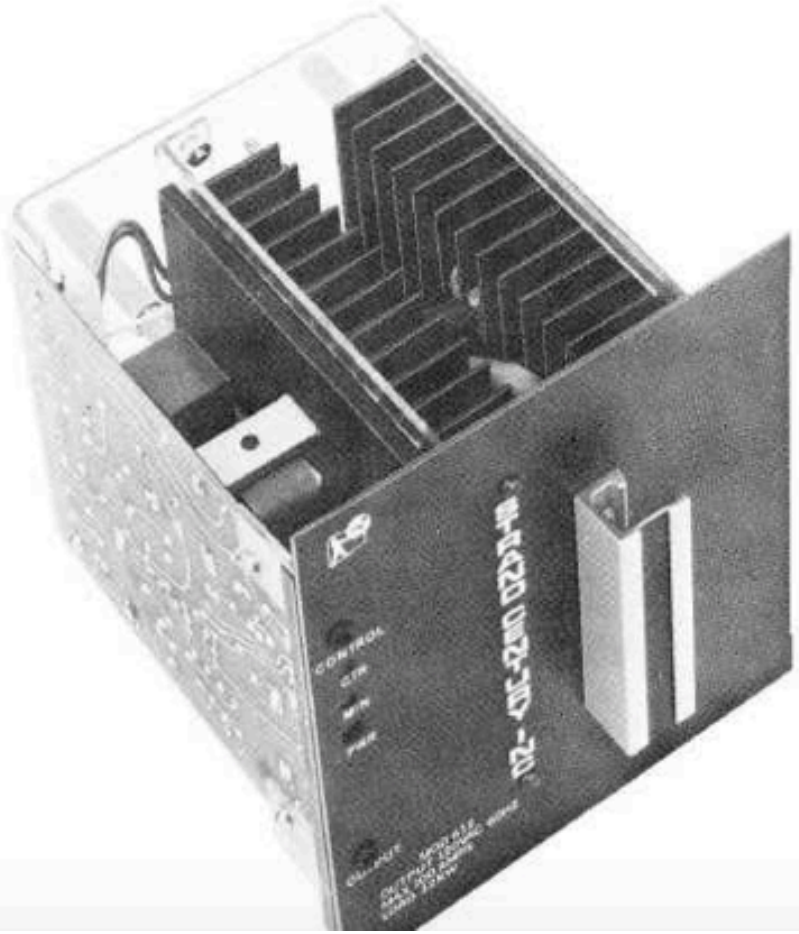
DIMMER MODULES

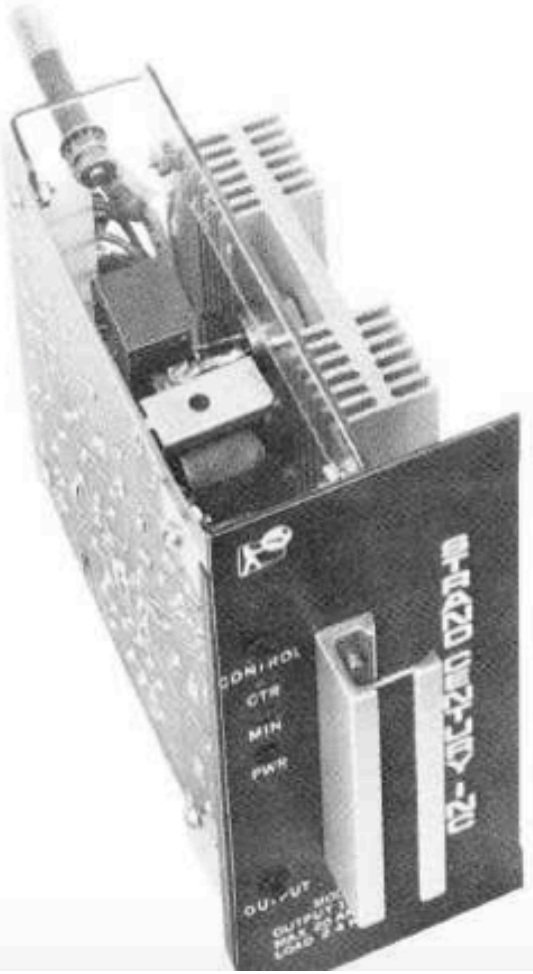
CCR 600 series

STRAND CENTURY

Compact, economical plug-in modules.

