 Vdc	•	•		Surface	18"	8.25"	25.25"
EMPS6004CSDT	•	Midsized	600 W	600 VA	120/277 Vac	Lead-Calc	96 Vdc	•	•		Surface	18"	8.25"	25.25"
EMPS600	•	Midsized	600 W	600 VA	120/277 Vac	Lead-Calc	96 Vdc				Surface	18"	8.25"	25.25"

UL = UL924; Emergency Lighting

UL924
EMERGENCY
LIGHTING



PHASE ANGLE DIMMER

This phase angle dimming device is **powered by 120 Vac** and has a **dimmed line voltage (120 Vac) output**. The output can go to **one light or a branch of lights** to control the lighting level. This dimmer can handle **up to 600 Watts of lighting at 120 Vac**. The dimming level is **controlled by a 0-10 Vdc analog signal**. The device can be configured for **Leading Edge or Trailing Edge Dimming** as well as a **Sinking or Sourcing 0-10 Vdc Inputs**.

PHASE ANGLE
DIMMER

- Input Power: 120 Vac
- 120 Vac Phase Angle Dimming
- Dim up to 600 Watts on a lighting circuit
- Selectable dimming modes
- 0-10 Vdc input to control lighting level

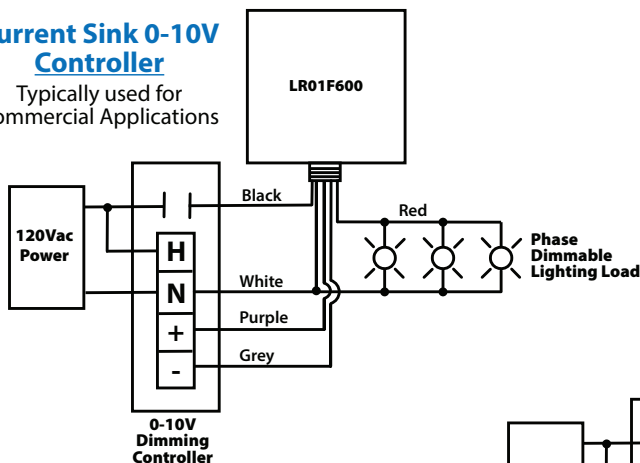
Phase Angle Dimmer

LR01F600



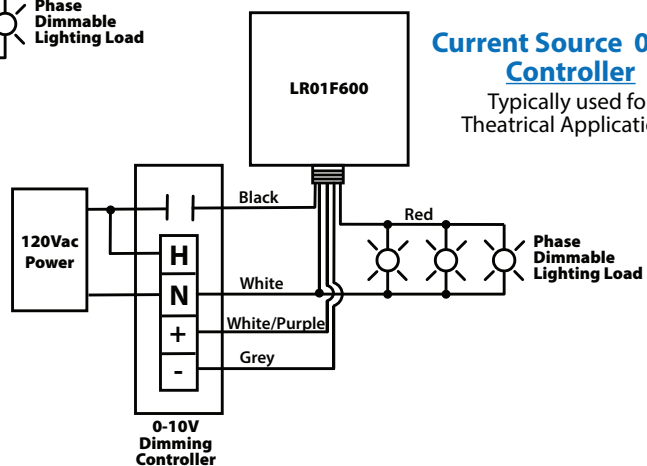
Current Sink 0-10V Controller

Typically used for Commercial Applications



Current Source 0-10V Controller

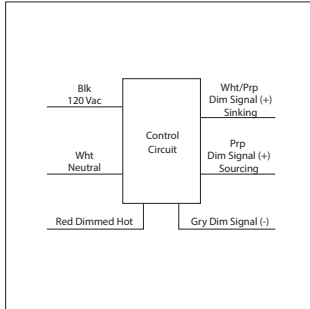
Typically used for Theatrical Applications



0-10V CONTROLLED PHASE ANGLE DIMMER

LR01F600

Phase Angle Dimmer, 0-10 Vdc Input, 120 Vac Power Input, 600W Rated, Dimming Mode Selectable, NEMA 1 Housing



SPECIFICATIONS

Operating Temperature: -30 to 122 F

Humidity Range: 5 to 95% (noncondensing)

Red LED: Power Status

Dimensions: 4.00"H x 4.00"W x 1.81"D with 0.50" NPT nipple

Housing Detail: See **Housing C** in housing guide for dimensions

Origin: Made of US and non-US parts

Wires: 16", 600V rated

Approvals: UL Listed, UL916, C-UL, RoHS

Housing Rating: UL Accepted, NEMA 1

Max Lighting Load: 600W Incandescent/Halogen

Recommended 300W max for other dimmable lighting loads

Min Lighting Load: 1W

Dim to off: Yes

Selectable Dimming Mode: Yes

Selectable Low Dim Threshold: No

Power Input Ratings: 100mA @ 120 Vac; 60Hz

Notes:

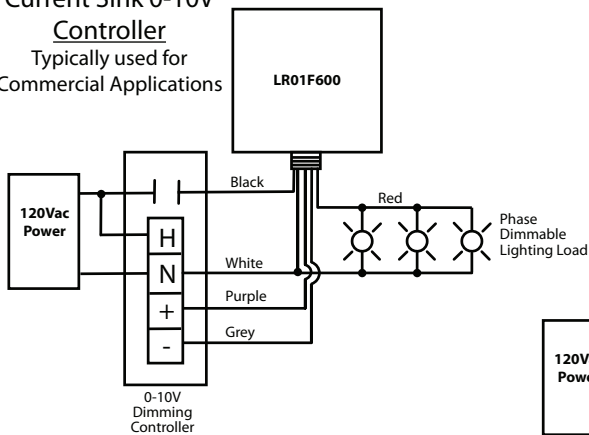
- DIP switches on unit can change dimming between leading or trailing edge and between sinking or sourcing 0-10V control standards.
- Purple wire is used with Current Sink 0-10V controllers and White/Purple wires are used with Current Source 0-10V controllers.
- Not for use with Magnetic Low Voltage (MLV) loads.
- Low Voltage wires not Class 2

Switch Settings

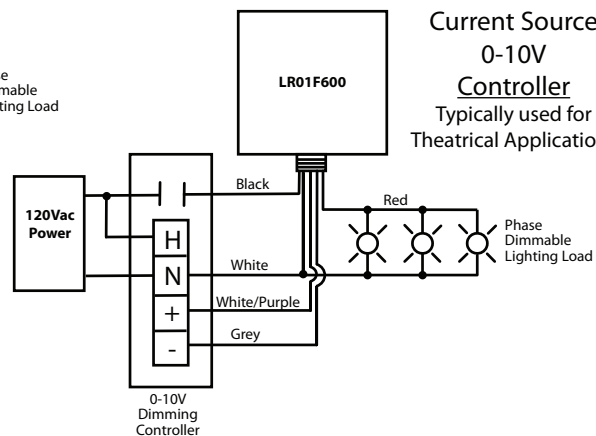
Switch 1	ON	Leading Edge Dimming
Switch 1	OFF	Trailing Edge Dimming
Switch 2	ON	Current Source 0-10V
Switch 2	OFF	Current Sink 0-10V

TYPICAL APPLICATION

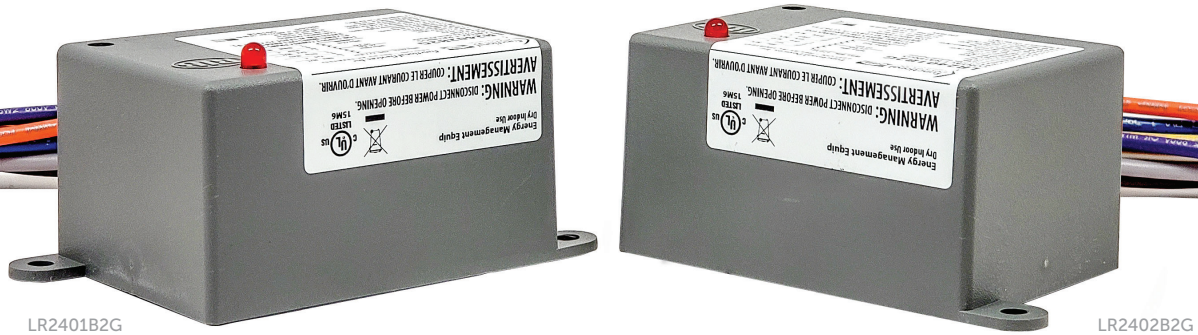
Current Sink 0-10V Controller
Typically used for Commercial Applications



Current Source 0-10V Controller
Typically used for Theatrical Applications



GENERAL PURPOSE RELAYS



Many contractors and lighting specialists need general purpose relays when specifying or installing lighting control systems.

Functional Devices offers two general purpose relays built with the same quality and durability as our original RIB® relays, with every unit being tested before leaving our production floor. These products are commission-based and sold only through our Lighting Reps.

Product Features:

- Prepackaged: NEMA 1 enclosure, pre-wired, LED indicator
- 20 Amp General Purpose at 277 Vac
- 16 Amp Electronic Ballast at 277 Vac
- DPDT relay (if SPDT is needed, use only one set of contacts)
- 24 Vac/dc/120 Vac or 24 Vac/dc/208-277 Vac power input
- UL Listed



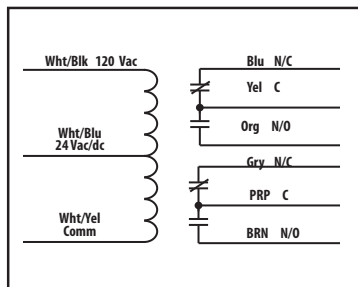
Applications and Uses:

- General Purpose lighting requirement where a relay is specified or needed
- Plug Load Control options
- Panel Load Control for switching
- Field relay control, cost savings

20 AMP POWER CONTROL RELAY

LR2401B2G

Power Relay, 20 Amp DPDT, 24 Vac/dc/120 Vac Coil, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: DPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 18ms
Relay Status: LED On = Activated
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.75"NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 20 A @ 277 Vac General Purpose
 20 A @ 28 Vdc
 1 HP @ 120 Vac
 2 HP @ 277 Vac
 2 HP @ 240 Vac (N/O)
 1 HP @ 208 Vac (N/O)
 20 A Ballast @ 277 Vac
 15 A Tungsten @ 120 Vac (N/O)
 5 A @ 480 Vac Resistive
 16 A @ 277 Vac Electronic Ballast (N/O)
 1110 VA Pilot Duty @ 277 Vac
 1158 VA Pilot Duty @ 240 Vac (N/O)
 770 VA Pilot Duty @ 208 Vac (N/O)
 770 VA Pilot Duty @ 120 Vac
 2 A Tungsten @ 120 Vac (N/C)

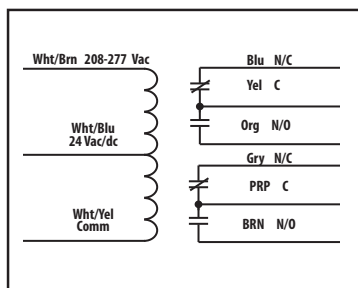
Coil Current:
 145 mA max @ 24 Vac
 65 mA max @ 30 Vdc
 107 mA @ 120 Vac

Coil Voltage Input:
 24 Vac/dc ; 120 Vac ; 50-60 Hz
 Drop Out = 13.5 Vac / 15.5 Vdc
 Pull In = 18 Vac / 22 Vdc

20 AMP POWER CONTROL RELAY

LR2402B2G

Power Relay, 20 Amp DPDT, 24 Vac/dc/208-277 Vac Coil, NEMA 1 Housing



SPECIFICATIONS

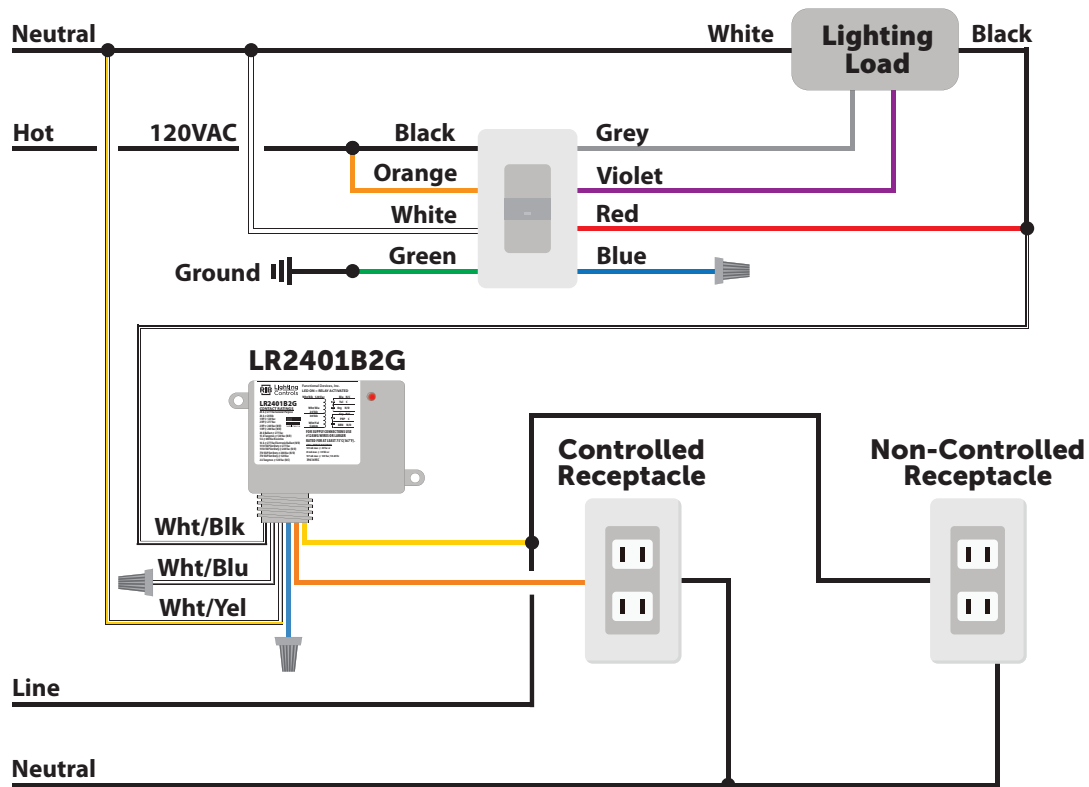
Relays & Contact Type: DPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 18ms
Relay Status: LED On = Activated
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.75"NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 20 A @ 277 Vac General Purpose
 20 A @ 28 Vdc
 1 HP @ 120 Vac
 2 HP @ 277 Vac
 2 HP @ 240 Vac (N/O)
 1 HP @ 208 Vac (N/O)
 20 A Ballast @ 277 Vac
 15 A Tungsten @ 120 Vac (N/O)
 5 A @ 480 Vac Resistive
 16 A @ 277 Vac Electronic Ballast (N/O)
 1110 VA Pilot Duty @ 277 Vac
 1158 VA Pilot Duty @ 240 Vac (N/O)
 770 VA Pilot Duty @ 208 Vac (N/O)
 770 VA Pilot Duty @ 120 Vac
 2 A Tungsten @ 120 Vac (N/C)

