Overview

Many lighting control applications require support for emergency lighting of some type. These emergency lighting circuits typically provide minimum illumination levels for egress and safety 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. A disadvantage to these approaches is that these dedicated luminaires often go largely unused as they provide lighting only when normal power has failed. An alternative is to utilize the same fixtures for both normal and emergency lighting needs. Greengate lighting control panels for energy management from Cooper Controls have been designed to accommodate this approach.

Technical Details

Greengate ControlKeeper and LiteKeeper 16, 32 and 48 circuit lighting control panels for centralized applications have built-in provisions for initiating a hardware override of all lighting loads in the event of an emergency. In ControlKeeper systems the relay cards communicate through a Relay Stack Controller (RSC) to the panel logic board. The logic board would normally command the relay cards to switch lighting loads based on system programming that may incorporate time schedules or responses to system inputs such as switches or photosensors. A LiteKeeper logic board commands its relays through a Standard Override Card (SOC). The RSC and SOC provide similar functionality in that they both possess the ability to override the state of all relays independent of the system logic board. This override may be initiated by an operator via a three position override switch. The switch allows the operator to command all relays to the off state (OFF), the on state (ON) or to states determined by the logic board (AUTO).

If the on or off state is selected the relays will assume that state regardless of system programming. In fact, on and off commands can be issued by an RSC or SOC even if no logic board is installed in the system. This feature is often used during the construction phase to allow illumination of the job site before the system is programmed.

The RSC and SOC also include dry contact inputs that can be used to force an override condition. Forcing an override condition by providing a contact closure to the RSC or SOC is similar to creating an override condition via the override switch. The significant difference between these two override methods is that the dry contact inputs take precedence over the override switch. If, for example, the relays were forced on by a contact closure there would be no method to turn those relays off short of removing panel power.

The Greengate Relay Interface Module (RIM) is a UL924 listed accessory for Greengate lighting control panels. The panel override switch allows an operator to force all relays to an on or off state.

The Relay Interface Module is a UL924 listed accessory for Greengate lighting control panels.
Upon restoration of normal power the RIM will remove the contact closure and the relays will assume their proper state based on system programming. Relays states will correctly reflect any time schedules or changes to system inputs that may have occurred during the override condition.

Relays feeding emergency lighting fixtures should be fed by emergency branch circuits that are switched from normal to emergency power by an upstream UL1008 listed transfer switch. The lighting control panel power transformer must also be fed from the emergency power source in order for the relays to operate. If normal and emergency circuits are present in the same lighting control panel, they should be separated by a high voltage barrier. Barriers are available to separate loads by individual relay cards.

The panel power transformer is located in the lower portion of the class 1 section of the lighting control panel enclosure. In panels with mixed normal and emergency circuits, relays in the lower portion of the enclosure should be allocated to emergency circuits to facilitate the use of barriers for separation.

Proper operation of the system can be verified by removing the normal power feed to the Relay Interface Module. This should force an on override condition as indicated by the green ON override indicator located next to the override switch and also by the closure of all relays in the lighting control panel.

Typical emergency lighting application

The panel power transformer is located in the lower portion of the class 1 section of the lighting control panel enclosure. In panels with mixed normal and emergency circuits, relays in the lower portion of the enclosure should be allocated to emergency circuits to facilitate the use of barriers for separation.

Proper operation of the system can be verified by removing the normal power feed to the Relay Interface Module. This should force an on override condition as indicated by the green ON override indicator located next to the override switch and also by the closure of all relays in the lighting control panel.

An on override condition is indicated by illumination of the green LED located adjacent to the override switch

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. Greengate lighting control panels for centralized applications are designed to facilitate this approach when used in conjunction with the UL924 listed Relay Interface Module accessory. High voltage barriers are available from Cooper Controls, which may be employed to accommodate normal and emergency circuits within the same lighting control panel enclosure.