

You can have it all,  
energy savings and  
emergency lighting



EMERGENCY LIGHTING CONTROL

■ PUTTING A STOP TO ENERGY WASTE®

**WattStopper®**



# Emergency Lighting Control

Ensures  
**Safety** and  
**Energy Savings**

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**Offering energy savings through efficient lighting control is what**

**WattStopper is all about.** But when it comes to emergency lighting, users want complete reliability and security. We also understand you want the most flexibility in your control options. That's why we've developed the ELCU emergency lighting control product line. It meets all these needs:

**Complete  
reliability  
and security**

- Eliminates energy waste caused by always on emergency lighting
- Allows your choice of control device to switch emergency lighting in conjunction with normal lighting
- Compatible with WattStopper occupancy sensors, lighting control panels, daylighting controls and dimmers
- UL 924 listed for use in emergency circuits
- Test features facilitate code compliance
- Status LEDs enhance safety of personnel
- Can also control supplemental standby lighting

**Imagine <sup>the</sup> Difference****Standard Emergency Lighting**

- Limited control options
- Only responds to general power outage
- Burns 24/7 – wastes energy
- Shorter lamp life

**Emergency Lighting with ELCU**

- Emergency lights are controlled with normal lighting
- Responds to local power failures
- Saves energy
- Longer lamp life and reduced maintenance costs
- Can respond to security or fire alarms
- Convenient testing options



# Emergency lighting rules and regulations

Emergency lighting is required in all public facilities, but what is meant by the broad term, “emergency lighting,” and which regulations spell out the equipment and performance that are required? Here’s a brief overview.

## NFPA 101

The National Fire Protection Agency’s **Life Safety Code** (NFPA 101) specifies illumination requirements (in most cases, 1 footcandle) for specific areas in buildings with different occupancies that must be immediately available to facilitate egress in the event of an emergency. These requirements are discussed in Article 7.8 “Illumination of Means of Egress,” Article 7.9 “Emergency Lighting,” and articles dealing with specific occupancies. While egress lighting and emergency lighting do have separate definitions, one set of lighting is typically used to meet the requirements of both definitions.

## NEC

NFPA 70, the **National Electrical Code**, defines what kinds of equipment may be used, and the installation and maintenance practices that must be followed, to meet the illumination requirements of the **Life Safety Code**. The NEC discusses Emergency Systems in Article 700, and defines them as “those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life.”

The NEC also defines Legally Required Standby Systems (Article 701) and Optional Standby Systems (Article 702), which are often confused with Emergency Systems, since all are designed for use in the event of power failures, emergencies, natural disasters, fire, etc. To clarify, Emergency Systems are those essential for safety to life, Legally Required Standby Systems are extra systems required for specific types of buildings to provide power to aid in fire fighting, rescue operations, control of health hazards, etc., and Optional Standby Systems are those intended to minimize the disruption to business caused by power failures.

### Testing requirements:

Both NFPA 101 and the NEC require periodic functional testing of emergency lighting equipment.

## UL

Underwriters Laboratories tests and approves the components of emergency systems to be safe for a specific use. Two distinct listing categories apply to emergency lighting and power control equipment: UL 1008 and UL 924. UL 1008, Automatic Transfer Switches for Use in Emergency Systems, applies to the switching gear that transfers the power feed for the emergency circuits from the normal source to the emergency source and back. UL 924, Standard for Safety for Emergency Lighting and Power Equipment, applies to most of the components downstream of the transfer switch. All components of an emergency circuit must be appropriately designed and listed.

## Why control emergency lighting?

### Energy savings

Most facilities operate emergency lighting 24/7. This represents a significant energy usage that is not necessary. Now, with the ELCU product line, building owners and managers can control this emergency lighting along with their normal lighting for increased energy savings. And by operating the lighting for fewer hours, they will also realize savings from longer maintenance intervals for emergency lamp replacement.

Emergency lighting typically consumes .15 to .25 watts per square foot, or 12 to 21 percent of an average building's lighting load. Over half of this power usage can be eliminated by turning these lights off along with normal lighting, after hours and on weekends.

### Enhancing safety

With an ELCU, building operators can be confident emergency lighting will come on

when it's needed. In fact, they can be assured of optimal response because the ELCU provides control at the branch circuit level and it will force emergency lighting on even if normal power is interrupted in only part of a building.

**ELCU provides protection at the branch circuit level**

What's more, they can turn emergency lighting on when they want to, such as for emergency

preparedness drills or trainings. By connecting ELCU units with security, fire alarm or other life safety systems, building managers can automate the activation of emergency lighting when it makes the most sense.

ELCU products are specifically UL listed and labeled for use in emergency lighting circuits and include LED power indicator lights designed to insure personnel safety.

### Flexibility

Sometimes building occupants want the ability to turn all lighting – even emergency lighting – off, such as for presentations or films in theaters, lecture halls, auditoriums, or in museum galleries or classrooms. With an ELCU, this is easy to do.



## Introducing:



**ELCU-100**

DIN rail-mounted controller



**ELCU-200**

Plenum-rated controller

# Controllers offer optimum flexibility and safety

ELCU products monitor the status of the normal power line and switch emergency lights on only when they're needed, whether for normal usage or for an emergency condition. An ELCU does this in one of two ways, depending on whether it is wired as a control device or as a bypass device.

### ELCU as a control device

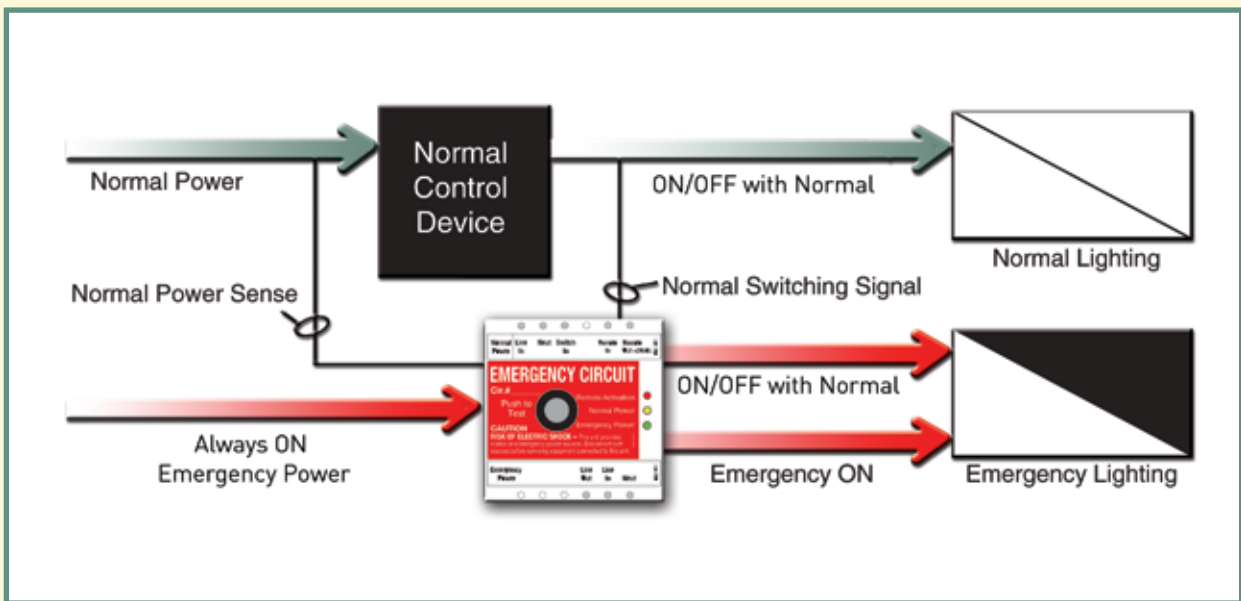
An ELCU allows the status of normal lighting control devices – occupancy sensors, lighting control panels, daylighting controls – to control emergency lighting in tandem with normal lighting. It does this by sensing the normal power line before the control device and receiving a switching signal from the line after the device.