Coil Current:
 145 mA max @ 24 Vac
 65 mA max @ 30 Vdc
 140 mA max @ 208-277 Vac

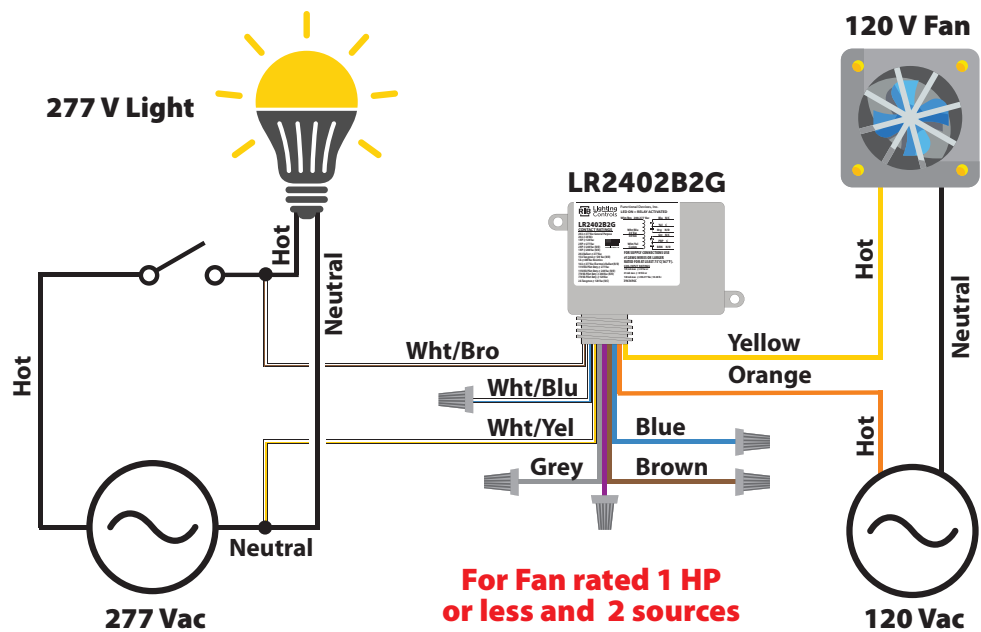
Coil Voltage Input:
 24 Vac/dc ; 208-277 Vac ; 50-60 Hz
 Drop Out = 13.5 Vac / 15.5 Vdc
 Pull In = 18 Vac / 22 Vdc

LR2401B2G APPLICATION

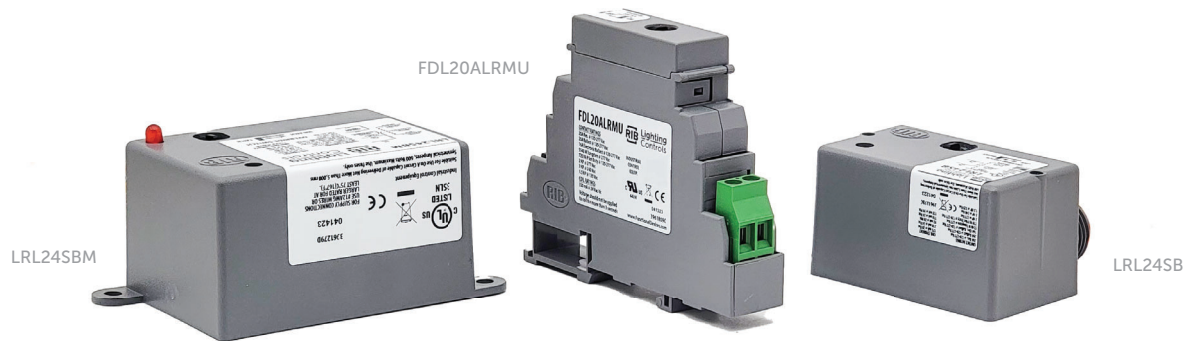


RELAYS

LR2401B2G APPLICATION



LATCHING RELAYS

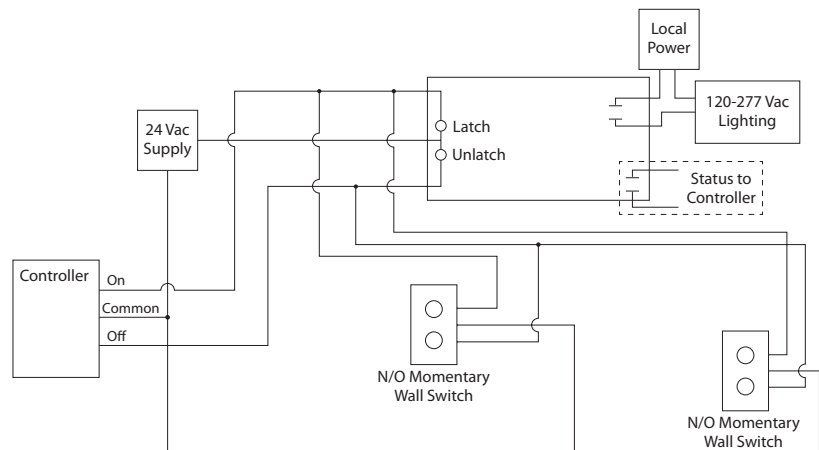


Our **Latching Relays** come **prepackaged** in their own NEMA 1 plastic enclosure with a 1/2" spud mount, LED indicator and pre-wired for a money-saving installation that is easy and quick. These relays are **activated by pulse commands from a controller or momentary switch closure.**

The **relay contacts are mechanically latched** in the closed position and **the load will remain on in the event of a control panel failure period.** If **power is completely lost the contacts will remain in their last state** and the load will activate upon the return of normal power or emergency power.

LATCHING RELAYS

- Prepackaged for convenience
- Electromechanical relay
- Mechanically latching
- Status output contact
- Electronic ballast rating
- 20 Amp rating
- Override switch



LATCHING RELAYS

		COIL VOLTAGE					
MODEL #	UL	AC/DC	RELAYS	CONTACTS	OVERRIDE SWITCH	AUXILIARY OUTPUT	SPEC PAGE
LRL12B	•	12	1	SPST			42
LRL12BM	•	12	1	SPST		•	42
LRL12SB	•	12	1	SPST	•		43
LRL12SBM	•	12	1	SPST	•	•	43
LRL24B	•	24	1	SPST			44
LRL24BM	•	24	1	SPST		•	44
LRL24SB	•	24	1	SPST	•		45
LRL24SBM	•	24	1	SPST	•	•	45
FDL20ALRM2U	UL	24	1	SPST	•	•	46
FDL20ALRMU	•	24	1	SPST	•		46

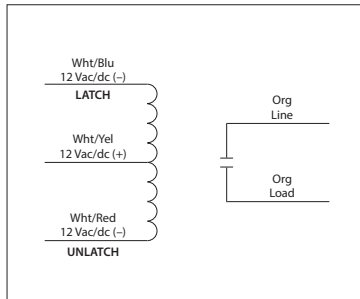
UL = UL Listed - see data sheet for specific Listing

UL = UL Component Recognized - see data sheet for specific Listing

LATCHING RELAY

LRL12B

Mechanically Latching Relay, 20 Amp SPST, 12 Vac/dc Coil, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50" NPT nipple
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 182 mA @ 10 Vac
 250 mA @ 12 Vac
 165 mA @ 10 Vdc
 198 mA @ 12 Vdc
 250 mA @ 15 Vdc
Latch / Unlatch:
 Min. 10 Vdc / 11 Vac

Notes:

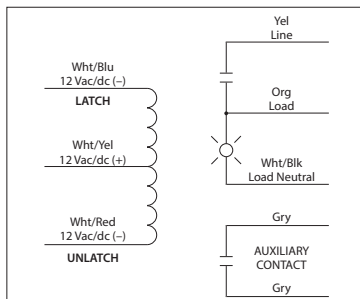
- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.

LATCHING RELAYS

LATCHING RELAY

LRL12BM

Mechanically Latching Relay, 20 Amp SPST, 12 Vac/dc Coil, Status LED, Auxiliary Output, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Relay Status / Auxiliary
Contact Closed: LED On = Voltage Detected on Load Wire
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 182 mA @ 10 Vac
 250 mA @ 12 Vac
 165 mA @ 10 Vdc
 198 mA @ 12 Vdc
 250 mA @ 15 Vdc

Latch / Unlatch:
 Min. 10 Vdc / 11 Vac

Auxiliary Contact:
 3 Amp @ 30 Vac/dc max.

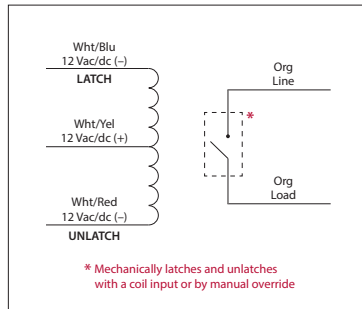
Notes:

- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.
- Auxiliary contact and status LED activate when 120-277 Vac is applied between Load (Org) wire and Load Neutral (Wht/Blk) wire.

LATCHING RELAY

LRL12SB

Mechanically Latching Relay, 20 Amp SPST + True Override, 12 Vac/dc Coil, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50" NPT nipple
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: Yes

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 182 mA @ 10 Vac
 250 mA @ 12 Vac
 165 mA @ 10 Vdc
 198 mA @ 12 Vdc
 250 mA @ 15 Vdc
Latch / Unlatch:
 Min. 10 Vdc / 11 Vac

Notes:

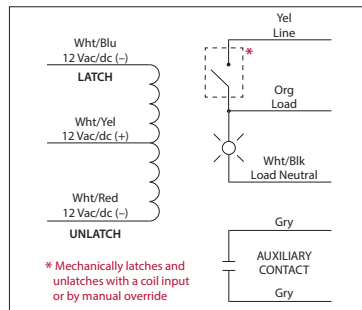
- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.

LATCHING
RELAYS

LATCHING RELAY

LRL12SBM

Mechanically Latching Relay, 20 Amp SPST + True Override, 12 Vac/dc Coil, Status LED, Auxiliary Output, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Relay Status / Auxiliary
Contact Closed: LED On = Voltage Detected on Load Wire (LRL12BM & SBM)
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: Yes

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 182 mA @ 10 Vac
 250 mA @ 12 Vac
 165 mA @ 10 Vdc
 198 mA @ 12 Vdc
 250 mA @ 15 Vdc

Latch / Unlatch:
 Min. 10 Vdc / 11 Vac

Auxiliary Contact:
 3 Amp @ 30 Vac/dc max.

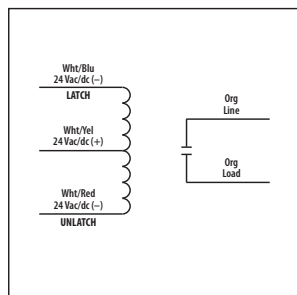
Notes:

- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.
- Auxiliary contact and status LED activate when 120-277 Vac is applied between Load (Org) wire and Load Neutral (Wht/Blk) wire.

LATCHING RELAY

LRL24B

Mechanically Latching Relay, 20 Amp SPST, 24 Vac/dc Coil, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50" NPT nipple
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 175 mA @ 20 Vac
 210 mA @ 24 Vac
 92 mA @ 20 Vdc
 110 mA @ 24 Vdc
 138 mA @ 30 Vdc
Latch / Unlatch:
 Min. 20 Vdc / 22 Vac

Notes:

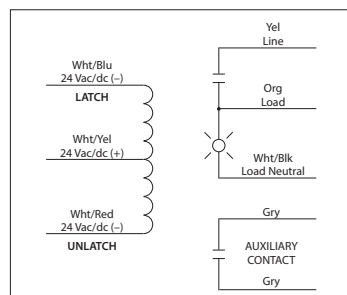
- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.

LATCHING RELAYS

LATCHING RELAY

LRL24BM

Mechanically Latching Relay, 20 Amp SPST, 24 Vac/dc Coil, Status LED, Auxiliary Output, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Relay Status / Auxiliary
Contact Closed: LED On = Voltage Detected on Load Wire
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 175 mA @ 20 Vac
 210 mA @ 24 Vac
 92 mA @ 20 Vdc
 110 mA @ 24 Vdc
 138 mA @ 30 Vdc
Latch / Unlatch:
 Min. 20 Vdc / 22 Vac
Auxiliary Contact:
 3 Amp @ 30 Vac/dc max.

