L86 DIMMER MODULES

Fully Magnetic Circuit Breakers

Broadcast Quality Filter

Individually Cooled

Full Range of Sizes

- *Quad (4) - [illegible]*
- *Dual (2) - [illegible]*
- *Single - 50A*
- *Single - 100A*

Retaining Latch

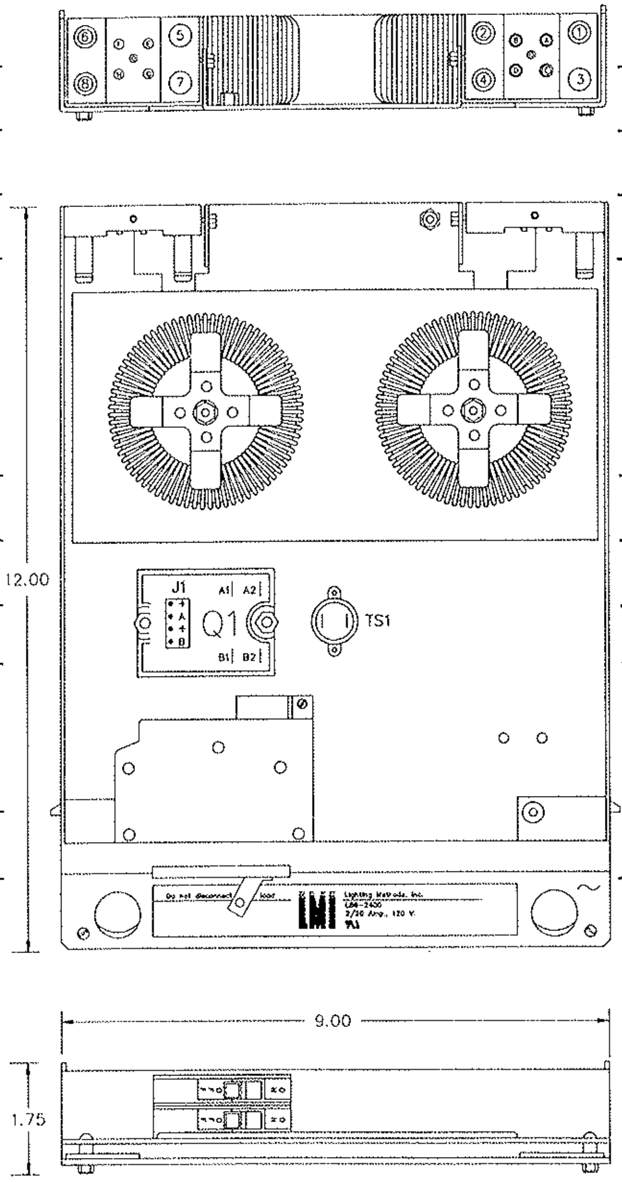
Optional Dim Non-dim Switch

Optional High Rise Filter

Indicator Package

[illegible]

UL Recognized



Lighting Methods, Inc.

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Specifications:

General: Lighting Methods, Inc. L86 series dimmer modules are designed using state-of-the-art components for dependable, economical service in heavy usage applications.

Physical: Dimmer modules shall be assembled on a formed .100 aluminum chassis Module faceplate is formed of .080 steel and has integral pull handles with module retaining latches. Latches shall hold modules securely in their slots but not require tools for insertion or removal. All parts shall be properly treated and finished black baked enamel. Module body is satin finish, the faceplate is textured. With the exception of the circuit breaker, latch and optional dim/nondim switches the module shall contain no moving parts. Each module shall be labeled with the manufacturers name, catalog number, identification number and rating

Dimmer module maximum sizes and weights shall be as follows:

L86/1200	1.62H x 8.87W x 12D	7#
L86/2400	1.62H x 8.87W x 12D	7#
L86/6000	1.62H x 8.87W x 12D	7#
L86/12000	3.37H x 8.87W x 12D	10#

Electrical: Each dimmer module shall contain 1, 2 or 4 single pole fully magnetic circuit breakers, 1 or 2 solid state switching modules and associated toroidal filters, power and control connectors.

Power connections to the module shall be via .250 brass pins mounted to the chassis. Control connections are via tin plated brass banana jacks. Module shall not have any protruding pins subject to physical damage when the module is not in the rack. Power connections shall be keyed so that modules of a larger capacity cannot be inserted in a slot wired for a lesser capacity. Dimmer modules that do not contain all power related components or use fuse clips for power connections are not acceptable.

Each dimmer circuit shall contain a fully magnetic circuit breaker rated at the capacity of the dimmer. Thermal-magnetic or hydraulic-magnetic circuit breakers are not acceptable. Breakers shall be rated at 10,000 AIC. Circuit breakers shall also serve as disconnects.

SCR Assembly: Each dimmer circuit shall use solid state switching devices consisting of two silicon controlled rectifiers in an inverse parallel configuration, snubber network and all required gating circuitry on the high voltage side of an integral optocoupled control voltage isolator. Rectifiers shall be mounted on a beryllium oxide substrate for maximum isolation and heat dissipation and encapsulated with the other components in an epoxy filled high impact plastic case. Dimmers employing triac power devices, pulse transformers or other isolating devices not providing at least 2500v RMS isolation, or current limiting fuses to provide short circuit ratings listed shall not be acceptable. Power devices shall be a non-proprietary device available from at least 3 sources.

SCR power switching devices shall have the following minimum ratings:

model #	peak single cycle surge current	I^2T	Transient overvoltage
L86/1200	350A	500	600V
L86/2400	630A	1,700	600V
L86/6000	1,200A	6,000	600V
L86/12000	1,950A	15,800	600V

Filtering: Dimmer modules shall include toroidal filters to reduce the rate of current rise time resulting from the switching of the SCR's. The filter shall limit objectionable harmonics, reduce lamp filament sing and limit the radio frequency interference on line and load conductors. The current rise time shall be not less than 500 microseconds measured at 90 conduction angle from 10-90% of the output waveform with the dimmer operating at rated load.

Performance: Power efficiency shall be at least 97% at full load with a no load loss of 3V RMS.

Dimmer shall accept hot patching of a cold incandescent load up to the full capacity of the dimmer.

Dimmer output shall be regulated for incoming line voltage variations except that the output voltage cannot be increased above a level equal to line voltage less dimmer insertion drop Line regulation shall be +/- 1V over a 90-140 volt range for changes up to 10% Load regulation shall be +/- 2V for 1-100% of rated current. Dimmers shall employ a scheme for compensation for harmonic distortion of the power line for any variation in load.

Control: Response to control shall be less than 25 milliseconds. Dimmer electronics shall exhibit no oscillating or hunting for levels Dimmer output shall repeat exactly regardless of the direction of the movement of the controller.

Dimmer electronics operation shall be entirely digital. Dimmers employing digital to analog conversion or any form of ramp comparison scheme to fire the SCR's are not digital dimmers and are not equal to this specification.

Options: The indicator option includes a membrane switch which turns the dimmer on full. An adjacent signal tracking LED tracks control signal from the control console. The load indicator light mimics the dimmer output.

The dim/non-dim option includes a dim/non-dim circuit card mounted on the power device. With the selector switch in the non-dim position the device control signal converts to a zero point switch signal which is either fully on or off. In the dimmer position the module operates normally.

The high rise option includes a larger filter to increase the dimmer rise time. Different levels of performance are available.

Catalog Numbering System: