

ENR SERIES

UNIVERSAL DIMMER MODULE

New Dimming Technology Complemented By Stylish Compact Design

- ENR dimmer modules are available in 120 volt dual 1.8kW, 2.4W and single 6.0kW capacities. 240 volt dual 2.5kW and single 5.0kW capacities.
- The ENR Universal Dimmer Module operates with incandescent, fluorescent, low voltage, neon, cold-cathode and non-dim loads.
- Each module shall consist of a fully enclosed two piece "engineering grade" plastic chassis.
- All heat generating components shall have separate ambient air intakes to eliminate heat build up from component to component.
- Safe, non-conductive, cool surface construction.
- UL Recognized.
- CSA Certified.



166-360 Series

Compact design – Each module is 1.25"H x 12.0"W x 4.0"D.

Lightweight – Total dimmer module weight: 2.5 lbs.



Specifications

ENR PLUG-IN DIMMER MODULES

MECHANICAL

Each plug-in module shall consist of a fully enclosed two piece plastic chassis containing one or two circuit breakers, a solid state power device and two filter chokes. The chassis and cover shall be injection molded of high temperature engineering grade composite plastic, and shall include an integral handle. Three independent molded air channels shall provide high velocity ambient air cooling for the power device and filter chokes while preventing airflow over connection points and other components. Dimmers with a single air channel (which develops a thermal gradient from component to component) or dimmers allowing air flow over connection points (which allows the build up of oil and dust on these connections) shall not be acceptable.

The module shall be electrically and thermally non-conductive with no thermally hot components accessible when the module is removed from the rack. All internal power connections shall be made of stamped and formed bronze or nickel-plated copper. All internal signal connections shall be made of stamped and roll-formed gold-plated phosphor bronze. The module shall be completely enclosed with no exposed wires, connections or components and with all external connectors fully recessed. Dimmers with exposed wires, connections, and components or dimmers made of electrically and thermally conductive material shall not be acceptable.

The dimmer modules shall have the following maximum dimensions and weights:

Size: 1.25"H x 12.0"W x 4.0"D
Weight: 2.5 lbs.

ELECTRICAL Dimming

- A. Each dimming channel shall be capable of hot patching cold incandescent loads up to its full rated capacity.
- B. Each dimming channel shall operate satisfactorily on 50/60 Hz, 100 Volts to 130 Volts or 200 Volts to 260 Volts AC lines and in ambient air temperatures from 0-40°C.
- C. Each dimming channel shall produce essentially a full sine wave when the control signal is full on, and an output of zero volts when the control signal is off.

- D. The output voltage of each dimming channel shall be automatically regulated for incoming line voltage variations except that output voltage cannot be increased above a level equal to the difference between incoming line voltage and dimmer voltage drop. Dimmer voltage drop shall not exceed 3 V for 120 V units and 5 V for 240 V units. Line regulation shall be $\pm 2\%$ power for 95 V to 135 V. Load regulation shall be ± 2 V for 1% to 100% of rated current at any control setting.
- E. The output voltage of each dimming channel shall follow a modified square-law curve from 0 to 100% control signal and shall be repeatable within ± 2 volts. The response time of the dimmer shall not exceed 0.1 second. All dimming curve characteristics shall be factory set with no user adjustments required.

ELECTRICAL Module

- A. The dimmer module shall be protected by one or two fully magnetic circuit breakers with the following ratings:

Catalog#	Description	Circuit Breaker
166-361	Dual 1.8kW, 120V	2 x 15A
166-362	Dual 2.4kW, 120V	2 x 20A
166-363	Single 6.0kW, 120V	50A
166-364	Dual 2.5kW, 240V	2 x 15A
166-365	Single 5.0kW, 240V	25A

The circuit breakers shall serve as load disconnects and shall have a 10,000 amp interrupting capacity.

- B. Each dimmer module shall contain a solid state power device with two or four SCR's in an anti-parallel configuration which are reflow soldered to nickel-plated copper lead frames which are in turn reflowed to a beryllium oxide ceramic substrate. The ceramic substrate shall be reflow soldered to an integral nickel-plated aluminum heat sink for maximum thermal conductivity and maximum semiconductor reliability. Dimmers using separate semiconductor assemblies (such as solid state relays) attached to a heat sink and requiring heat sink grease and mechanical mounting hardware shall not be acceptable. Surface mounted optical isolators shall be utilized to provide a minimum of 2500 volts of electrical isolation between the power semiconductors and the control signal. The active components in the power device shall be encapsulated in a high dielectric potting compound for mechanical protection and electrical isolation. The SCR's shall have the following minimum ratings:

Catalog#	Description	Single Cycle Surge	Transient Voltage
166-361	Dual 1.8kW, 120V	650A	600V
166-362	Dual 2.4kW, 120V	650A	600V
166-363	Single 6.0kW, 120V	1200A	600V
166-364	Dual 2.5kW, 240V	650A	600V
166-365	Single 5.0kW, 240V	1200A	600V

- C. Each 120V dimmer module shall be a recognized component of Underwriters' Laboratory for incandescent and inductive loads and shall be so labelled. These modules shall also be CSA certified.

ENVIRONMENTAL

- A. Each Dimmer Module shall include a toroidal filter choke to limit objectionable harmonics, radiated radio frequencies, electromagnetic interference on the conductors and acoustical noise in the load lamp filament. Current rise time shall be no less than 500 microseconds measured at 90° conductive angle from 10% to 90% of the output wave form with the dimmer operating at maximum load.
- B. Power efficiency of each dimming channel shall be at least 97% at full load. Maximum heat loss for each dimming channel shall be as follows:

Catalog#	Description	Watts	BTU/hr	Tons A/C
166-361	Dual 1.8kW, 120V	36	122	.010
166-362	Dual 2.4kW, 120V	54	184	.015
166-363	Single 6.0kW, 120V	117	398	.033
166-364	Dual 2.5kW, 240V	43	146	.012
166-365	Single 5.0kW, 240V	93	316	.026

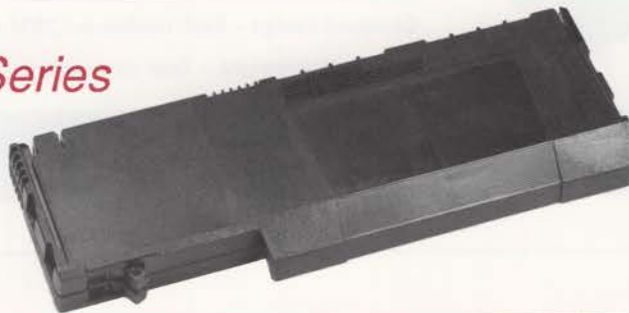
QUANTITIES AND SIZES

- A. Provide the following modules:

- A. _____ Dual 1.8kW Dimmer Module, 120V (166-361).
- B. _____ Dual 2.4kW Dimmer Module, 120V (166-362).
- C. _____ Single 6.0kW Dimmer Module, 120V (166-363).
- D. _____ Dual 2.5kW Dimmer Module, 240V (166-364).
- E. _____ Single 5.0kW Dimmer Module, 240V (166-365).

Note: Specification subject to change without notice.

166-360 Series



Ordering Information

Catalog No.	Description
166-360	Filler Module
166-361	Dual 1.8kW, 120V, Dimmer Module
166-362	Dual 2.4kW, 120V, Dimmer Module
166-363	Single 6.0kW, 120V, Dimmer Module
166-364	Dual 2.5kW, 240V, Dimmer Module
166-365	Single 5.0kW, 240V, Dimmer Module
Accessories	
Catalog No.	Description
166-388	Fluorescent Handle Kit

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