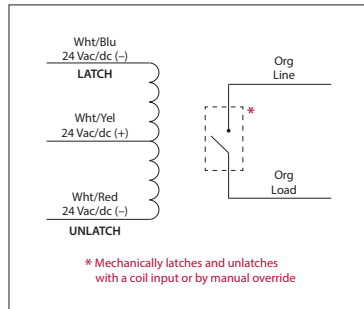
Notes:

- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.
- Auxiliary contact and status LED activate when 120-277 Vac is applied between Load (Org) wire and Load Neutral (Wht/Blk) wire.

LATCHING RELAY

LRL24SB

Mechanically Latching Relay, 20 Amp SPST + True Override, 24 Vac/dc Coil, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50" NPT nipple
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16', 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: Yes

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 175 mA @ 20 Vac
 210 mA @ 24 Vac
 92 mA @ 20 Vdc
 110 mA @ 24 Vdc
 138 mA @ 30 Vdc
Latch / Unlatch:
 Min. 20 Vdc / 22 Vac

Notes:

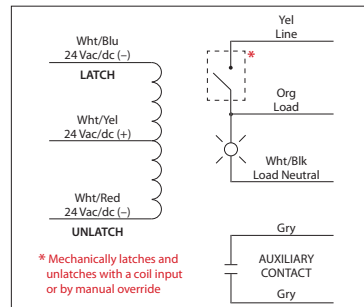
- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.

LATCHING
RELAYS

LATCHING RELAY

LRL24SBM

Mechanically Latching Relay, 20 Amp SPST + True Override, 24 Vac/dc Coil, Status LED, Auxiliary Output, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay, Dual Coil
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 30 seconds
Relay Status / Auxiliary
Contact Closed: LED On = Voltage Detected on Load Wire
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16', 600V Rated
Approvals: UL Listed, UL60947, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: Yes

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 175 mA @ 20 Vac
 210 mA @ 24 Vac
 92 mA @ 20 Vdc
 110 mA @ 24 Vdc
 138 mA @ 30 Vdc
Latch / Unlatch:
 Min. 20 Vdc / 22 Vac
Auxiliary Contact:
 3 Amp @ 30 Vac/dc max.

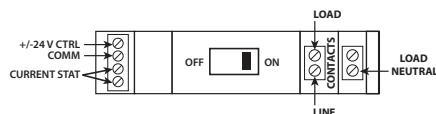
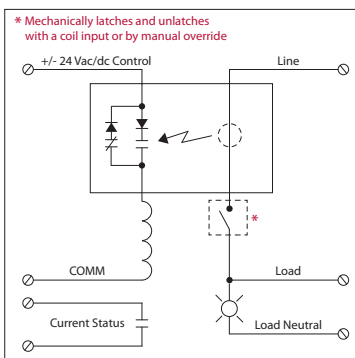
Notes:

- Application of momentary voltage on latch coil (Wht/Blu & Wht/Yel) will close the contact.
- Application of momentary voltage on unlatch coil (Wht/Red & Wht/Yel) will open the contact.
- Auxiliary contact and status LED activate when 120-277 Vac is applied between Load (Org) wire and Load Neutral (Wht/Blk) wire.

LATCHING RELAY

FDL20ALRM2U

Mechanically Latching Lighting Relay, 20 Amp SPST + True Override, 24 Vac/dc Coil, Status LED, Auxiliary Output, DIN Mount



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Contact Closed: LED On = Voltage Detected on Load Wire
Maximum Pulse Length: 3 seconds
Dimensions: 2.76"H x 3.88"W x 0.78"D
Housing Detail: See **Housing K** in housing guide for dimensions
Origin: Made of US and non-US parts
Terminal Strip Input: 16-24 AWG wire
Terminal Strip Output: 12-26 AWG wire
Approvals: UL508 Recognized, CE, RoHS
Gold Flash: No
Override Switch: Yes

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 481mA @ 20Vac
 552mA @ 24Vac
 284mA @ 20Vdc
 330mA @ 24Vdc
 426mA @ 30Vdc
Latch / Unlatch:
 Min. 20 Vdc / 22 Vac
Auxiliary Contact:
 5 Amp @ 30 Vac/dc max.

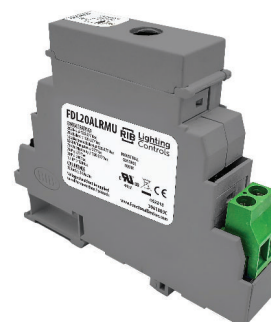
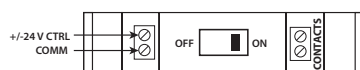
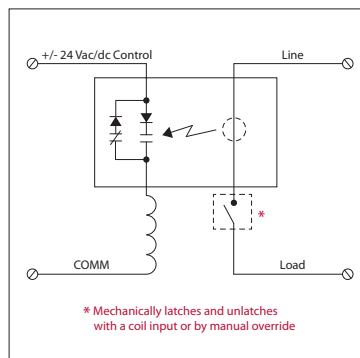
Notes:

- A Load Neutral must be connected to ensure correct operation.
- A diode structure within the coil only allows current to flow in one direction at any given time. The direction of the diode is determined by whether the relay is ON or OFF.
- Voltage should not be applied to the coil for more than 3 seconds.
- Do Not apply full wave AC Voltage to control input, have-wave rectified voltage OK

LATCHING RELAY

FDL20ALRMU

Mechanically Latching Relay, 20 Amp SPST + True Override, 24 Vac/dc Coil, DIN Mount



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Latching Relay
Expected Relay Life: 1 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 50ms
Maximum Pulse Length: 3 seconds
Dimensions: 2.76"H x 3.88"W x 0.78"D
Housing Detail: See **Housing K** in housing guide for dimensions
Origin: Made of US and non-US parts
Terminal Strip Input: 12-28 AWG wire
Terminal Strip Output: 10-24 AWG wire
Approvals: UL508, CE, RoHS
Gold Flash: No
Override Switch: Yes

Contact Ratings:
 20 Amp Resistive @ 120-277 Vac
 20 Amp Ballast @ 120-277 Vac
 16 Amp Electronic Ballast @ 120-277 Vac
 5540 Watt Tungsten @ 277 Vac
 720 VA Pilot Duty @ 120-277 Vac
 2 HP @ 277 Vac
 3 HP @ 240 Vac
 1.5 HP @ 120 Vac

Coil Current:
 481mA @ 20Vac
 552mA @ 24Vac
 284mA @ 20Vdc
 330mA @ 24Vdc
 426mA @ 30Vdc
Latch / Unlatch:
 Min. 20 Vdc / 22 Vac

Notes:

- A load drawing at least 0.3 Amps AC must be attached to the contacts to ensure correct operation.
- A diode structure within the coil only allows current to flow in one direction at any given time. The direction of the diode is determined by whether there is at least 0.3 Amps AC flowing through the relay contacts (i.e. whether the relay is ON or OFF).
- Voltage should not be applied to the coil for more than 3 seconds.
- Do Not apply full wave AC Voltage to control input, have-wave rectified voltage OK





CLOSET LIGHT CONTROLLERS



Our **Closet Light Controllers** are designed for a wide variety of applications, such as a closet door, where the **load status (ON/OFF) is determined by the opening and closing of switches**. These relays are **powered by line voltage** and can **switch loads varying from 120 Vac or 277 Vac**. With model CLC212-D15, money and energy can be saved when a door is inadvertently left open. In this event, the **light will switch off after a 15-minute delay**. If you wish for the light to remain on indefinitely after the door is open, simply open, close, and reopen the door within three seconds.

CLOSET LIGHT CONTROLLERS

LIGHT CONTROLLERS

MODEL #	UL	VOLTAGE INPUT	CONTACTS	ACCESSORY SWITCH REQUIRED [▲]	DELAY ON BREAK	OUTPUT WHEN SWITCH OPENS	SPEC PAGE
CLC106	•	120Vac	SPST	N/O *	N/A	ON	50
CLC106-NC	•	120Vac	SPST	N/O *	N/A	OFF	50
CLC212	•	120-277 Vac	SPST	N/C	N/A	OFF	51
CLC212-NC	•	120-277 Vac	SPST	N/C	N/A	ON	51
CLC212-D15	•	120-277 Vac	SPST	N/O	15 min.	ON	52
CLC212-D60	•	120-277 Vac	SPST	N/O	60 min.	ON	53

* Integral Switch Included

▲ Normal State is when no outside forces (like a magnet) are acting on it.

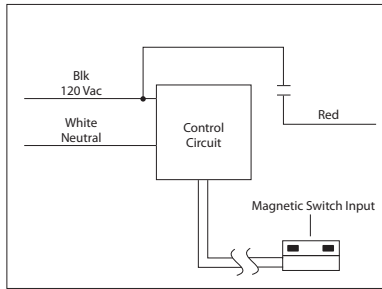
ACCESSORY SWITCHES

MODEL #	VOLTAGE MAX	CURRENT MAX	CONTACTS	MOUNT	SPEC PAGE
ACLCMAGSM	30 Vac/dc	0.2A	SPDT	Surface	50
ACLCMAGDJ	200 Vac	0.5A	SPDT	Recessed	50

LIGHT CONTROLLER

CLC106

Closet Light Controller Relay, 5 Amp SPST-N/O, 120 Vac Power, Separated Class 2 Magnetic Door Switch Input, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST-N/O Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Dimensions: 1.50"H x 2.90"W x 1.05"D
 with Retaining Clip for 1/2" Knockout
Housing Detail: See **Housing J** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600 V Rated (120 Vac Connections)
 6' Leads on Magnetic Door Switch
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 5 Amp Resistive @ 120 Vac
 5 Amp Electronic Ballast @ 120 Vac
 5 Amp Magnetic Ballast @ 120 Vac
 5 Amp Tungsten @ 120 Vac

Power Usage:
 21 mA @ 120 Vac Max.

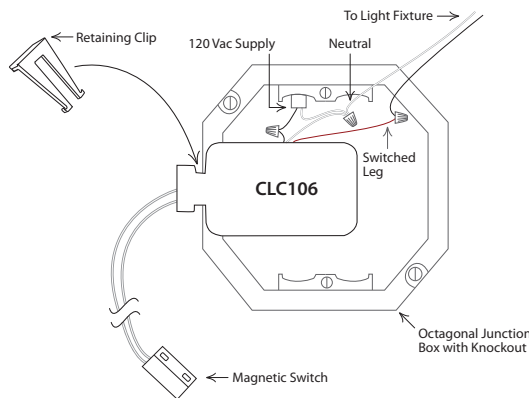
Notes:

• By default, the Magnetic Switch being closed turns the light **off**. To reverse this (Magnetic Switch being closed turns the light **on**), add "-NC" to end of model number. See table below:

Model #	Magnetic Switch Closed	Magnetic Switch Open
CLC106	Light OFF	Light ON
CLC106-NC	Light ON	Light OFF

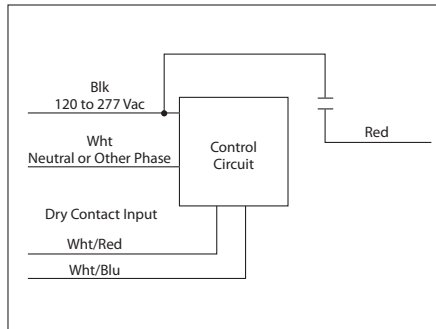
RETROFIT APPLICATIONS

- Easily fits inside junction box
- Includes magnetic door switch. When the magnet and contact are separated, the closet light turns on.
- 120 Vac operation



CLC212

Closet Light Controller Relay, 10 Amp SPST-N/O, Separated Class 2
Dry Contact Input, 120-277 Vac Power, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST-N/O Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Relay Status: LED On = Activated
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50" NPT nipple with Retaining Clip for 1/2" Knockout
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 10 Amp General Use @ 277 Vac
 1/2 HP @ 125 Vac
 1 HP @ 250 Vac
 1/4 HP @ 277 Vac
 470 VA Pilot Duty @ 125 Vac
 770 VA Pilot Duty @ 250 Vac

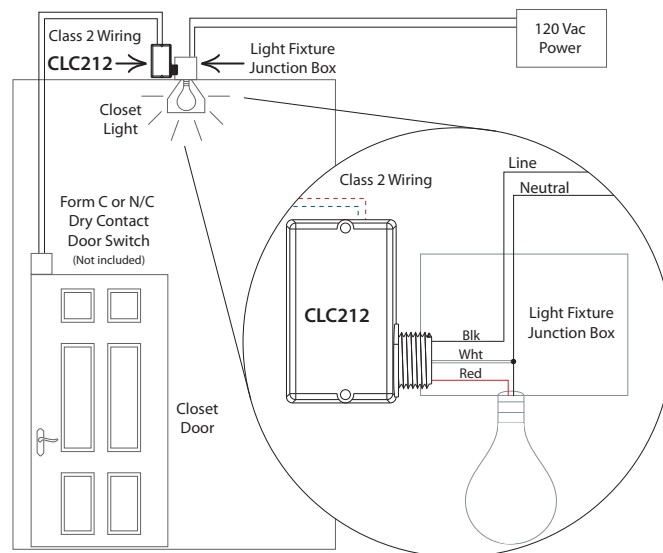
Power Usage:
 50 mA @ 240 Vac Max.

