Sensor3 Power Control System

For instructions about how to use Sensor3 Power Control system specific to CEM3 operation, terms, and definitions, also see the CEM3 User Manual (http://www.etcconnect.com/WorkArea/D...id=10737491993).

Sensor3 is the foundation for a versatile power system that builds on our proven Sensor workhorse system with CEM3 control. Sensor3 is coming soon to installation racks around the world! Stay tuned as ETC prepares to announce innovative advances for your lighting system's power infrastructure.

ETC's Sensor3 Power Control Systems are the performance standard for top theaters, TV studios, and concert halls worldwide. Because a complete range of Sensor3 racks are available, smaller venues like schools and community theaters can also afford Sensor3 excellence. Modularity means configurability: mix and match the modules in the racks according to your particular fixture inventory. Now with Sensor3's new three-in-one ThruPower modules you can freely jump from Dimmable to Non-Dim as well as lock a circuit to a constant hot output override without changing modules. The compact design lets you slide up to 48 modules for up to 96 channels of 2.4kW dimming in and out of a single Sensor3 rack - without tools! And you can take advantage of ETC's innovative /Support/Articles/Dimming-Switching/Sensor3-Power-Control™ (twice the control, half the circuits!) and save on dimmer costs.

With CEM3 Power Control your system is high performance, fast to set up, and easy to use! Quickly override levels with console-style number-pad entry. Take remote management even further with Advanced Feature (AF) monitoring by providing circuit-specific information, such as load changes, lamp failures, or breaker trips directly to the control console.

Our philosophy at ETC is "zero down time!" Add the optional backup stations for an easy, "off the network" control backup solution for failure proofing. Additionally, system backup is stored directly in the rack, which means no setup during controller changes, and options are available for secondary USB backups.

Entertainment lighting has not seen such a drastic and exciting period of change since the transition from carbon arc to tungsten sources. This transition brought rise to the branch circuit dimmer, which allowed technicians to control the intensities of separate fixtures individually on each branch circuit. At the time, these changes we saw in the power system were caused by a fundamental change in how the new types of light sources needed to be powered in order to be controlled properly.

Now, there is similar change occurring in the types of fixtures that are--and will soon be--hung in theatres, studios, ballrooms, and museums in the coming decades. Solid state light sources such as LED fixtures are becoming acceptable for an increasing number of lighting applications. With this new brush in our lighting design palette, a wider mix of tungsten fixtures, moving lights, LED color changers, fluorescent, and arc-source fixtures also forces further change within the power system.
To support likely future transitions in the mix of these source types, flexibility in your power system is paramount. Freely switching between constant power, on/off switching with air gap relays, and dimming for your lighting loads will provide exactly the flexibility needed as fixtures are moved from one show to the next.

**Question:** "I have used dimmers in 'switched' mode in the past without problems. Can't I continue to power moving lights and self-dimming fixtures like LEDs on dimmers that are set to full-on?"

**Answer:** ETC recommends that loads such as LEDs, Moving Lights, and Motors be powered via a non-dimmable source such as a Relay or Constant Current Module, or a ThruPower Module set to Relay mode. Please see [this Support Article](https://support.etcconnect.com/ETC/Power_Controls/Sensor/Sensor3/Hardware/Sensor3_Power_Control_System) for more information.

**Question:** "Why do you suggest air gap relay instead of a solid state relay?"

**Answer:** Solid state relay indicates that the power device is an SCR, Triac, IGBT, or Mosfet. These power devices are dimmers, so products that are using these devices typically take out the toroid filter (choke) from the dimming circuit and fire the dimmer to full on. While this method eliminates possible interactions of the choke with the fixture’s power supply, it does nothing to eliminate possible effects of the dimmer itself on the fixture's power supply. For example, there will always be a modification to the voltage waveform as the dimmer turns on even if it is attempting to fire at full.

**Question:** "If I power my fixture from a dimmer in switched-mode and it fails, I can replace it under warranty right?"

**Answer:** In the past, there were relatively few companies making moving lights and fixtures that required constant power. Manufacturers of fixtures and dimming systems could work cooperatively to test products together when questioned about support of powering the fixture on a dimmer. Now, many new LED and moving light manufacturers have been created from startups that were not previously building performance lighting. Instead of designing their fixtures to operate on dimmers that are set to full on, they void warranty if the fixture is powered by a dimmer set in switched mode.

In contrast, ETC’s Selador series LED fixtures are designed to be capable of running on a dimmer in switched mode so, within the ETC family of LED products, no damage will be caused as long as the fixture is not powered at a dimmed state.

**Question:** "Why do ETC's new ThruPower Modules contain fuses?"

**Answer:** All thyristor dimmers use the impedance of the choke as a method of raising the SCCR of the dimmer module and thus the dimmer rack. Engineers use this SCCR rating to determine safe coordination of the available fault current on the rack feeders with the safe SCCR of the dimmer rack. When the choke is switched out of the circuit, the SCCR is lowered, since the choke's fault current limiting properties are no longer in the circuit. For instance, a rack with an SCCR of 100,000 amps could be lowered to the native AIC rating of the module circuit breakers, 10,000 amps or lower. Since the fuse’s rating is more than the branch circuit rating, 35 amps, the breaker will trip well in advance of the fuse blowing. For this reason the fuse will not blow under typical overcurrent conditions.