- Field adjustable curve shaping potentiometers.
- Heavy duty power and control plugs.
- Two silicon controlled rectifiers.
- External control and load test points.
- Complete range of sizes up to 12 Kw.





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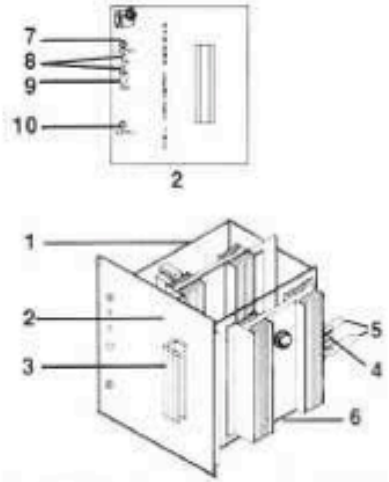
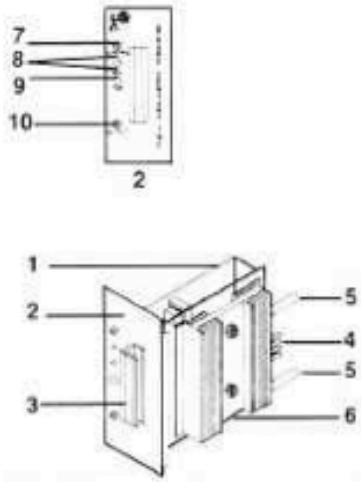


Model 607 Maximum Capacity 7.2KW

Height 7" (178mm)
Depth: 7½" (191mm)
Width: 6" (152mm)
Weight: 4 lbs. 4 ozs. (1.92kg)



Model 603 Maximum capacity 3.6 KW

Height 7" (178mm)
Depth: 7½" (191mm)
Width: 3" (76mm)
Weight: 2 lbs. 6 ozs. (1.07kg)

1 Removeable preamplifier printed circuit board
2 Faceplate
3 Handle
4 Control pins
5 Power pins
6 Heatsink w/scr's
7 Control voltage monitor jack
8 Dimming curve adjustment potentiometer
9 On/Off pilot light
10 Output voltage monitor jack

Specifications

Quantities and ratings of dimmers shall be as specified in the schedule.

Individual dimmer modules shall be built on a slide-mount chassis with a steel faceplate. Each shall slide into the Dimmer Equipment Bank and shall be provided with power and control connectors for plug-in to the mating receptacles in the Dimmer Equipment Bank as previously specified. The faceplate shall be provided with a handle for ease of withdrawal, power-on indicator light, test points and access for curve adjustment. The dimmer modules shall be finished in baked enamel.

These solid-state dimmers shall be of the generic type designated as avalanche rectifiers. They shall utilize two silicon controlled rectifiers in a back-to-back electrical configuration which provides, at all times, symmetrical alternating current output to the lamp load which it controls. The full load of the circuit is to be carried and controlled solely by the silicon controlled rectifers. Dimmers employing triacs will not be acceptable. Dimmer modules shall be U. L. approved.

A. The output of each dimmer shall be A.C. and at maximum shall approach a full sine wave. It shall be symmetrical with respect to the zero voltage axis at any point on the dimming curve.

B. Each dimmer module shall have an associated, inductive-type filter, mounted on acoustically dampened vibration mounts, to accomplish the following:

1. Limit objectionable harmonics.

2. Limit the conducted radio frequency interference on supply lines.

3. Modify the steep wave front of the avalanche effect which would otherwise create noise of an acoustical origin in the lamp filaments in the output circuit.