Notes:

- Dry Contact Input Operation:** Close Wht/Red wire to Wht/Blu wire to activate relay. Normally Open relay contact will close. If more than one CLC212 shares a single dry contact input, Wht/Blu must be common.
- Order Normally Closed contact by adding "-NC" to end of model number for opposite operation. Normally Closed contact will open when Wht/Red wire is closed to Wht/Blu wire.
- Switch must be Form C or N/C.
- Suggested switches: Functional Devices models ACLCMAGSM or ACLCMAGDJ

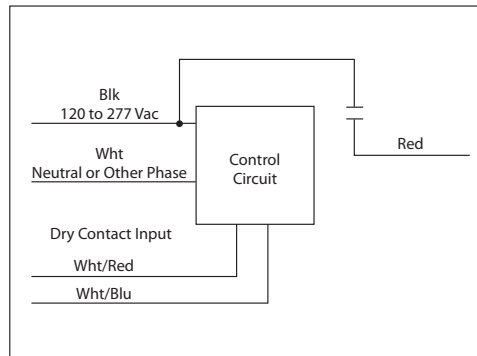
NEW CONSTRUCTION APPLICATIONS

- No stepdown transformer necessary
 - Operates on any device from 120 Vac to 277 Vac
 - Light 18 AWG wire used to control relay, instead of armored cable, but any size may be used
 - Closet light turns on when door is open
 - Customer needs to purchase Form C or N/C* door switch.
- * A Normally Closed (N/C) door switch is closed when no outside forces are acting upon it. When used in this application, the switch is open when the door is closed, and the switch closes when the door is opened, activating the controller to turn the light on.
 (Door switch not provided, see notes for details.)



CLC212-D15

Closet Light Controller Relay, 15 Minute Delay, 10 Amp SPST-N/O, Separated Class 2 Dry Contact Input, 120-277 Vac Power, NEMA 1 Housing



SPECIFICATIONS

# Relays & Contact Type:	One (1) SPST-N/O Continuous Duty Coil
Expected Relay Life:	10 million cycles minimum mechanical
Operating Temperature:	-30 to 140° F
Relay Status:	LED On = Activated
Dimensions:	1.70"H x 2.80"W x 1.50"D with 0.50" NPT nipple with Retaining Clip for 1/2" Knockout
Housing Detail:	See Housing A in housing guide for dimensions
Origin:	Made of US and non-US parts
Wires:	16", 600V Rated
Approvals:	UL Listed, UL916, C-UL, CE, RoHS
Housing Rating:	UL Accepted for Use in Plenum, NEMA 1
Gold Flash:	No
Override Switch:	No

Contact Ratings:
 10 Amp General Use @ 277 Vac
 1/2 HP @ 125 Vac
 1 HP @ 250 Vac
 1/4 HP @ 277 Vac
 470 VA Pilot Duty @ 125 Vac
 770 VA Pilot Duty @ 250 Vac

Power Usage:
 52 mA @ 277 Vac Max.

Notes:

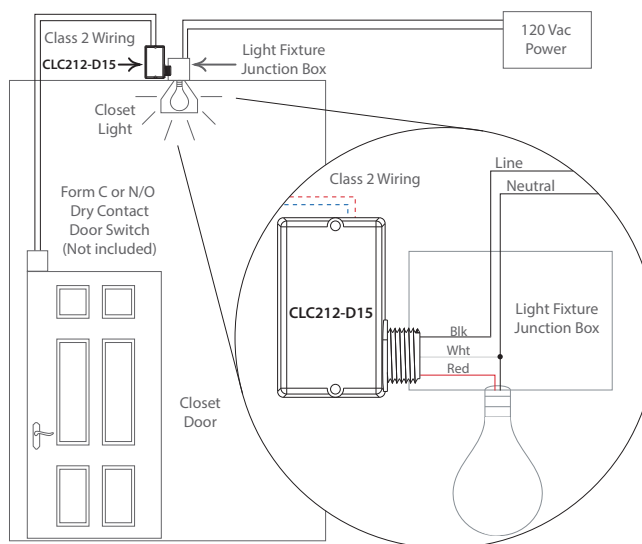
- Dry Contact Input Operation: Open Wht/Red wire and Wht/Blu wire to activate relay. Relay contact will close. If more than one CLC212-D15 share a single dry contact input, Wht/Blu must be common.
- For 60 minute delay, order model CLC212-D60.
- Suggested switches: Functional Devices models ACLCMAGSM or ACLCMAGDJ

CLOSET LIGHT CONTROLLERS

With model CLC212-D15, money and energy can be saved when a door is inadvertently left open. In the application below, the closet light will turn off after a 15-minute delay. If you wish for the light to remain on indefinitely after the door is open, simply open, close, and reopen the door within three seconds.

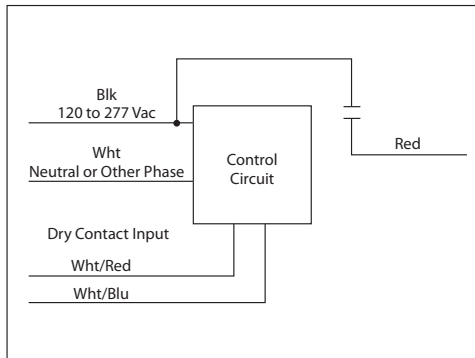
NEW CONSTRUCTION APPLICATIONS

- No stepdown transformer necessary
 - 15 minute delay when door is left open
 - Operates on any device from 120 Vac to 277 Vac
 - Light 18 AWG wire used to control relay, instead of armored cable, but any size may be used
 - Closet light turns on when door is open
 - Customer needs to purchase Form C or N/O* door switch
- * A Normally Open (N/O) door switch is open when no outside forces are acting upon it. When used in this application, the switch is closed when the door is closed, and the switch opens when the door is opened, activating the controller to turn the light on.
(Door switch not provided, see notes for details.)



CLC212-D60

Closet Light Controller Relay, 60 Minute Delay, 10 Amp SPST-N/O, Separated Class 2 Dry Contact Input, 120-277 Vac Power, NEMA 1 Housing



SPECIFICATIONS

Relays & Contact Type: One (1) SPST-N/O Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Relay Status: LED On = Activated
Dimensions: 1.70"H x 2.80"W x 1.50"D with 0.50"NPT nipple with Retaining Clip for 1/2" Knockout
Housing Detail: See **Housing A** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No

Contact Ratings:
 10 Amp General Use @ 277 Vac
 1/2 HP @ 125 Vac
 1 HP @ 250 Vac
 1/4 HP @ 277 Vac
 470 VA Pilot Duty @ 125 Vac
 770 VA Pilot Duty @ 250 Vac
Power Usage:
 52 mA @ 277 Vac Max.

Notes:

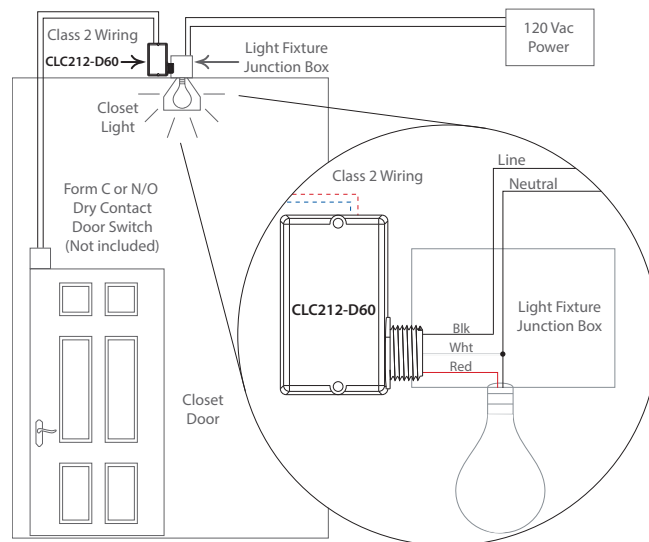
- Dry Contact Input Operation:** Open Wht/Red wire and Wht/Blu wire to activate relay. Relay contact will close. If more than one CLC212-D60 share a single dry contact input, Wht/Blu must be common.
- For 15 minute delay, order model CLC212-D15.
- Suggested switches: Functional Devices models ACLCMAGSM or ACLCMAGDJ

With model CLC212-D60, money and energy can be saved when a door is inadvertently left open. In the application below, the closet light will turn off after a 60-minute delay. If you wish for the light to remain on indefinitely after the door is open, simply open, close, and reopen the door within three seconds.

NEW CONSTRUCTION APPLICATIONS

- No stepdown transformer necessary
- 60 minute delay when door is left open
- Operates on any device from 120 Vac to 277 Vac
- Light 18 AWG wire used to control relay, instead of armored cable, but any size may be used
- Closet light turns on when door is open
- Customer needs to purchase Form C or N/O* door switch

* A Normally Open (N/O) door switch is open when no outside forces are acting upon it. When used in this application, the switch is closed when the door is closed, and the switch opens when the door is opened, activating the controller to turn the light on. (Door switch not provided, see notes for details.)

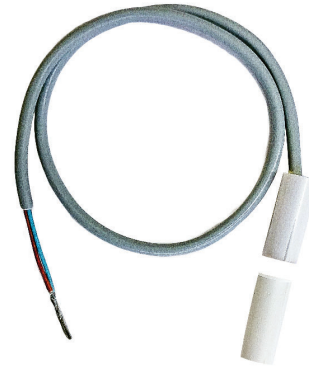
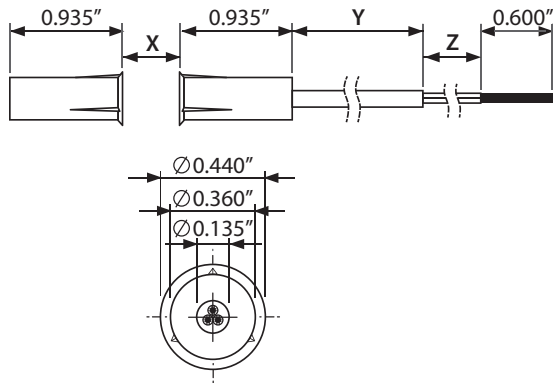


ACCESSORY SWITCHES

MAGNETIC SWITCH FOR CLOSET LIGHT CONTROLLERS

ACLCMAGDJ

Recessed Mount Magnetic Switch, Form C (SPDT)



SPECIFICATIONS

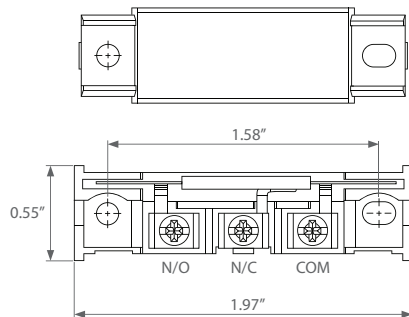
Switching Voltage (Max): 200 Vdc
Switching Current (Max): 0.5 Amp
Operating Gap: 0 - 0.375" (Dimension X)
Dimension Y: Approx. 12"
Dimension Z: Approx. 1"

Wire Color	Normal State	Door Closed	Door Open
Brown	Common	Brown	Brown
Black	N/O	Black	Black
Blue	N/C	Blue	Blue

MAGNETIC SWITCH FOR CLOSET LIGHT CONTROLLERS

ACLCMAGSM

Surface Mount Magnetic Switch, Form C (SPDT)



MAGNET
(shown without cover)



SWITCH
(shown without cover)



(shown with covers)

SPECIFICATIONS

Switching Voltage (Max): 30 Vac/dc
Switching Current (Max): 0.2 Amp
Operating Gap: 0 - 1.125"

Terminal Normal State	Door Closed	Door Open
Common	COM	COM
N/O	N/O	N/O
N/C	N/C	N/C

TRANSFORMERS

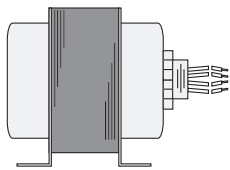


TRANSFORMERS

MODEL #	UL	VA RATING	STYLE	OVER CURRENT PROTECTION	CLASS 2	PRIMARY VOLTAGE (VAC)	SEC. VOLTAGE (VAC)	FOOT MOUNT	HUBS	L	W	H	A	B	C	D	SPEC PAGE
LT20-24	•	20VA	4	Inherent	•	277/240/208/120	24	•	2 Threaded	2.310"	1.890"	2.625"	1.540"	1.625"	1.000"	2.100"	56
LT50-120	•	50VA	5	Circuit Brkr.		480/277/240/208	120	•	2 Threaded	3.440"	2.510"	3.012"	1.932"	1.945"	1.346"	2.523"	56
LT150-120	•	150VA	12	Circuit Brkr.		480/277/240/208	120	•	2 Threaded	4.283"	3.786"	3.161"	3.211"	3.148"	2.116"	4.177"	57
LTA100	•	100VA	1			277	120	•	1 Threaded	6.760"	1.610"	1.500"	6.040"	1.310"	5.554"	6.750"	57

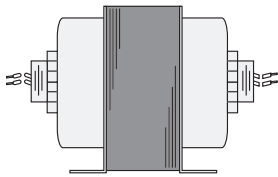
UL = UL Listed - see data sheet for specific Listing

STYLE GUIDE



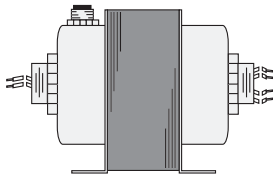
STYLE 1

Single Hub
& Foot Mount



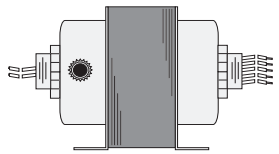
STYLE 4

Dual Hub
& Foot Mount



STYLE 5

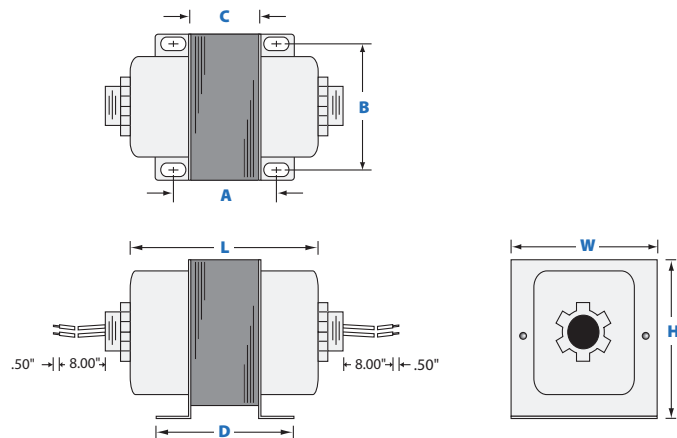
Dual Hub
& Foot Mount
with Circuit Breaker