When normal power is present to the control device, and the device is feeding

power through to the normal lighting, the ELCU switches the emergency lights on. When normal power remains uninterrupted, but the control device turns the normal lighting off, the ELCU follows suit and switches the emergency lights off. However, when normal power to the control device is lost for any reason, the ELCU forces the emergency lights on regardless of the on/off status of the control device.

This primary application for ELCU products allows building owners and designers to leverage the energy saving benefits of their control devices while still complying with all the code requirements for emergency lighting circuits.

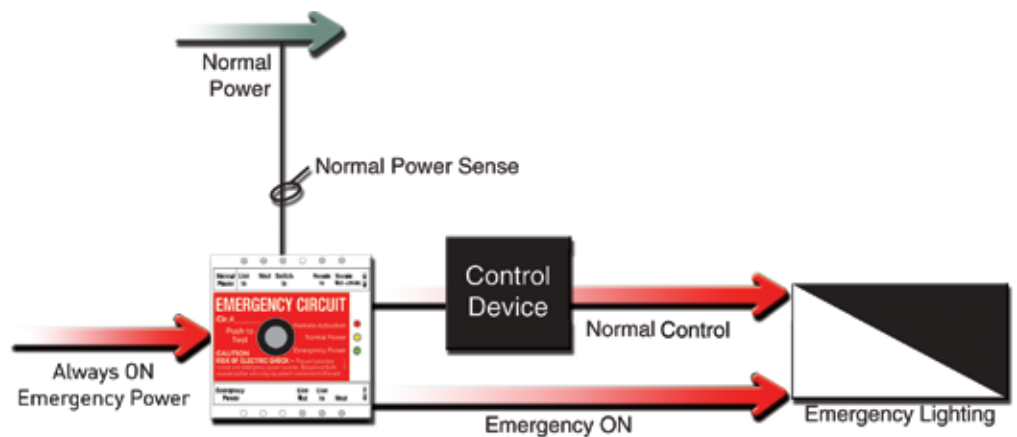
**Leverage the energy saving benefits of control devices**



**ELCU as a shunt or bypass device**

In some cases it is desirable to have a control device, often a line voltage dimmer, on the emergency line in order to directly control the emergency lighting. However, that device must be bypassed in the event of a power failure to ensure that emergency lights come on, and come on at full brightness. An ELCU provides a simple solution for this kind of application too.

As a shunt, the ELCU senses the normal power line. When power is present, it allows the control device on the emergency line to directly operate the emergency lighting. In the event of a loss of normal power, the ELCU completely bypasses the control device, rerouting, or shunting, the emergency line around it, immediately forcing the emergency lighting on full in compliance with code requirements.



**Power status LEDs**

A yellow status LED indicates the presence of normal power. A separate green LED indicates emergency power.

## Select ELCU model based on mounting requirements

An ELCU should be mounted in close proximity to the normal control device that it is sensing. By offering two ELCU models, WattStopper makes this easy to do. The

ELCU-100 mounts on a DIN rail, either in a lighting control panel or in an enclosure. The ELCU-200 mounts to a junction box and is plenum-rated.



The ELCU-100 mounts on a DIN rail.



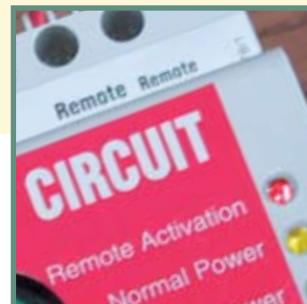
The ELCU-200 mounts to a junction box.

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## Remote control options

In addition to normal operation, an ELCU can be instructed to turn emergency lighting on by a remote device. This could be a conveniently located remote test switch

or another building system such as a fire alarm or security system. When the unit has been activated remotely, a status LED on the ELCU indicates this condition.





