Emergency lighting circuits allow for occupant safety and egress in the event of a failure of a facility’s primary power source, as required by NFPA 101 Life Safety Code or other local building codes and standards. Designers may meet these requirements with dedicated emergency lighting fixtures. These fixtures would be fed directly from emergency branch circuits or from internal power sources (rechargeable battery packs are typical) when grid power has failed. In some implementations, these fixtures are continuously illuminated. The alternative approach of utilizing the same fixtures for both normal and emergency lighting needs can lower fixture count. Employing control devices to ensure that the fixtures are only illuminated when necessary will extend lamp and ballast life and reduce energy consumption. Cooper Controls provides a number of products for use with iLumin lighting control panels that facilitate this approach.

Panel Level Implementation

iLumin Source Controllers and Relay Panels are equipped with two dry contact inputs for emergency scene control. A contact closure on these inputs will initiate a preprogrammed emergency scene. The loads affected by an emergency scene and their levels are programmable. Output levels for an emergency scene are typically programmed at full on for a dimming panel. The emergency scene will remain in effect, regardless of other system programming or inputs, until the contact closure is removed. The iLumin Lighting Relay Module accessory is a UL924 listed device that is designed to operate in conjunction with an iLumin panel to provide emergency lighting. The Lighting Relay Module senses normal power and provides a contact closure to the iLumin panel when normal power is lost, triggering the emergency scene. Upon restoration of normal power the Lighting Relay Module will remove the contact closure and the panel will resume normal operation. A typical implementation is shown in Figure 1.

In this example a Source Controller is fed either normal or emergency power by an upstream UL1008 transfer switch. In the event of normal power failure, the transfer switch would provide emergency power to the Source Controller. The Lighting Relay Module would force the Source Controller to initiate the emergency scene until such time as normal power is restored. The Lighting Relay Module can be used in conjunction with any iLumin Source Controller or Relay Panel to achieve a panel level UL924 listed emergency lighting implementation.
Cooper Controls also provides solutions for implementing emergency lighting by circuit, as opposed to an entire panel. The Cooper Emergency Power Control (CEPC) series of accessories are UL924 listed devices that facilitate emergency lighting implementations by circuit or individual fixture. The CEPC-120 and CEPC-277 are solutions for non-dimming loads. These devices can be placed downstream of an iLumin relay panel as shown in Figure 2.

Under emergency power conditions, the CEPC device feeds the normal/emergency fixture with power from the emergency power source when power is lost on the normal power sense input. Under normal power conditions, the normal/emergency fixture is controlled in conjunction with the normal fixtures by duplicating commands to the normal/emergency loads based off of activity on the monitored switch leg.
The CEPC-D-F-S-120 and CEPC-D-F-S-277 are for use with dimmable loads. These devices provide a universal interface that allow them to support 2-wire, 3-wire and 4-wire dimming loads. Designers only need to specify the operating voltage. A typical 3-wire dimming load implementation is shown in Figure 3.

In this example the CEPC is sensing the presence of normal power on the Hot terminal of the SC-UN Power Card terminal block. As long as normal power is present, the emergency fixture is controlled by the SC-UN. Upon loss of normal power the fixture is switched to the emergency power source and brought to full intensity because both the switched and dimmed hot fixture leads are tied to line of the emergency power source by the CEPC. Wiring for 2-wire and 4-wire loads will differ from this configuration. Consult the CEPC specification sheet for wiring details.

**Conclusion**

With a properly designed and configured lighting control system it is possible to utilize the same lighting fixtures for both normal and emergency applications. Cooper Controls provides UL924 listed solutions to permit designers to achieve this goal resulting in lower fixture counts and increased energy savings.