STYLE 12

Dual Hub
& Foot Mount
with Circuit Breaker

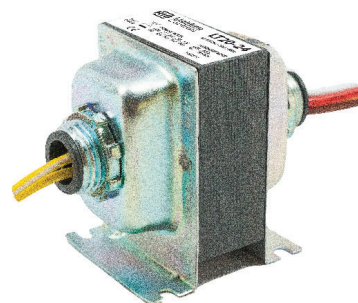
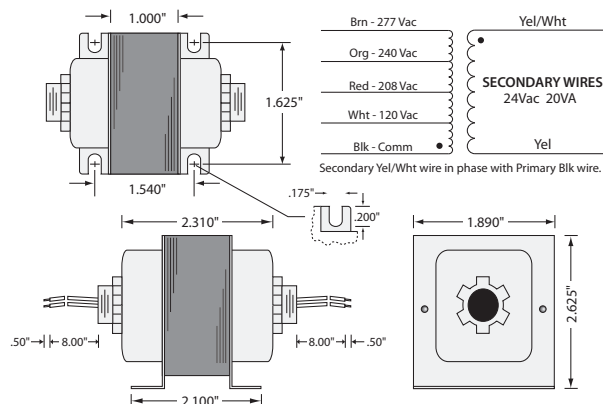
DIMENSIONS: SEE CHART



TRANSFORMERS

LT20-24

Transformer, 20VA, 277/240/208/120 to 24 Vac, Foot and Dual Threaded Hub Mount



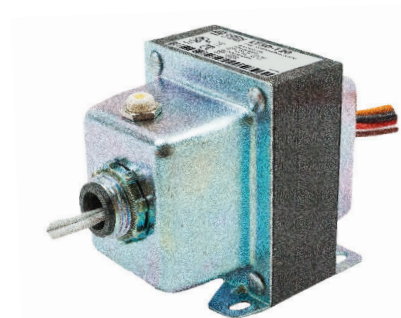
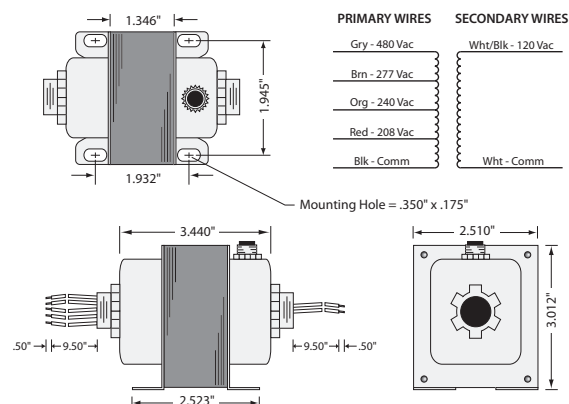
SPECIFICATIONS

- VA Rating:** 20
- Frequency:** 50/60 Hz
- Mounting:** Foot & Dual Threaded Hubs
- Over Current Protection:** Inherently Limited
- Dimensions:** 2.625" H x 1.890" W x 2.310" D (w/ .500" NPT Hubs)
- Wire Length:** 8" Typical w/ .5" Strip
- Operating Temperature:** -30 to 140° F
- MTBF:** 100,000 Hours @ 77° F
- Construction:** Split-Bobbin
- Approvals:** Class 2 UL5085-3 Listed, C-UL, CE, RoHS

TRANSFORMER

LT50-120

Transformer, 50VA, 480/277/240/208 to 120 Vac, Circuit Breaker, Foot and Dual Threaded Hub Mount



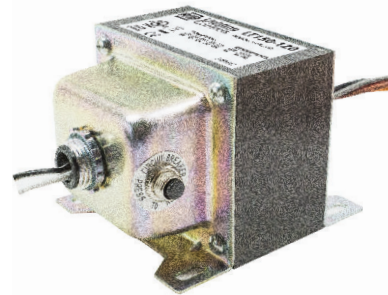
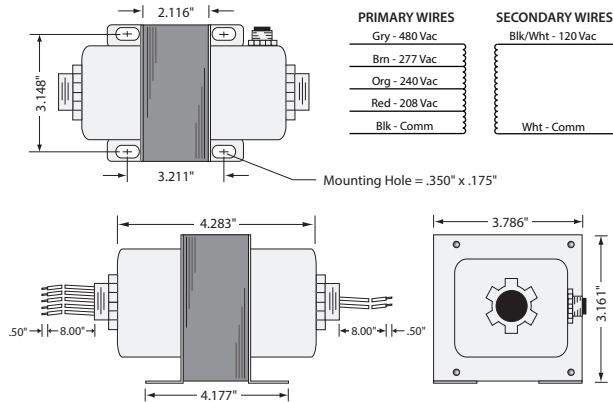
SPECIFICATIONS

- VA Rating:** 50
- Frequency:** 50/60 Hz
- Mounting:** Foot & Dual Threaded Hubs
- Over Current Protection:** Circuit Breaker
- Dimensions:** 3.012" H x 2.510" W x 3.440" D (w/ .500" NPT Hubs)
- Wire Length:** 9.5" Typical w/ .5" Strip
- Operating Temperature:** -30 to 140° F
- MTBF:** 100,000 Hours @ 77° F
- Construction:** Split-Bobbin
- Approvals:** UL5085-2 Listed General Purpose, US / Canada, CE, RoHS

TRANSFORMER

LT150-120

Transformer, 150VA 480/277/240/208 to 120 Vac, Foot and Dual Threaded Hub Mount, Circuit Breaker



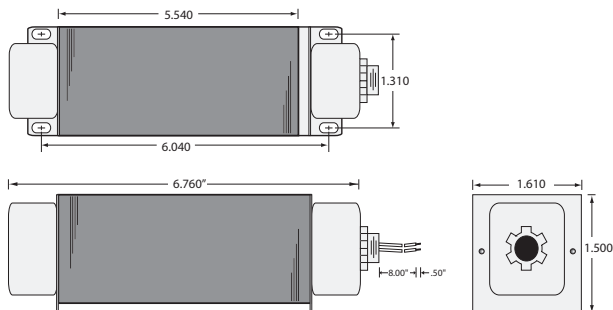
SPECIFICATIONS

- VA Rating:** 150
- Frequency:** 50/60 Hz
- Mounting:** Foot & Dual Threaded Hub
- Over Current Protection:** Circuit Breaker
- Dimensions:** 3.161" H x 3.786" W x 4.283" D (w/ .500" NPT Hubs)
- Wire Length:** 8" Typical w/ .5" Strip
- Operating Temperature:** -30 to 140° F
- MTBF:** 100,000 Hours @ 77° F
- Construction:** Split-Bobbin
- Approvals:** UL5085-2 Listed General Purpose, C-UL, CE, RoHS

TRANSFORMER

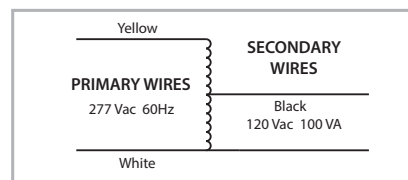
LTA100

Autotransformer 100 VA, 277 to 120 Vac, Foot and Single Threaded Hub Mount



SPECIFICATIONS

- VA Rating:** 100VA
- Frequency:** 50/60 Hz
- Mounting:** Foot & Single Threaded Hub
- Dimensions:** 1.50" H x 1.61" W x 6.76" D (w/ .500" NPT Hub)
- Wire Length:** 8" Typical w/ .5" Strip
- Operating Temperature:** -30 to 140° F
- MTBF:** 100,000 Hours @ 77° F
- Construction:** Shared Common
- Weight:** 3.984 lbs.
- Approvals:** UL5085-2 Listed, C-UL, CE, RoHS



White wire shared between primary and secondary

TRANSFORMERS



TRANSFORMERS

UNIVERSAL POWER PACK & SENSORS

Our **Universal Voltage Power Pack and Relay** combination provides **low voltage control** for your **lighting load applications**. This device can be used with our **Occupancy/Vacancy Sensors** or other control devices to provide an easy and reliable solution.



Universal Power Pack & Relay
LR21BPP5

- Universal voltage: 120-277 Vac; 50-60Hz
- 24 Vdc, UL Class 2 rated output
- SPDT relay with momentary switch
- Load ratings up to 20 Amp
- Can be used with our occupancy/vacancy sensors or other control devices



**Daylight Harvesting
On/Off Photocell**
LSDHPDC



**Large Motion 360°
PIR, Acoustic, Low Voltage**
LSDUALC2



**Small Motion 360°
PIR, Low Voltage**
LSPIRC

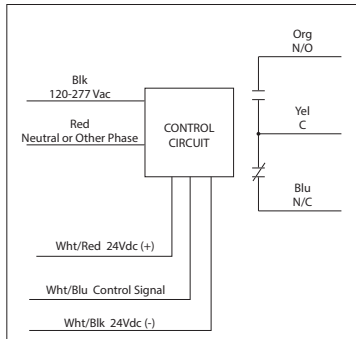
POWER PACK
& SENSORS

UNIVERSAL POWER PACKS

MODEL #	DESCRIPTION	SPEC PAGE
LR21BPP5	Universal Voltage Power Pack, 120-277 Vac Input, 24 Vdc Class 2 Output, 20 Amp SPDT relay with Momentary Switch	60
LSDHPDC	Daylight Harvesting & On/Off Photocell, Ceiling Mount - Low Voltage, 0-10V Dimming	61
LSDUALC2	Large Motion 360° 2000 SF Ceiling Sensor - PIR, Acoustic, Low Voltage	63
LSPIRC	Small Motion 360° Ceiling Sensor - PIR, Low Voltage	64

LR21BPP5

Universal Power Pack, 20 Amp SPDT + Momentary Push Button Override Switch, 120-277 Vac
Universal Voltage Power Input, 5 Watt Class 2 Output, NEMA 1 Housing

**SPECIFICATIONS**

Relays & Contact Type: One (1) SPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 104° F
Humidity Range: 5 to 95% (noncondensing)
Operate Time: 1.8 Seconds
Relay Status: Red LED On = Activated
Power Status: Green LED On = 24Vdc out
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.75" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Momentary Override: Yes

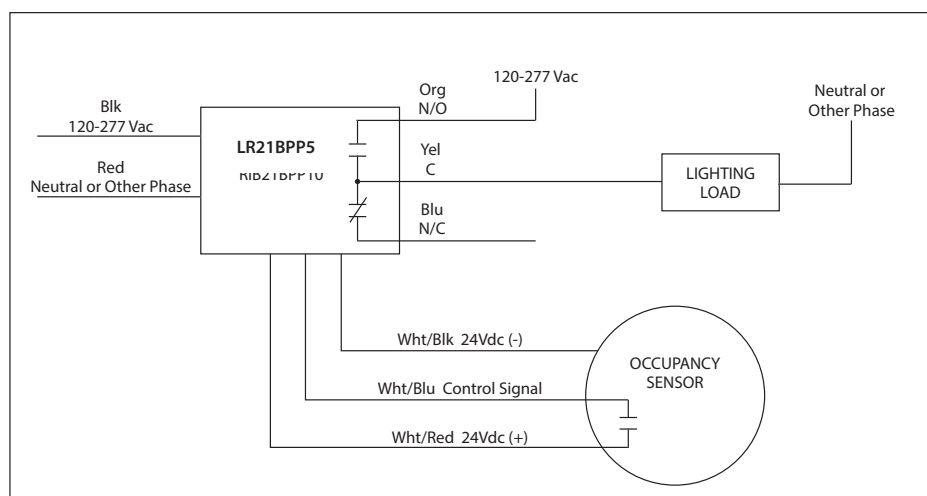
Contact Ratings:
 20 Amp Resistive @ 277 Vac
 5 Amp Resistive @ 480 Vac
 20 Amp Ballast @ 277 Vac
 16 Amp Electronic Ballast @ 277 Vac (N/O)
 10 Amp Tungsten @ 120 Vac (N/O)
 770 VA Pilot Duty @ 120 Vac (N/C)
 1100 VA Pilot Duty @ 277 Vac (N/C)
 2 HP @ 277 Vac
 1 HP @ 120 Vac

Power Input:
 250 mA @ 120 -277 Vac

DC Output:
 24 Vdc @ 210mA, Class 2

OCCUPANCY SENSOR APPLICATION

The LR21BPP5 can be used to provide power to an occupancy sensor and control a lighting load based on the status of the occupancy sensor. The white/red and white/black wires can be used to power an occupancy sensor with 24Vdc. When the white/blue wire is connected to the white/red wire through the occupancy sensor contact, the relay will activate, switching the lighting load On or Off.