## Integrating ELCU products into your lighting designs

ELCUs are appropriate for emergency lighting, night lighting and standby lighting applications that include controls such as occupancy sensors, lighting control panels, bi-level controls, daylighting controls, dimmers and switches.

An ELCU-100 is used for applications where the normal control device is centrally located.

Examples include lobbies, corridors and some open offices.

An ELCU-200 is used for applications where the normal control device is located in the space being controlled. Examples include classrooms, conference rooms and open offices with occupancy sensors.

### Open office

Large open space with multiple users throughout the day.

Control needs:

Scheduled lighting control to ensure that lights are on during periods of use and to switch lights off overnight and during weekends and holidays to meet energy code requirements.

Solution:

Overall switching is handled by a Lighting Integrator panel. An ELCU-100 is installed on the emergency circuit and connected to the relay serving the area. The ELCU turns off the emergency lights when the relay for the area is



turned off. If normal power to this relay is lost for any reason, the emergency lights will turn on.

A remote test switch is installed in the maintenance room for the floor for convenience.

### Control with:



Lighting Control Panel



Emergency Lighting Controller



Remote Test Switch

## School classroom

Large room used for multiple purposes on a complex schedule subject to change.

Control needs:

Bi-level switching to allow selection of the right level of lighting for different activities. Occupancy sensor to ensure that lights are turned off during recesses, field trips and all periods of vacancy.

Solution:

Lighting control is provided by a dual technology DT-200 sensor in conjunction with dual wall switches. An ELCU-200 is installed on the emergency circuit, with the switching line wired to either the "a" or "b" portion of the normal lighting. The ELCU turns the emergency lights on or off



along with the selected normal lighting. If normal power is lost for any reason, the emergency lights will turn on.

Additionally, the ELCU is connected to the fire alarm system and emergency lights will come on whenever the fire alarm is activated regardless of the state of the switches or the utility power.

## Control with:



Occupancy Sensor



Emergency Lighting Controller

## Restaurant

Dining and bar areas that are open throughout the day and include upscale decor that would be marred by unit equipment.

Control needs:

Scene control with different looks for setup, lunch, cocktails, dinner and cleanup.

Solution:

Miro DRD4 and MR2000 dimmers are used for decorative and downlighting circuits throughout the space. Two additional Miro dimmers are used for emergency lighting circuits along with ELCU-200s that are wired for shunt operation. Miro DRD6 scene controllers are located near the entrance and behind the bar. A Miro MRD5 handheld



scene controller gives the maitre d' control of all the dimmers from any location.

During normal operation, all of the dimmers respond to the scene controllers. If power is lost, the ELCU will bypass emergency power around the dimmer and bring emergency lighting on at full brightness.

## Control with:



Remote Scene Controller



Miro Dimmer



Room Scene Controller



Emergency Lighting Controller

# ELCU-100 Emergency Lighting Control Unit

Guarantees emergency lighting remains ON or is turned on when power to the control device is lost

“Watchdog” feature allows emergency loads to be controlled in tandem with normal power loads

Interfaces with fire alarm panel or security system



Integrated push-to-test button

UL listed for use in emergency circuits

PROJECT
LOCATION/TYPE

## Product Overview

### Description

WattStopper’s Emergency Lighting Control Unit (ELCU) is a self-contained, emergency lighting control device. The ELCU provides all required functionality to allow any standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.

### Operation

The ELCU monitors a single circuit that provides normal lighting to an area. As long as normal power is present, the ELCU permits lighting control devices (i.e., occupancy sensors, panels, dimmers, or wall switches) to control the emergency lighting fixtures as well as the general lighting. If power is lost for any reason, including the tripping of a single branch circuit breaker, the ELCU will force the emergency fixtures for that area on. The ELCU can be wired either as a control device, so that emergency lighting follows the control of normal lighting, or as a bypass device to shunt emergency power around a control device when normal power fails.

