



For Your Information ...



How Can Lutron Make Panels with a Short-Circuit Current Rating (SCCR) that is Higher than the Circuit Breakers' Ampere Interrupting Capacity (AIC)?

Overview

With the adoption of the 2005 NEC® code, particularly article 409, there are new requirements for short-circuit current ratings (SCCR) for industrial control panels. As always, Lutron's mission is to serve our customers by meeting or exceeding safety recommendations. Lutron uses very stringent test criteria to ensure that our equipment displays long-term reliability under normal operation. Our equipment has been evaluated by UL (Underwriters' Laboratories) and passed the UL 508 high-fault current testing requirements for industrial control equipment, and it is rated accordingly with an SCCR.

Lutron's panels are UL listed with an SCCR. The testing for the SCCR proved that by the time the current reaches the overcurrent protection devices, it has been impeded by the internal panel components, and the let-through fault current at that point is **always** less than the AIC rating of the overcurrent protection devices.

Definitions of Terms

SCCR: Short-Circuit Current Rating

The SCCR is defined as the highest available fault current (in amps) at the feed side of a panel assembly that will not affect the panel in an unsafe manner when a fault is introduced at the panel's load side. To pass the stringent UL safety criteria for industrial control equipment, the panel does not need to be functional after a fault is introduced at the load side of the panel; however, reduced spacings, disconnected conductors, emission of flames, molten materials, etc., are not acceptable.

Lutron conducts testing on our panels, deliberately shorting the equipment at various points, to ensure that our panels are within safe-failing parameters. This testing is beyond the requirements of UL 508.

AIC: Ampere Interrupting Capacity

The AIC rating indicates the maximum available fault current (in amps) that an overcurrent protection device (circuit breaker, fuse, etc.) will safely clear when a fault is applied at the load side of the overcurrent protection device. The AIC rating applies only to overcurrent protection devices. It is not relevant to standard relays, nor do standard relays carry an AIC rating.

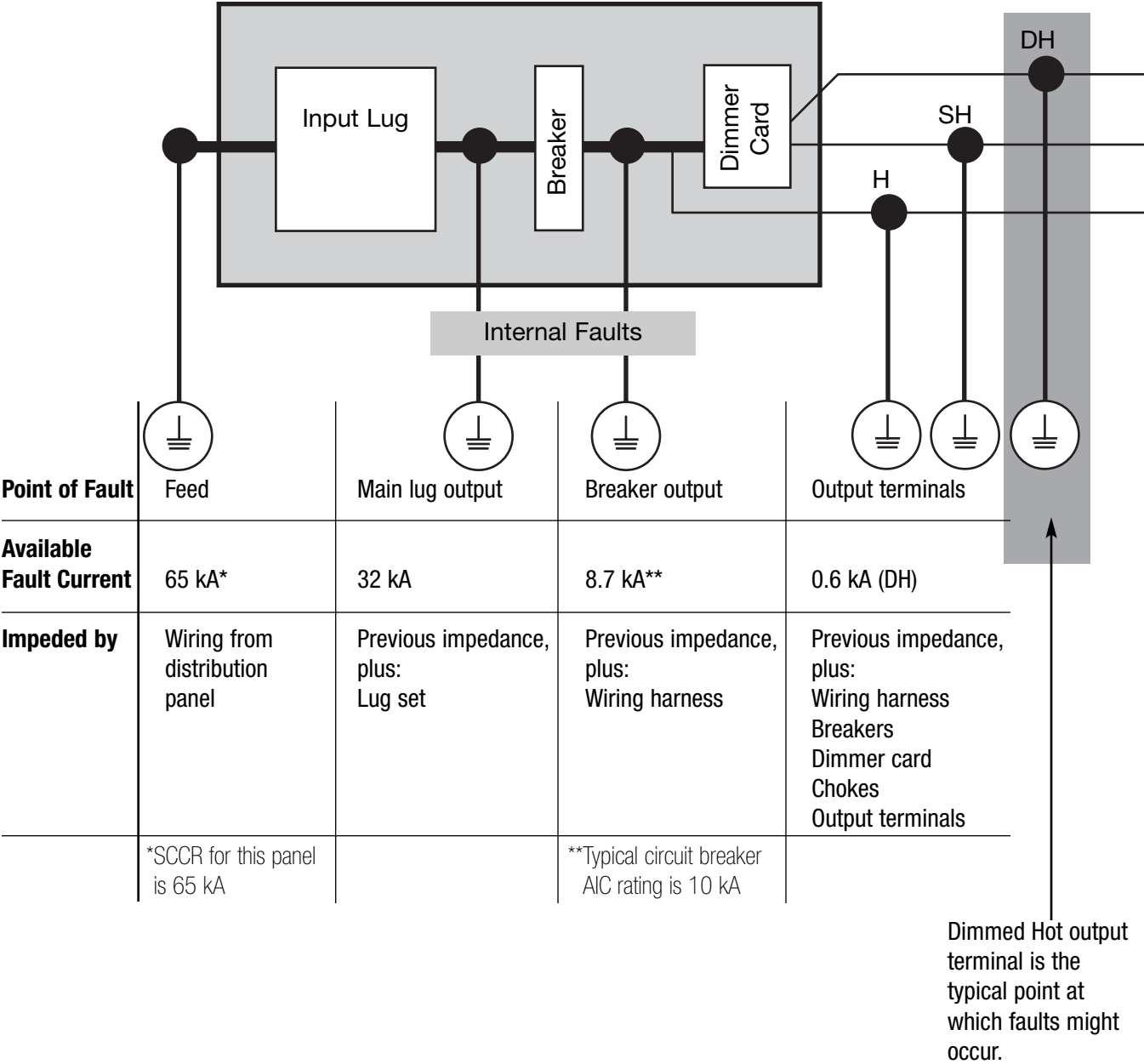
Note: The difference between SCCR and AIC is that AIC applies to overcurrent protection devices only, and the SCCR applies to the entire assembled device, which may use as part of its assembly overcurrent protection devices with an AIC rating.