LSDHPDC

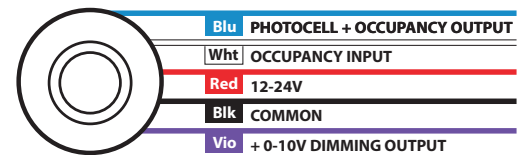
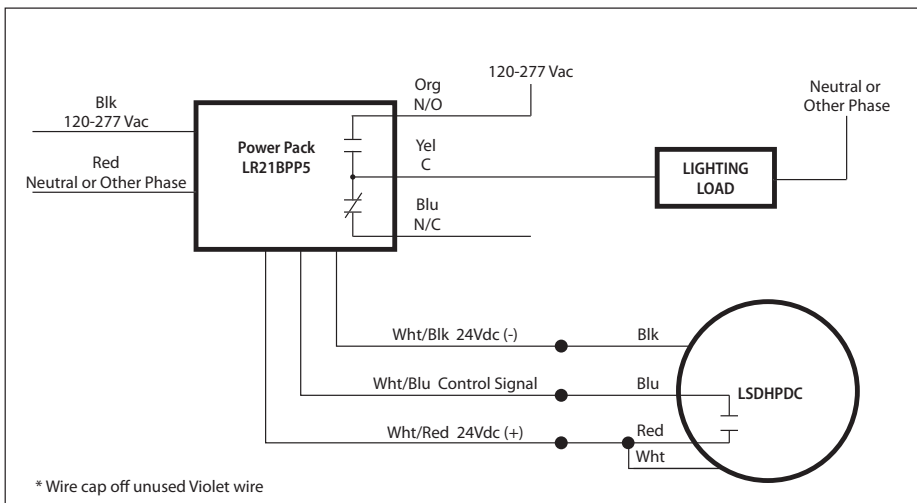
Daylight Harvesting Sensor and ON/OFF Photocell, Ceiling Mount, 0-10 V Dimming

**SPECIFICATIONS**

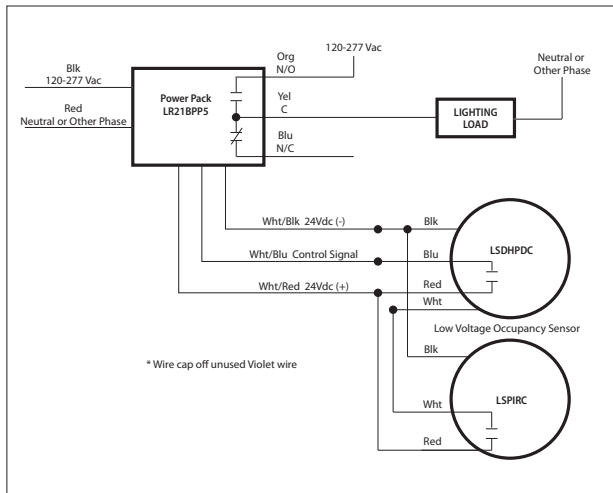
- Operating Voltage:** 12-24Vac/dc
Current Draw: 2mA
Dimming Capacity: 50mA
Dimming Compatibility: 0-10Vdc Ballasts or Drivers Compliant with IEC 60929 Annex E.2
Photocell Output: Logic High Vdc
Recommended Power Pack: LR21BPP5
Dimensions: 4.00" Diameter x 1.25" Height (10.16 cm x 3.17 cm)
Environment: Indoor use only
 32° to 122° F (0° to 50° C)
 0-95% relative humidity (non-condensing)
Code Compliance: Sensors can be used to meet ASHRAE 90.1, IECC, & Title 24 energy code requirements

**Notes:**

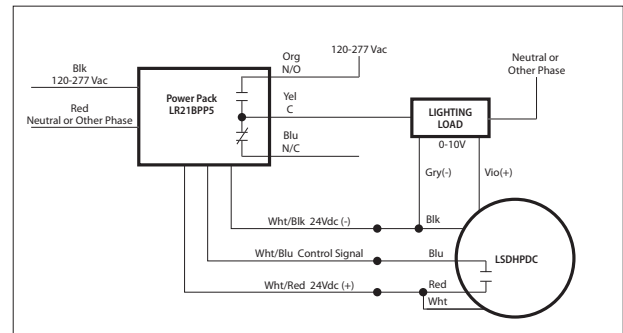
- There are two types of photocell operation; ON/OFF PHOTOCELL CONTROL and DAYLIGHT HARVESTING CONTROL (see descriptions below). A photocell sensor can be used by itself (e.g., STANDALONE operation) or together with low voltage occupancy sensors. Only one photocell sensor should be configured to control any particular group of lights.
- ON/OFF Photocell Control:** Recommended for public spaces (hallways, entryways, etc) where fully switching lighting off/on will not be noticed. Photocell output (blue wire) will turn lights off if ambient light levels surpass threshold and back on if level drops. To prevent cycling of lights back on after lighting is turned off, a "deadband" level equal to the measured level of light being controlled is continuously maintained in the unit. For lighting to turn off the ambient light level must be higher than the sum of the setpoint and the deadband.
- Daylight Harvesting Control:** Recommended for spaces where it is important to not distract occupants (e.g., offices, classrooms). Unit will gradually dim lighting in order to maximize energy savings while maintaining desired overall lighting level. After dimming to low trim level, unit can optionally be enabled to turn off lights completely
- For installation instructions: https://www.functionaldevices.com/downloads/bulletins/B2871_393311.pdf

BASIC WIRING**STANDALONE ON/OFF PHOTOCELL APPLICATION**

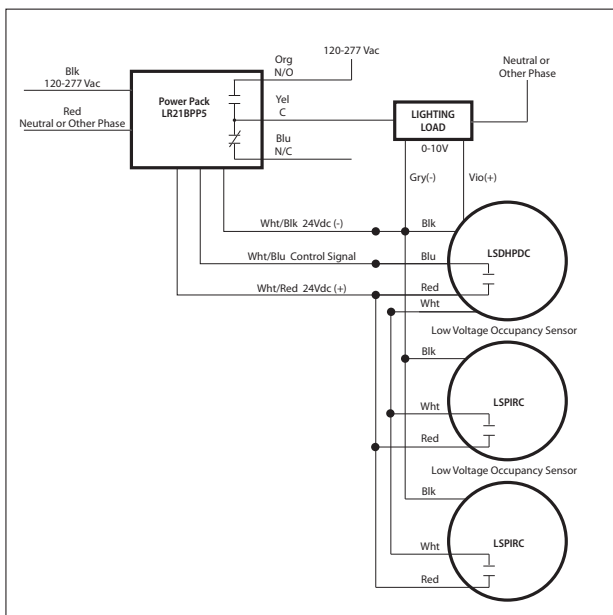
ON/OFF PHOTOCELL + OCCUPANCY APPLICATION



STANDALONE DAYLIGHT HARVESTING APPLICATION



DAYLIGHT HARVESTING + OCCUPANCY SENSOR(S) APPLICATION



LSDUALC2

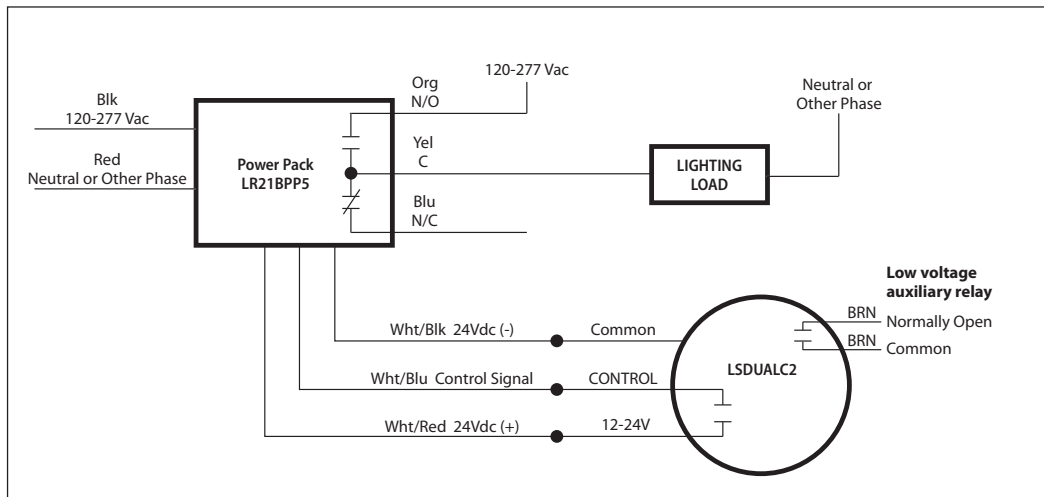
Occupancy/Vacancy Sensor, Ceiling Mount, PIR/Acoustic, Auxiliary Relay

**SPECIFICATIONS****Operation Voltage:** 12-24 Vac/dc**Current Draw:** 16mA**Output:** Logic High Vdc (Occupied Mode)**Recommended Power Pack:** LR21BPP5**Dimming Compatibility:** 0-10 Vdc Ballasts or Drivers Compliant with IEC 60929 Annex E.2**Auxiliary Relay Type:** One (1) SPST**Auxiliary Relay Contact Ratings:** 1A @ 30 Vac/dc**Operating Temperature:** 32 to 122°F (0 to 50°C)**Humidity Range:** 0 to 95% (noncondensing)**Dimensions:** 4.00" Diameter x 1.25" Height (10.16 x 3.17 cm)**Time Delay:** 30 sec to 30 min**Code Compliance:** Sensors can be used to meet ASHRAE 90.1, IECC & Title 24 energy code requirement**Notes:**

- **Acoustic Detection:** Acoustic detection covers the same area as PIR. A PIR event is required to enable Acoustic detection. Sounds triggering the Acoustic detection will reset the time delay, however, periodic PIR detection is still needed to keep the lights on. Sensor also filters out any non-occupant noise and keeps Acoustic detection active for 15 seconds after time delay.
- **Auxiliary Relay:** By default, relay closes when occupancy is detected. Relay can be configured to open upon detection.
- For installation instructions: https://www.functionaldevices.com/downloads/bulletins/B3153_393330.pdf

OCCUPANCY SENSOR APPLICATION

The LR21BPP5 Power Pack can be used to provide power to the LSDUALC2 and control a lighting load based on the status of the LSDUALC2. The white/red and white/black wires of the LR21BPP5 provide 24Vdc power to the +/-24V wires of the LSDUALC2. When occupancy is detected, the LSDUALC2 will bring the control signal wire to a logic high, switching the lighting load On or Off. See installation instructions for setting modes of operation.



OCCUPANCY/VACANCY SENSOR

LSPIRC

Occupancy/Vacancy Sensor, Ceiling Mount, PIR



SPECIFICATIONS

Motion Sensing Range: 500 ft² (refer to coverage diagrams in bulletin B2872)

Time Delay: 30 Seconds to 30 Minutes (10 Minutes default)

Mounting Height: 8-15 feet recommended

Operating Voltage: 12-24Vac/dc

Current Draw: 2mA

Output: Logic High Vdc (Occupied Mode)

Recommended Power Pack: LR21BPP5

Dimensions: 4.00" Diameter x 1.25" Height (10.16 cm x 3.17 cm)

Environment: Indoor use only

32° to 122° F (0° to 50° C)

0-95% relative humidity (non-condensing)

Code Compliance: Sensors can be used to meet ASHRAE 90.1, IECC, & Title 24 energy code requirements

Notes:

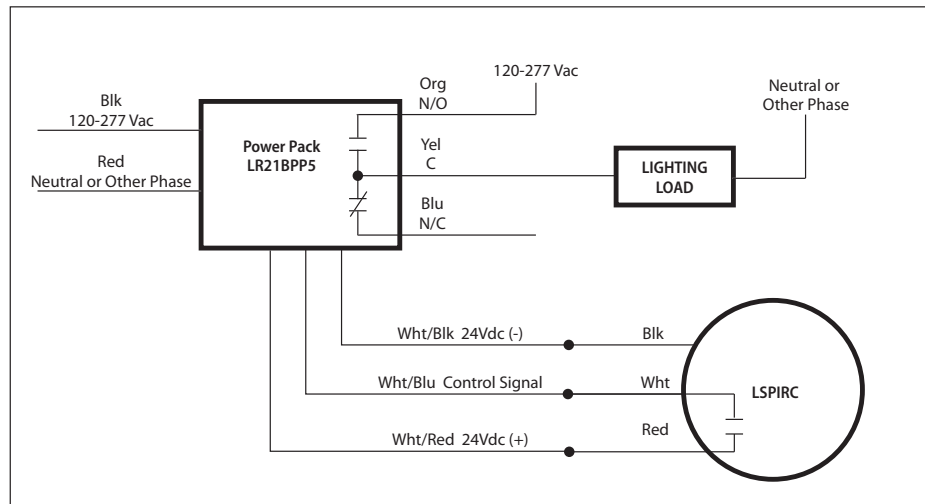
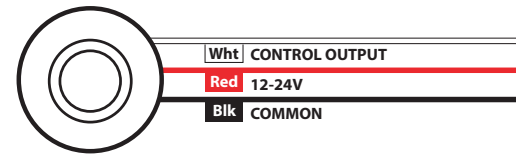
- For installation instructions: https://www.functionaldevices.com/downloads/bulletins/B2872_393312.pdf
- Occupancy Sensor Functionality only with LR21BPP5. Vacancy incompatible.



OCCUPANCY SENSOR APPLICATION

The LR21BPP5 Power Pack can be used to provide power to the LSPIRC and control a lighting load based on the status of the LSPIRC. The white/red and white/black wires of the LR21BPP5 provide 24Vdc power to the red and black wires of the LSPIRC. When occupancy is detected, the LSPIRC will bring the control signal wire to a logic high, switching the lighting load On or Off.

BASIC WIRING







HVAC & LIGHTING ENERGY MANAGEMENT

The diagram illustrates a hotel room with various EnOcean energy management components. A central chandelier is shown. Callouts point to different areas: a Gateway/BMS near the ceiling, an Occupancy Sensor near the chandelier, a Key Card Switch near a door, Position Sensors near a window, and Batteryless Wireless Switches near a lamp. A central box highlights the EnOcean logo and the 'YOUR PAYBACK/ROI' section.