## Features

- Eliminates energy waste caused by “always ON” emergency lighting
- Integral push-to-test button activates emergency mode for a true test condition
- Connects to remote test switch or other input to activate emergency ON from a remote location
- Operates as a control device or as a shunt
- Senses local single circuit power failure
- Zero cross switching technology for reliability and increased product life
- Compatible with WattStopper occupancy sensors, daylighting controls, lighting control panels, and dimmers
- LED indication for emergency and normal power
- Half-second delayed ON positively identifies emergency fixtures for required maintenance
- Provides absolute fail-to-on emergency lighting
- UL924 listed, meets NEC, OSHA and NFPA safety codes

### Mounting

The ELCU is equipped with an integral DIN rail mounting groove and retaining clip mechanism. It can be installed on the DIN rail track provided within a WattStopper enclosure (i.e., LS-E8, LS-E12), or in a WattStopper lighting control panel.

### Applications

The ELCU is designed to control lighting in areas where emergency lighting fixtures are connected on dedicated emergency lighting circuits that are typically on 24 hours per day. The ELCU allows normal control of emergency lighting for energy savings and/or task related reasons while strictly adhering to National Electric Code requirements. It is suitable for any application where enhanced energy saving is desired.

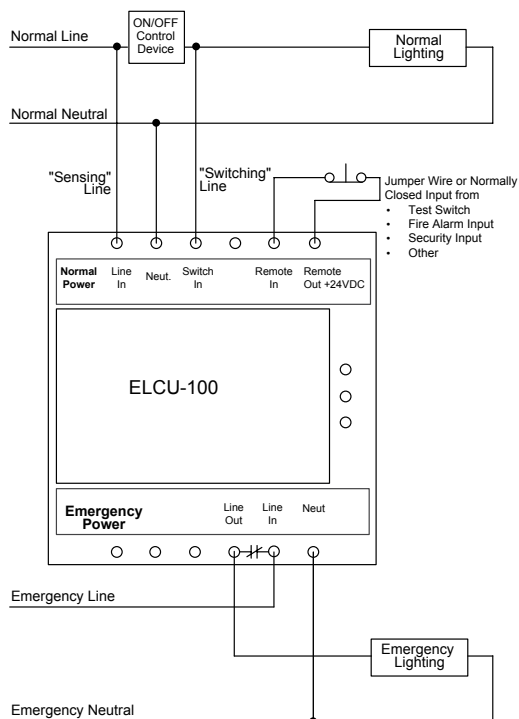


## Specifications

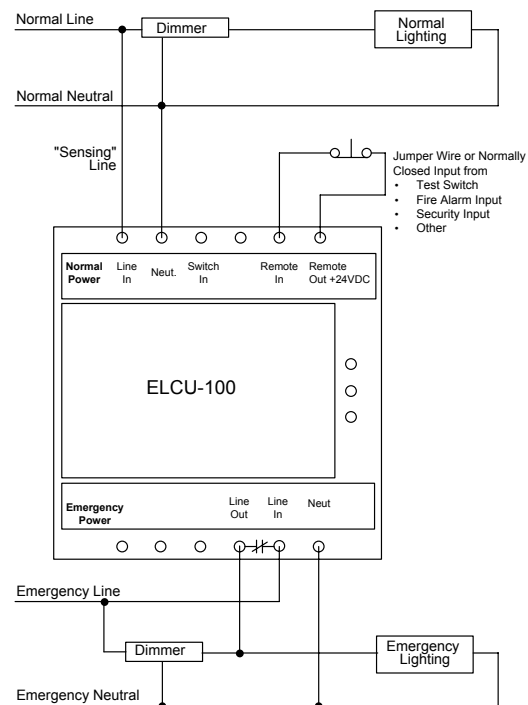
- 120/277 VAC; 60Hz
- Maximum load:
  - Ballast 20A @ 120/277 VAC
  - Incandescent 10A @ 120/277 VAC
  - Motor 1HP @ 120 VAC
- Remote activation: supplies 24 VDC source for dry contact closure
- Integral control: push-to-test button on unit
- Housing: fire rated V-0, 176°F (80°C)
- Terminal torque: 4/428 inch pound-force (0.5Nm)
- Dimensions: 2.78" x 3.44" x 2.63" (71mm x 87mm x 67mm) L x W x D
- UL, cUL listed Emergency Lighting and Power Equipment; five year warranty

## System Wiring

### ELCU Wiring Diagrams



When wired as a control device, the ELCU receives a switching signal from the output of the control device (relay, switch, power pack, etc.)