Fault Current

The fault current is the current that flows through a panel when a short-circuit occurs. As it encounters various components (lugs, wiring, breakers, dimmer cards, modules, chokes, terminals, etc.), the impedance of the components reduces the measured current at each point. If a fault (short-circuit) is created at any point, it is possible to measure the resulting fault current to determine the let-through current value for a fault at that location.

Please refer to the diagrams on the next page for an example showing the fault current path and measured let-through current values.

Fault Current Path and Let-Through Current Values in Lutron Panels



Summary

Lutron's panels are UL-tested while fed by a circuit that has up to 65 kA available fault current. When the load is short-circuited as specified by UL 508, Short-Circuit Testing (fault applied to the load side), UL has verified that the load-side output current is sufficiently limited to safe levels (well below the AIC rating of the overcurrent protection device), along with the other safety criteria specified in UL 508.

With these results, UL has listed Lutron panels tested under these conditions with an SCCR of up to 65 kA on panels that include 10 kA AIC-rated breakers. SCCR appears on the product label on the front cover of Lutron panels.

Frequently Asked Questions

What is AIC?

AIC stands for Ampere Interrupting Capacity. The AIC rating indicates the maximum fault current (in amps) that an overcurrent protection device (circuit breaker, fuse, etc.) will safely clear when a fault is applied at the load side of the overcurrent protection device. The AIC rating applies only to overcurrent protection devices. It is not relevant to standard relays, nor do standard relays carry an AIC rating.

What is SCCR?

SCCR stands for Short-Circuit Current Rating. The SCCR is defined as the highest available fault current (in amps) at the feed side of an assembled device that will not affect the device in an unsafe manner, when a fault occurs on the load side of the device. To pass the stringent UL safety criteria for industrial control equipment, the device does not need to be functional after a fault is introduced at the load side of the device; however, reduced spacings, disconnected conductors, emission of flames, molten materials, etc., are not acceptable.

Are the terms AIC and SCCR interchangeable?

No! AIC applies only to overcurrent protection devices (circuit breakers, fuses, etc.), and SCCR applies to a fully assembled device (i.e., Lutron panel), which may use specific AIC-rated overcurrent protection devices.

Do Lutron's standard relays have an AIC rating?

No. Standard relays do not carry an AIC rating because they are not overcurrent protection devices. A Lutron relay panel has an SCCR, but not an AIC rating. AIC ratings are only for overcurrent protection devices.

Standard Lutron switching panels use branch circuit breakers with an AIC rating of 10 kA (120 V \sim panels) or 18 kA (277 V \sim panels). These branch circuit breakers function as overcurrent protection devices and fault current remains within the rated AIC in a fault condition. Although our panels are capable of accepting breakers rated up to 65 kA AIC, we do not include them because the lower-rated breakers are well within the safety parameters of the AIC rating, and because of their increased cost.

How can I find out the SCCR of my panel?

SCCR appears on the product label on the front cover of Lutron panels.

Frequently Asked Questions (continued)

What is the AIC rating of the circuit breakers Lutron uses in their panels?

Product Family	Voltage	Standard AIC rating	Optional available AIC ratings
GP LCP SpecGrade LP XP XPS	120 V~	10 kA	22 kA, 35 kA, 65 kA
GP XP XPS	277 V~	10 kA or 14 kA	NA
GP XP XPS	277 V~	18 kA	35 kA, 65 kA

Can I have a panel with an SCCR that is higher than the AIC rating of the breakers installed in the panel?

Yes. The AIC rating of the branch circuit breakers (overcurrent protection devices) installed in the panel is taken into consideration when testing a product for its SCCR. It does NOT have to be the same. Lutron's panels are UL listed with an SCCR. The testing for the SCCR proved that by the time the current reaches the overcurrent protection devices, it has been impeded by the internal panel components, and the let-through fault current at that point is **always** less than the AIC rating of the overcurrent protection devices. See page 2 for an example.



Warning! SCCR does not prevent arc flashes from occurring if objects are placed across conductors and grounded in the panel. Follow all local and national safety requirements, and read the instructions for each panel that accompany them in shipping.

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