Gateway/BMS

Occupancy Sensor
adjusts temperature and turns off lights when a room is not in use

Key Card Switch
controls access to a room and turns on heating and lighting when entering a room

Position Sensors
set back HVAC when windows are open

Batteryless Wireless Switches
control lighting

enocean®

YOUR PAYBACK/ROI

- 70% COST SAVINGS IN RETROFITS
- 40% ENERGY SAVINGS
- UNLIMITED FLEXIBILITY

902 MHz • Maintenance-free

Flexibility of applications • Time saving

Cost savings in installation, renovation, and energy usage

Many hotels keep their rooms at a comfortable temperature for the duration of their guests' stays – whether the guests are in or out of their room. With guest comfort as a priority, hotels and motels typically use almost 40 percent of their electricity on heating and cooling rooms, even though studies show that most sold rooms are unoccupied for 12 or more hours a day. Used correctly, the right controls could offer significant energy savings without compromising the comfort of guests.

Information from: EnOcean® Alliance & ENERGY STAR Building Upgrade Manual

WIRELESS DEVICES



EnOcean® Enabled Wireless RIB® Relay Receivers & Transceivers work in conjunction with many 902 MHz EnOcean® enabled transmitters.

Wireless wall switches, occupancy sensors, thermostats, key card switches, and patio & door switches are all devices which can activate the **RIB® Wireless Control Relays** by using EnOcean's "energy harvesting" technology. Energy harvesting refers to the process by which energy is captured and stored, then used to transmit a wireless signal, which in turn is received by the RIB® Wireless Relay.

WIRELESS CONTROL RELAYS

		COIL VOLTAGE				CONTACT RATINGS										
MODEL #	Ⓛ	AC/DC	AC	RELAYS	CONTACTS	RESISTIVE	MOTOR	BALLAST	TUNGSTEN	PILOT DUTY	FREQUENCY	REPEAT FUNCTION	DRY CONTACT INPUT	BALLAST SIZE ENCLOSURE	SPEC PAGE	
FDLR05B	•		120	1	SPST-N/O			5 A	5 A		902 MHz	•		•	68	
FDLR05F	•		208-277	1	SPST-N/O			5 A	5 A		902 MHz	•		•	68	
FDLR20A	•	24		1	SPDT	20 A	2 HP	20 A	10 A	1110 VA	902 MHz	•	•		69	
FDLR20B	•		120	1	SPDT	20 A	2 HP	20 A	10 A	1110 VA	902 MHz	•	•		69	
FDLR20C	•		208	1	SPDT	20 A	2 HP	20 A	10 A	1110 VA	902 MHz	•	•		69	
FDLR20D	•		240	1	SPDT	20 A	2 HP	20 A	10 A	1110 VA	902 MHz	•	•		69	
FDLR20E	•		277	1	SPDT	20 A	2 HP	20 A	10 A	1110 VA	902 MHz	•	•		69	
FDLR20GV	•		120-277	1	SPDT	20 A	2 HP	20 A	10 A	1110 VA	902 MHz	•			70	
FDLR05BPD	•		120	0		5A		5A	5A		902 MHz	•			71	

UL = UL Listed; UL916 Energy Management

WIRELESS TRANSMITTERS

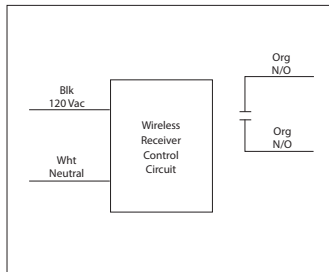
MODEL #	DESCRIPTION	POWER INPUT		FREQUENCY	COLOR	SPEC PAGE
		ENOCEAN® ENERGY HARVESTING				
FDLTKEY	Wireless Keycard Transmitter Switch	Self-Powered	•	902 MHz	White	72
FDLT20A	Wireless Solar Door/Window Sensor	Self-Powered	•	902 MHz	White	72
FDLT20B	Wireless Rocker Switch, Transmitter, & Cover Plate	Self-Powered	•	902 MHz	White	73
FDLTVC	Wireless Occupancy/Vancancy Sensor	Self-Powered	•	902 MHz	White	73
FDLT20V	Wireless Occupancy/Vancancy Sensor	Self-Powered	•	902 MHz	White	74

WIRELESS DEVICES

5 AMP WIRELESS CONTROL RELAY

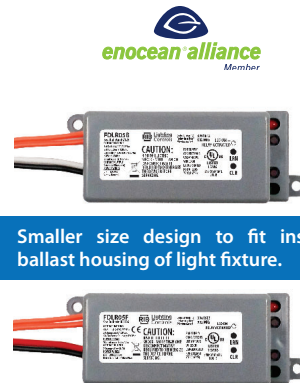
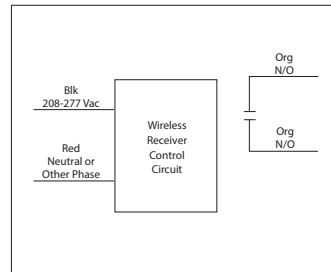
FDLR05B

EnOcean 902 MHz Wireless Relay, Receiver/ Repeater, 5 Amp SPST-N/O, 120 Vac Power Input, NEMA 1 Housing



FDLR05F

EnOcean 902 MHz Wireless Relay, Receiver/ Repeater, 5 Amp SPST-N/O, 208-277 Vac Power Input, NEMA 1 Housing



Smaller size design to fit inside ballast housing of light fixture.



SPECIFICATIONS

Relays & Contact Type: One (1) SPST Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Red LED: Relay Status / Learn Mode Status (Flashing)
Dimensions: 1.68"H x 4.58"W x 1.18"D
Housing Detail: See **Housing E** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, RoHS
Agency Compliance: FCCID: SZV-TCM320U
 IC: 5713A-TCM320U
Gold Flash: No
Override Switch: No
Frequency: 902 MHz
Receiver Sensitivity: -93 dBm typical
Conducted Power: 5 mW typical
Built-in Switch Modes: Alarm, Repeater, Delay, Rocker, Momentary, and Toggle

Contact Ratings:
 5 Amp Ballast @ 120/277 Vac
 5 Amp Tungsten @ 120 Vac
 5 Amp Electronic Ballast @ 120 Vac

Power Input Ratings:
 75 mA @ 120 Vac ; 60 Hz (FDLR05B)
 100 mA @ 208-277 Vac ; 60 Hz (FDLR05F)

Notes:

- Compatible with EnOcean® 902 MHz Switches/Transmitters.
- Typical range: 50-150 ft.
- Open area transmission could be farther. Consult factory for more information.
- Repeater function only rebroadcasts original EnOcean® transmission. Up to two repeaters can be used.
- Version 1.5 firmware or later implements Functional Devices, Inc.'s EnOcean® Manufacturer ID of 0x055.
- For setup instructions, see website for FDLR Series Application Manual: https://www.functionaldevices.com/wp-content/uploads/2021/12/B2126_393251.pdf
- EEP A5-30-02

20 AMP WIRELESS CONTROL RELAY

FDLR20A

EnOcean 902 MHz Wireless Relay, Transceiver/
Repeater, 20 Amp SPDT, 24 Vac/dc Power Input,
Dry Contact Input, NEMA 1 Housing

FDLR20B

EnOcean 902 MHz Wireless Relay, Transceiver/
Repeater, 20 Amp SPDT, 120 Vac Power Input,
Dry Contact Input, NEMA 1 Housing

FDLR20C

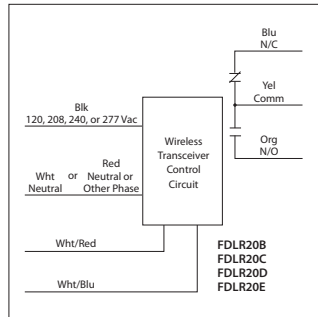
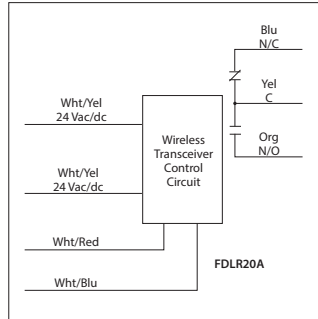
EnOcean 902 MHz Wireless Relay, Transceiver/
Repeater, 20 Amp SPDT, 208 Vac Power Input,
Dry Contact Input, NEMA 1 Housing

FDLR20D

EnOcean 902 MHz Wireless Relay, Transceiver/
Repeater, 20 Amp SPDT, 240 Vac Power Input,
Dry Contact Input, NEMA 1 Housing

FDLR20E

EnOcean 902 MHz Wireless Relay, Transceiver/
Repeater, 20 Amp SPDT, 277 Vac Power Input,
Dry Contact Input, NEMA 1 Housing



Relay has built-in repeater function.
Relay receives signal from wireless
switch transmitter and rebroadcasts
the signal to the next relay receiver.



SPECIFICATIONS

Relays & Contact Type: One (1) SPDT Continuous Duty Coil
Expected Relay Life: 10 million cycles minimum mechanical
Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Red LED: Relay Status / Learn Mode Status (Flashing)
Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing B** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V Rated
Approvals: UL Listed, UL916, C-UL, RoHS
Agency Compliance: FCCID: SZV-TCM320U
 IC: 5713A-TCM320U
Housing Rating: UL Accepted for Use in Plenum, NEMA 1
Gold Flash: No
Override Switch: No
Frequency: 902 MHz
Receiver Sensitivity: -93 dBm typical
Conducted Power: 5 mW typical
Built-in Switch Modes: Alarm, Repeater, Delay, Rocker, Momentary, and Toggle

Contact Ratings:
 20 Amp Resistive @ 277 Vac
 20 Amp Ballast @ 277 Vac
 16 Amp Electronic Ballast @ 277 Vac (N/O)
 10 Amp Tungsten @ 120 Vac (N/O)
 770 VA Pilot Duty @ 120 Vac
 1,110 VA Pilot Duty @ 277 Vac
 2 HP @ 277 Vac
 1 HP @ 120 Vac

Power Input Ratings:
 139 mA @ 24 Vac (FDLR20A)
 69 mA @ 24 Vdc (FDLR20A)
 73 mA @ 120 Vac ; 60 Hz (FDLR20B)
 80 mA @ 208 Vac ; 60 Hz (FDLR20C)
 80 mA @ 240 Vac ; 60 Hz (FDLR20D)
 80 mA @ 277 Vac ; 60 Hz (FDLR20E)

Notes:

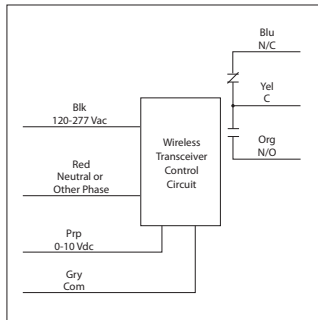
- Compatible with EnOcean® 902 MHz Switches/Transmitters.
- Typical range: 50-150 ft.
- Open area transmission could be farther. Consult factory for more information.
- Repeater function only rebroadcasts original EnOcean® transmission. Up to two repeaters can be used.
- Version 1.5 firmware or later implements Functional Devices, Inc.'s EnOcean® Manufacturer ID of 0x055.
- For setup instructions, see website for FDLR Series Application Manual: https://www.functionaldevices.com/wp-content/uploads/2021/12/B2126_393251.pdf
- EEP A5-30-02

WIRELESS
DEVICES

20 AMP WIRELESS CONTROL RELAY

FDLR20GV

EnOcean 902 MHz Wireless Relay, Transceiver / Repeater, 20 Amp SPDT,
120-277 Vac Power Input, 0-10 Vdc Analog Output, NEMA 1 Housing



Relay has built-in repeater function. Relay receives signal from wireless switch transmitter and rebroadcasts the signal to the next relay receiver.



SPECIFICATIONS

Relays & Contact Type: One (1) SPDT Continuous Duty Coil

Expected Relay Life: 10 million cycles minimum mechanical

Operating Temperature: -30 to 140° F

Humidity Range: 5 to 95% (noncondensing)

Red LED: Relay Status / Learn Mode Status (Flashing)

Dimensions: 2.39"H x 3.31"W x 1.81"D with 0.75"NPT nipple

Housing Detail: See **Housing B** in housing guide for dimensions

Origin: Made of US and non-US parts

Wires: 16", 600V Rated

Approvals: UL Listed, UL916, C-UL, RoHS,

Agency Compliance: FCCID: SZV-TCM320U

IC: 5713A-TCM320U

Housing Rating: UL Accepted for Use in Plenum, NEMA 1

Gold Flash: No

Override Switch: No

Frequency: 902 MHz

Receiver Sensitivity: -93 dBm typical

Conducted Power: 5 mW typical

Built-in Switch Modes: Alarm, Repeater, Delay, Dimming, Rocker, Momentary, and Toggle

Contact Ratings:

20 Amp Resistive @ 277 Vac

20 Amp Ballast @ 277 Vac (N/O)

10 Amp Ballast @ 277 Vac (N/C)

16 Amp Electronic Ballast @ 277 Vac (N/O)

10 Amp Tungsten @ 120 Vac (N/O)

770 VA Pilot Duty @ 120 Vac

1,110 VA Pilot Duty @ 277 Vac

2 HP @ 277 Vac

1 HP @ 120 Vac

Power Input Ratings:

39 mA max @ 120-277 Vac

0-10 Vdc Output Ratings:

10 mA Sourcing

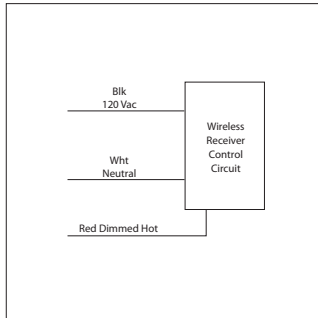
50 mA Sinking

Notes:

- Compatible with EnOcean® 902 MHz Switches/Transmitters.
- Typical range: 50-150 ft.
 - Open area transmission could be farther. Consult factory for more information.
- Repeater function only rebroadcasts original EnOcean® transmission. Up to two repeaters can be used.
- For setup instructions, see website for FDLR Series Application Manual: https://www.functionaldevices.com/wp-content/uploads/2021/12/B2126_393251.pdf
- EEP A5-11-01

FDLR05BPD

EnOcean 902 MHz Wireless Phase Angle Dimmer, Receiver / Repeater, 120 Vac Power Input, 600W Rated, Dimming Mode Selectable, NEMA 1 Housing



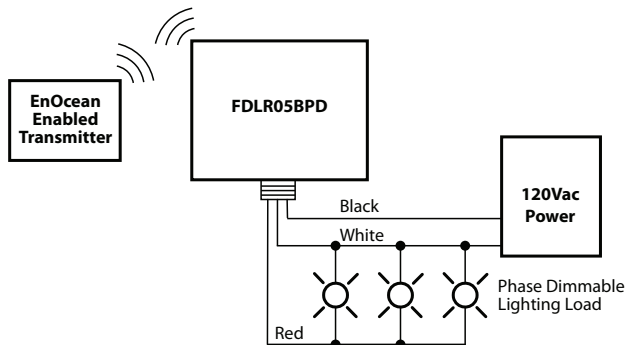
Dimmer has built-in repeater function. Dimmer receives signal from wireless transmitter and rebroadcasts the signal to the next relay receiver.

**SPECIFICATIONS**

- Operating Temperature:** -30 to 122 F
Humidity Range: 5 to 95% (noncondensing)
Red LED: Learn Mode Status (Flashing) / Dim Mode Status
Dimensions: 4.00"H x 4.00"W x 1.81"D with 0.50" NPT nipple
Housing Detail: See **Housing C** in housing guide for dimensions
Origin: Made of US and non-US parts
Wires: 16", 600V rated
Approvals: UL Listed, UL916, C-UL, RoHS
Agency Compliance: FCCID: SZV-TCM320U
 IC: 5713A-TCM320U
Housing Rating: UL Accepted, NEMA 1
Frequency: 902 MHz
Max Lighting Load: 600W Incandescent/Halogen
 Recommended 300W max for other dimmable lighting loads
Min Lighting Load: 1W
Dim to off: Yes
Selectable Dimming Mode: Yes
Selectable Low Dim Threshold: Yes
Power Input Ratings: 100mA @ 120 Vac; 60Hz

Notes:

- Compatible with EnOcean® 902 MHz Switches/Transmitters.
- Typical range: 50-150 ft.
 - Open area transmission could be farther. Consult factory for more information.
- Repeater function only rebroadcasts original EnOcean® transmission. Up to two repeaters can be used.
- Version 1.5 firmware or later implements Functional Devices, Inc's EnOcean® Manufacturer ID of 0x055.
- Not for use with Magnetic Low Voltage (MLV) loads.
- EEP A5-11-01

TYPICAL APPLICATION

WIRELESS
DEVICES

WIRELESS KEYCARD TRANSMITTER SWITCH

FDLTKEY

EnOcean 902 MHz Wireless Key Card Transmitter Switch



SPECIFICATIONS

Power Supply:	Mechanical energy harvesting (power is generated by inserting the card into the key card switch)
Inputs/Outputs:	Slot for standard hotel key card: (2.125" W x 3.375" H x 0.034" D) Radio Frequency (RF) transmitter
RF Communications:	EnOcean® 902 MHz
Transmission Range:	80ft.
RF Transmission:	On key card insertion or removal
Installation:	Surface mounted on wall (using included mounting screw)
Dimensions:	4.72" H x 3.8" W x .43" D (at edge)
Weight:	3.5 oz.
Environment:	Indoor use only 32° to 131° F (0° to 55° C) 5% to 95% relative humidity (noncondensing)
Agency Compliance:	FCC: SZV-PTM330U IC: 5713A-PTM330U



Notes:

- For use with FDLR Series Relays.
- EEP F6-04-01
- For Installation Instructions: https://www.functionaldevices.com/wp-content/uploads/2022/04/B2139_393255.pdf

WIRELESS SOLAR DOOR/WINDOW TRANSMITTER SWITCH

FDLTMAG2

EnOcean 902 MHz Wireless Solar Door / Window Transmitter Switch



SPECIFICATIONS

Minimum Illumination:	400 lux hours per day e.g. 100 lux for 4 hours or 200 lux for 2 hours
Start-up Time:	Less than 2.5 min @ 400 lux
Operating Life in Darkness (after full charge):	Min 10 days signs-of-life only
Operating Life in Darkness (with backup battery):	Min 5 years
Maximum Sensor Gap:	0.16" (4mm)
Dimensions (Sensor):	3.00" L x 0.87" W x 0.59" D (76mm x 22mm x 15mm)
Dimensions (with mounting plate):	3.11" L x 0.94" W x 0.73" D (79mm x 23.8mm x 186mm)
Drill Distance:	2.05" (52mm)
Environment:	Indoor use only -4 to 140 F (-20 to 60 C) 5 to 93% relative humidity (noncondensing)
Agency Compliance:	FCC ID: SZV-STM 320U IC: 5713A-STM 320U



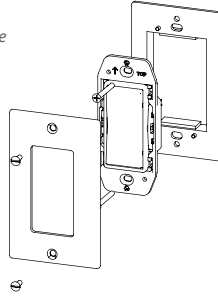
Notes:

- Typical range: 100 ft.
 - Open area transmission could be farther. Consult factory for more information.
- For use with FDLR Series Relays.
- EEP D5-00-01
- Use CR1255 for optional battery(See bulletin B2940)
<https://www.functionaldevices.com/wp-content/uploads/2021/10/B2940A-FDLTMAG2-393320.pdf>

WIRELESS ROCKER SWITCH TRANSMITTER WITH COVER PLATE

FDLTS2

EnOcean 902 MHz Wireless Wall Transmitter Switch with Barrier and Cover Plate, White



SPECIFICATIONS

Operating Modes: On/Off, Toggle, Scene control
Power Supply: Powered by finger press
(Electrodynamic Energy Harvester)
Frequency: 902 MHz
Antenna: Integrated antenna, 6.4cm
Transmission Power: Max. 10mW EIRP
Energy Bowtravel/Operating Force: 50,000 actuations tested to EN60669 / VDE 0632
Operating Temperature: -25 to 65° C
Relative Humidity: 5 to 92% (noncondensing)
Dimensions: 4.50" H x 2.75" W x 0.8" D
Agency Compliance: • Switch
FCC ID: SZV-PTM210U
IC: 5713A-PTM210U
• Barrier Plate
Certified to UL514D
CSA C22.2 #42-1-13

Notes:

- Control one load or one group of loads with a single rocker style Wireless Switch Transmitter.
- Typical range: 50-150 ft.
 - Open area transmission could be farther. Consult factory for more information.
- Mounting
 - Includes barrier plate and mounts to electrical wall boxes (screws included).
 - Alternate surface mount accessory AWSTFM to install on any surface using double sided tape or Velcro™ (sold separately).
- For use with FDLR Series Relays, FDLR20GV and FDLR05BPD dimmers
- EEP F6-02-02

WIRELESS OCCUPANCY/VACANCY SENSOR

FDLTVC

EnOcean 902 MHz Wireless Vacancy / Occupancy Sensor, Ceiling Mount



SPECIFICATIONS

RF Transmission Range: 80 ft.
Motion Sensing Range: 34 ft. diameter (refer to coverage diagrams in bulletin B2137)
Startup Charge Times
First Motion Transmission / Linking: 5 minutes at 200 lux
Motion LED Blink Light / Walk Test Modes: 1.5 hours at 2000 lux
Sustaining Charge Time: 3 hours per 24 hours at 200 lux
Time to Full Charge: 25 hours at 200 lux
Operating Life in Total Darkness: 80 hours (after full charge)
Minimum Operating Light: 50 lux (for auto-off only)
Motion Transmission Interval: 2 minutes
Unoccupied Transmission: 10 and 30 minutes since last motion
Dimensions: 6.3" L x 2.35" W x 1.47" D (160 mm x 60 mm x 37 mm)
Mounting Height: 7-10 feet recommended
Environment: Indoor use only
14° to 104° F (-10° to 40° C)
20 to 95% relative humidity (noncondensing)
Approvals: RoHS, R&TTE
Agency Compliance: FCC: SZV-STM300U
IC: 5713A-STM300U

Notes:

- For use with FDLR Series Relays.
- EEP A5-07-01
- Use CR2032 for optional battery(See bulletin B2137)
For Installation Instructions: https://www.functionaldevices.com/wp-content/uploads/2022/04/B2137_393253.pdf



WIRELESS
DEVICES

FDLTVW*EnOcean 902 MHz Wireless Vacancy / Occupancy Sensor, Wall Mount***SPECIFICATIONS****RF Transmission Range:** 80 ft.**Motion Sensing Range:** Up to 100 ft. (refer to coverage diagrams in bulletin B2136)**Startup Charge Times****First Motion Transmission / Linking:** 5 minutes at 200 lux**Motion LED Blink Light / Walk Test Modes:** 1.5 hours at 2000 lux**Sustaining Charge Time:** 3 hours per 24 hours at 200 lux**Time to Full Charge:** 25 hours at 200 lux**Operating Life in Total Darkness:** 80 hours (after full charge)**Minimum Operating Light:** 50 lux (for auto-off only)**Motion Transmission Interval:** 2 minutes**Unoccupied Transmission:** 10 and 30 minutes since last motion**Dimensions:** 5.83" L x 2.52" W x 1.8" D (148 mm x 64 mm x 45.7 mm)**Mounting Height:** 6-8 feet recommended**Environment:** Indoor use only

14° to 104° F (-10° to 40° C)

20 to 95% relative humidity (noncondensing)

Approvals: RoHS, R&TTE**Agency Compliance:** FCC ID: SZV-STM300U

IC: 5713A-STM300U

**Notes:**

- For use with FDLR Series Relays.
- EEP A5-07-01

- Use CR2032 for optional battery (See bulletin B2136)

For Installation Instructions: https://www.functionaldevices.com/wp-content/uploads/2022/04/B2136_393252.pdf

INDEX & HOUSING GUIDE



Confidence & Peace of Mind in Every Box®



INDEX &
REFERENCES

HOUSING GUIDE

			red ("-rd") and NEMA 4 ("-N4") HOUSINGS Available. See our website for details.	HOUSING A HOUSING B HOUSING C HOUSING D
				HOUSING E HOUSING F HOUSING G HOUSING H
	with Retaining Clip for 1/2" Knockout			HOUSING I HOUSING J HOUSING K

ACLCMAGDJ	54
ACLCMAGSM	54
CLC106	50
CLC106-NC	50
CLC212	51
CLC212-D15	52
CLC212-D60	53
CLC212-NC	51
EMPS110125RSDT	33
EMPS110125RSDTC	33
EMPS110125S	33
EMPS110125SSDT	33
EMPS110125SSDTC	33
EMPS110125T	33
EMPS110125TSDT	33
EMPS110125TSDTC	33
EMPS110250S	33
EMPS110250SSDT	33
EMPS110250SSDTC	33
EMPS20WR	33
EMPS20WS	33
EMPS20WT	33
EMPS220250S	33
EMPS220250SSDT	33
EMPS220250SSDTC	33
EMPS32WR	33
EMPS32WS	33
EMPS32WT	33
EMPS35WR	33
EMPS35WS	33
EMPS35WT	33
EMPS375	33
EMPS3754AOSDT	33
EMPS3754CSDT	33

EMPS55125R	33
EMPS55125RSDT	33
EMPS55125RSDTC	33
EMPS55125S	33
EMPS55125SSDT	33
EMPS55125SSDTC	33
EMPS55125T	33
EMPS55125TSDT	33
EMPS55125TSDTC	33
EMPS55WR	33
EMPS55WS	33
EMPS55WT	33
EMPS600	33
EMPS6004AOSDT	33
EMPS6004CSDT	33
ESR01P	30
ESR02P	31
ESR2401B	26
ESR2401D	28
ESR2402B	27
ESR2402D	29
ESRB	19
ESRBE01C	22
ESRBE277C	23
ESRLBC	24
ESRLBC-ND	25
ESRN	16
ESRN-1	18
ESRTB	21
FDL20ALRM2U	46
FDL20ALRMU	46
FDLR05B	68
FDLR05BPD	71
FDLR05F	68

FDLR20A	69
FDLR20B	69
FDLR20C	69
FDLR20D	69
FDLR20E	69
FDLR20GV	70
FDLTKEY	72
FDLTMAG2	72
FDLTS2	73
FDLTVC	73
FDLTVW	74
LR01F600	36
LR21BPP5	60
LR2401B2G	38
LR2402B2G	38
LRL12B	42
LRL12BM	42
LRL12SB	43
LRL12SBM	43
LRL24B	44
LRL24BM	44
LRL24SB	45
LRL24SBM	45
LSDHPDC	61
LSDUALC2	63
LSPIRC	64
LT150-120	57
LT20-24	56
LT50-120	56
LTA100	57





RIB® Lighting Controls

Confidence & Peace of Mind in Every Box®

VIEW OR DOWNLOAD
THE CATALOG
ON OUR WEBSITE



Sales: 800.888.5538

Office: 765.883.5538

Email: sales@functionaldevices.com

Website: www.functionaldevices.com

Functional Devices, Inc.®