When wired as a shunt, the switching line is not used.

Note: Use with Watt Stopper universal dimmers or contact dimmer manufacturer to determine the suitability of the specified dimmer for shunt operation.

## Ordering Information

Catalog No.	Description	Voltage
<input type="checkbox"/> ELCU-100	Emergency Lighting Control Unit	120/277 VAC; 60Hz
<input type="checkbox"/> EMTS-100	Remote test switch on single gang plate	24VDC, normally closed contact
<input type="checkbox"/> LS-E8	Surface Mount Enclosure for 1 or 2 ELCU units*	N/A
<input type="checkbox"/> LS-E12	Surface Mount Enclosure for up to 6 ELCU units*	N/A

\*LS-E8 and LS-E12 enclosures include screw cover and DIN rail

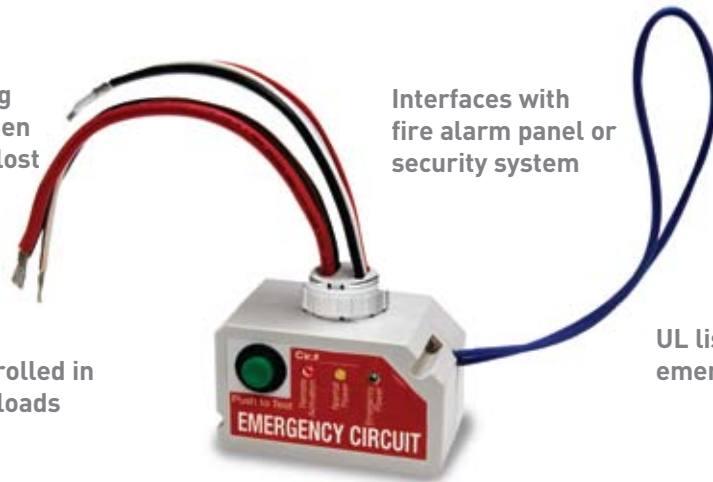
# ELCU-200 Emergency Lighting Control Unit

Guarantees emergency lighting remains ON or is turned on when power to the control device is lost

Interfaces with fire alarm panel or security system

“Watchdog” feature allows emergency loads to be controlled in tandem with normal power loads

UL listed for use in emergency circuits



Integrated push-to-test button

PROJECT
LOCATION/TYPE

## Product Overview

### Description

WattStopper’s ELCU-200 Emergency Lighting Control Unit is a self-contained device that allows any standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.

### Operation

The ELCU-200 monitors a single circuit that provides normal lighting to an area. As long as normal power is present, the ELCU-200 permits lighting control devices (e.g., occupancy sensors, panels, dimmers, or wall switches) to control the emergency lighting fixtures as well as the general lighting. If power is lost for any reason, including the tripping of a single branch circuit breaker, the ELCU-200 will force on the emergency fixtures for that area. The ELCU-200 can be wired either as a control device, so that emergency lighting follows the control of normal lighting, or as a bypass device to shunt emergency power around a control device (e.g., a dimmer) when normal power fails.

### Mounting

The ELCU-200 mounts directly to a junction box or electrical enclosure that has a standard 1/2” knockout. It is compatible with all WattStopper occupancy sensors, daylighting controllers and power packs.

### Applications

The ELCU-200 is designed to control lighting in areas where emergency lighting fixtures are connected on dedicated emergency lighting circuits that are typically on 24 hours per day. The ELCU-200 allows normal control of emergency lighting for energy savings and/or task related reasons while strictly adhering to National Electric Code (NEC) requirements. It is suitable for any application where enhanced energy saving of emergency lighting is desired.