C. The control circuit shall be complete on a single 1/16" (1.6mm) thick, fiberglass, printed circuitboard. This board shall also carry two dimmer curve adjustment potentiometers accessible through the face of the dimmer. Circuitboards for all dimmer capacities shall be the same. Circuitboard replacement shall not require the use of tools or removal of other components for access.

D. The dimmer module shall include all solid-state devices. No relays, tubes, or moving parts shall be used.

E. The dimmer module shall be designed to operate satisfactorily on 50 to 60 Hz., 110 to 140 volt A.C. lines, and in ambient temperatures from 32°F - 104°F (0°C - 40°C) with component variations not exceeding ± 5%.

F. The power efficiency of each dimmer module shall be approximately 95% minimum at full load and the output voltage 96% to 100% of the input voltage.

G. The dimmer module shall be capable of "hot patching" cold, incandescent lamp loads up to its full-rated capacity, either in parts or in one complete load, without malfunction or change in operation. The control setting may be at any position during this patching operation.

H. All rectifier components shall be completely protected, during "hot patching" or any proper or improper operation of the dimmer.

I. Each dimmer module shall have an associated fully magnetic circuit breaker which may also be used as a disconnect and reset. Under overload conditions it will disconnect power to the dimmer module before damage can be done to the power devices.

Each dimmer shall be protected by a replaceable silversand fuse of the proper rating for short circuit protection, which will open within ½ cycle. This fast-acting fuse will prevent failure of the semi-conductor elements due to short circuit in-rush current.

Current limiting feedback technique will not be acceptable as a means of protecting a main power device because an overload condition must exist before circuits can sense and correct for the condition. Under no circumstances will dimmers allowing continued operation with loads substantially in excess of the rated capacity be acceptable. The protective devices shall have maximum "must trip" ratings of 125% of rated capacity. On overloads greater than 25%, the fuse may open depending on circuit conditions and the degree of the overload. Otherwise, the circuit breaker will trip, opening the primary circuit.

J. Each dimmer module shall be capable of voltage regulation within ± 2½ % from 8 watts to full-rated load at any point on the dimming curve.

K. The rise time shall not be less than 500 microseconds measured at 90° conduction angle from 10% to 90% of the output wave form with the dimmer operating at maximum load.

L. The output voltage versus control position shall be factory adjusted to conform to the "Square Law Dimming Curve". It shall be possible to adjust the dimmers in the field to meet field conditions. Screwdriver adjustments, readily accessible through the face of the dimmer, shall be provided for this balance.

M. The input signal shall be 10 volts D.C. at .2 milliamperes; and dimmer response shall be insensitive to the phase from which this control signal is taken.

N. Switch-On versus Switch-Off response time shall be within ¼ second for all loads.

O. At minimum load, the output of the dimmer with circuit controllers at "zero" may be adjusted not to exceed 5 volts RMS.

P. The preamplifier shall not misfire during transient energization or de-energization.

Q. Power consumption of the control circuit shall not exceed a total of 6.5 watts.

R. For test purposes, test points shall be provided in the faceplate to make available dimmer output and control voltages. A neon pilot light shall indicate when there is power to the dimmer module. Two curve adjustment devices shall be accessible through the faceplate of the module, without having to remove the dimmer module from the Dimmer Equipment Bank.

S. All dimmer modules shall be interchangeable in the system with others of the same capacity. Individual dimmer chassis weights and sizes shall not exceed the following:

2.4 Kw and 3.6 Kw: 7" H x 6" D x 3" W, (178 mm x 152 mm x 76 mm) 2¾ lbs. (1.1 kg.)

7.2 Kw and 12 Kw: 7" H x 6" D x 6" W, (178 mm x 152 mm x 152 mm) 4¼ lbs. (1.9 kg)

T. The following dimmer modules shall be provided:

_____ 2.4 Kw (stage)
_____ 3.6 Kw (stage)
_____ 7.2 Kw (stage)
_____ 12 Kw (stage)
_____ _____ Kw (house)