

1.01 POWER THROUGH MODULES

A. General

1. The modules shall be C-21 Power Through modules as manufactured by Philips Strand Lighting. C-21 modules shall be designed for complete flexibility of choice for dimmed or non-dim on each 20A branch circuit. A single Power Through module shall provide:
 - a. Two (2) dimmed outputs with 350us rise times for 120Volt applications or 200uS at 230Volt applications.
 - b. Two (2) air gap relay switched outputs controlled by DMX
2. The module may be configured to operate as two dimmers, two relays, or any combination of relay and dimmer from the face of each Power Through Module. Any single circuit may be set to bypass the dimmer using a switch on the front of the module. Remote switching from the console shall not be an option to avoid inadvertent dimming of a SSL.

B. Electrical

1. Each Power Through module shall contain
 - a. two circuit breakers
 - b. SCR solid-state dimming
 - c. toroid filters
 - d. power and control connectors
 - e. 120VAC or 230VAC (depending upon model) remotely controllable mechanically latching air gap relay
2. The dimmer modules shall be designed using advanced, state-of-the-art components. The dimmer module shall be capable of "hot patching" cold, incandescent loads up to its full rated capacity without malfunction with the control signal at full ON.
3. The dimmer modules shall be fully plug-in and factory wired. Dimmer modules shall be of rugged and heavy-duty construction enclosed by a formed aluminum chassis. Power and signal pins shall be recessed in a self-aligning housing to avoid handling, storage, and insertion damage. A contoured handle shall be provided for ease of insertion and withdrawal. All chassis parts, except heat sinks, shall be properly treated, primed and finished in fine texture, scratch resistant, coating. Each module shall be labeled with the Philips Strand Lighting logo and rating. Modules constructed of molded plastic for structural support shall not be acceptable. Dimmer modules shall be ETL and cETL listed and CE marked devices.
4. Dimmer modules shall be keyed so that dimmer modules of greater capacity shall not be interchangeable.

5. Each dimmer module shall contain circuit breakers, associated solid state switching modules, filters, power and control components.

6. Standard dimmer electronics shall be completely solid state. They shall utilize two silicon controlled rectifiers in a back-to-back electrical configuration. The full load of the circuit is to be carried and controlled by the silicon controlled rectifiers.

7. Each 120 volt dimmer shall be protected by a single pole fully magnetic circuit breaker of the appropriate current rating and 10,000 AIC surge rating mounted on the face plate of the dimmer module so that the trip current is not affected by ambient or rack temperature. The circuit breaker shall be rated for tungsten loads having an inrush rating of no less than 20 times normal current and shall disconnect the power to the dimmer module before damage can be done to the dimmer power components. The circuit breakers shall be rated for 100 percent switching duty applications and shall be UL, and cUL marked devices.

C. Dimmer Module Power Devices.

SSR power devices shall be encapsulated, epoxy filled high impact plastic cases with optically isolated firing circuits, control circuitry, and two silicon controlled rectifiers (SCR's). There shall be a minimum of 2,500 (4,000 in 50Hz systems) volts RMS of isolation between the AC line and the control lines of the SCR. The SCR shall be in an industry standard format that is easily field replaceable without removing any other electrical or electronic devices.

D. SCR Power Device Filtering.

1. Each SCR power device dimmer module shall have an integral inductive filter to reduce the rate of current rise time resulting from the SSR switching on. The filter shall limit objectionable harmonics, reduce lamp filament sing and limit the radio frequency interference on line and load conductors.

2. Basic 120 volt Rise dimmers shall have a rise time of not less than 350 microseconds measured at 90 degrees conduction angle from 10% to 90% of output wave form with dimmer operating at maximum load. Voltage rate of rise (slew rate) must not exceed 420 millivolts per microsecond in any point of the wave under full load conditions.

E. Approved Manufacturer and Products.

Dimmer racks, modules and control electronics shall be Strand Lighting C21 Advanced Technology dimmer racks.