## Features

- Eliminates energy waste caused by emergency lighting that is always on
- Integral push-to-test button activates emergency mode for a true test condition
- Connects to EMTS-100 Remote Test Switch or other input to activate emergency on from a remote location
- Operates as a control device or as a shunt
- Senses local single circuit power failure
- Zero cross switching technology for reliability and increased product life
- Compatible with WattStopper occupancy sensors, daylighting controls, lighting control panels, and dimmers
- LED indication for emergency and normal power
- Half-second delayed on positively identifies emergency fixtures for required maintenance
- Provides absolute fail-to-on emergency lighting
- UL924 listed, meets NEC, OSHA and NFPA safety codes; UL2043 plenum rated
- Qualifies for use on ARRA-funded projects

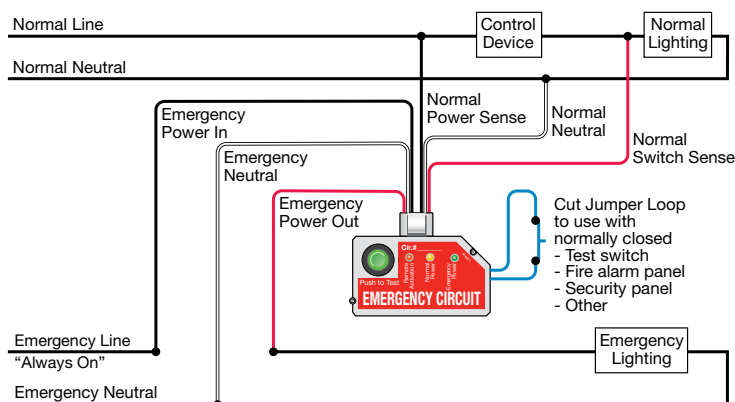


## Specifications

- 120/277 VAC; 60Hz
- Maximum load:
  - Ballast 20 A @ 120/277 VAC
  - Incandescent 10 A @ 120 VAC
  - Motor 1HP @ 120 VAC
- Remote activation: supplies 24 VDC source for dry contact closure
- Integral control: push-to-test button on unit
- Housing: fire rated V-0, 176° F (80°C)
- Operating temperature range: 32 to 131°F (0 to 55°C)
- Relative humidity range: 5 to 95%, noncondensing
- Dimensions: 1.7" x 2.97" x 1.64" (43.2mm x 75.4mm x 41.7mm) H x W x D with a 1/2" (12.7mm) threaded nipple
- UL, cUL listed Emergency Lighting and Power Equipment; five year warranty

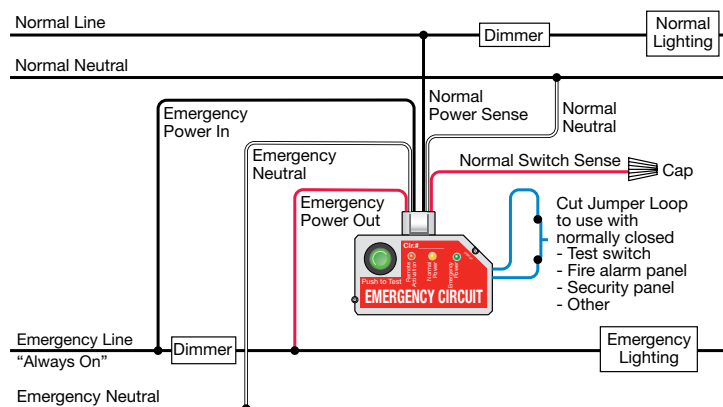
## Installation and System Wiring

### ELCU Wired As a Control Device



When wired as a control device, the ELCU-200 receives a switching signal from the output of the control device (relay, switch, power pack, etc.)

### ELCU Wired As a Shunt, or Bypass, Device



When wired as a shunt, the switching line is not used.

Note: Use with WattStopper universal dimmers or contact dimmer manufacturer to determine the suitability of the specified dimmer for shunt operation.

## Ordering Information

Catalog No.	Description	Voltage
<input type="checkbox"/> ELCU-200	Emergency Lighting Control Unit	120/277 VAC; 60Hz
<input type="checkbox"/> ELCU-200-U	Emergency Lighting Control Unit, ARRA-compliant	120/277 VAC; 60Hz
<input type="checkbox"/> EMTS-100	Remote Test Switch on single gang plate	24VDC, normally closed contact

# Specifications

1. The Emergency Lighting Control Unit (ELCU) shall provide all required functionality to allow any standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.
  2. The emergency lighting control unit shall allow control of emergency lighting fixtures in tandem with normal lighting in an area while ensuring that emergency lighting will turn on immediately to full brightness upon loss of normal power supplying the control device. Emergency lighting operation shall be independent for each controlled area and shall not require a generalized power failure for proper operation.
  3. The device shall be self-contained, measure 2.78" x 3.44" x 2.63", and provide integral DIN rail channel for mounting in panel or box. (ELCU-100)
- or,
- The device shall be self-contained, measure 1.70" x 2.97" x 1.64", and provide integral one half inch pipe nipple mount with snap in locking feature for mounting into a standard junction box KO. (ELCU-200)
4. The device shall have normally closed dry contacts capable of switching 20 amp emergency ballast loads @ 120-277 VAC, 60 Hz, or 10 amp tungsten loads @ 120 VAC, 60 Hz. (ELCU-100)
- or,
- The device shall have normally closed dry contacts capable of switching 20 amp emergency ballast loads @ 120-277 VAC, 60 Hz, or 10 amp tungsten loads @ 120 VAC, 60 Hz. (ELCU-200)- 5. The device shall have universal rated voltage inputs provided for normal power sense and normal switched power at 120-277 VAC, 60 Hz.
- 6. The device shall have an integral momentary test switch (top mounted on ELCU-100). Pressing and holding this switch shall instantly force the unit into emergency mode and turn on emergency lighting. Releasing the test switch shall immediately return the unit to normal operation.
- 7. The unit shall provide dedicated terminals (ELCU-100), or leads (ELCU-200), and 24 VDC source for connection to remote test switch, fire alarm system, or other external system capable of providing a normally closed dry contact closure. Breaking contact between the terminals, or leads, shall force and hold the emergency lighting on until the terminals are again closed. An integral LED indicator shall indicate the unit's current remote activation status.
- 8. The device shall provide separate LEDs to indicate the presence of normal and emergency power sources. The LEDs shall indicate the unit's current operational mode (normal or emergency).
- 9. The device's normal power input terminal (ELCU-100), or lead (ELCU-200), shall be connected to the line side of the control device such that any upstream fault causing a loss of power, including the tripping of the branch circuit breaker, will force the unit into the emergency mode and turn on the emergency lighting.
- 10. The unit shall automatically switch emergency lighting on and off as normal lighting is switched. When normal power is not available, the unit shall force and hold emergency lighting on regardless of the state of any external control device until normal power is restored.
- 11. The unit shall utilize zero crossing circuitry to protect relay contacts from the damaging effects of inrush current generated by switching electronic ballast loads.
- 12. Unit housing shall be UL94 V-0 plenum rated and shall be equipped with compression wire terminals (ELCU-100) rated for #14 - #12 solid or stranded copper wire or with flying leads (ELCU-200).
- 13. To ensure quality and reliability, the unit shall be manufactured by an ISO 9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1%.
- 14. The unit shall be UL and cUL listed and labeled for connection to both normal and emergency lighting power sources.
- 15. The unit shall have a 5-year warranty.

## **WattStopper®**

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**Please Recycle** 

WattStopper products and practices reflect our commitment to sustaining our natural resources. This project was manufactured with papers made with recycled fiber to conserve resources and reduce emissions.