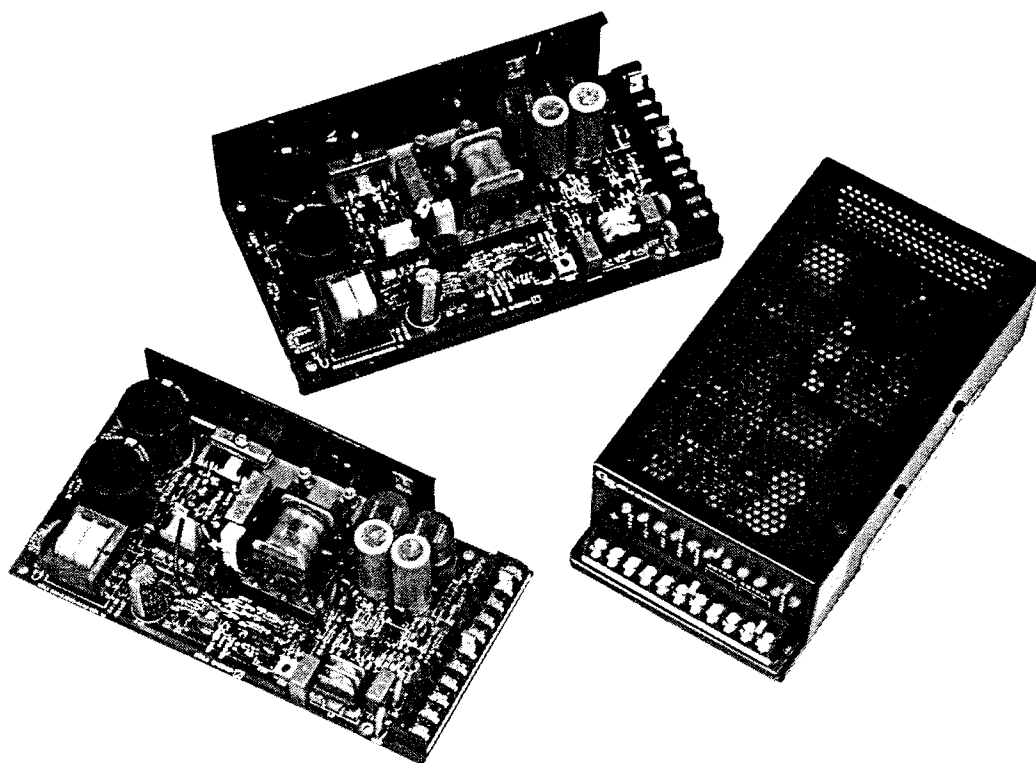


**OPERATING
INSTRUCTIONS
FOR
CLASS 086
150 WATT
SINGLE OUTPUT
POWER SUPPLIES**



2800

A UNIT OF GENERAL SIGNAL **GS**

SOLA

1. DESCRIPTION

The Class 086, 150-watt, single output switching mode power supply generates a regulated output voltage of +5V, +12V, +15V, or +24V (refer to Table 1) from an unregulated AC line input voltage of either 115VAC or 230VAC.

Refer to Figure 1. The power supply employs pulse width modulation to regulate the DC output of a 50kHz power converter. Electronic circuits monitor the DC output voltage and power converter input current, and shut down the power supply under abnormal conditions. The nominal output voltage is adjustable. Remote shutdown and remote sensing inputs provide maximum flexibility of application.

Table 1. DC Output Characteristics

Catalog No.	Output Voltage(VDC)	Max. Load Current (A)
86-05-325	+5V	25A
86-12-312	+12V	12.5A
86-15-310	+15V	10A
86-24-262	+24V	6.25A

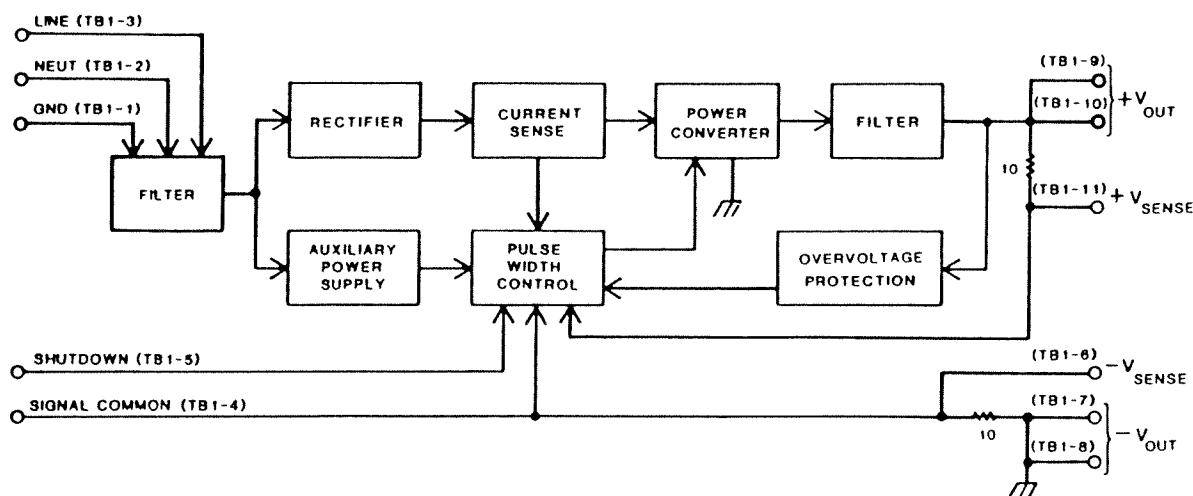


Figure 1. Power Supply Block Diagram

2. ELECTRICAL SPECIFICATIONS

Input Power Specifications

Nom. Voltage Selection	115 VAC	230 VAC
Voltage Range	90 to 135 VAC	180 to 257 VAC
Frequency Range	50 to 400 Hz	50 to 400 Hz
Current (Maximum)	3.0 A	1.8 A
Surge Current (Maximum)	35 A	35 A
Required Input Fuse ¹	4.0 A	3.0 A

% RATED
OUTPUT

Input Signal Specifications

Remote Sensing: minimum 0.25 volt compensation for voltage drop in conductors and connectors external to the power supply.

Remote Shutdown: TTL-compatible high (1.6 mA source requirement) shuts down the power supply.

AM

Output Specifications

Voltage	per Table 1
Initial Setting Accuracy	±1%
Adjustment Range (minimum)	±5%
Line Regulation	±0.1%
Load Regulation	±0.1%
Current Limit	Factory adjusted to 115% of maximum load current
Ripple (maximum) ²	50 mV p-p
Transient Response ³	500 μs
Overshoot	±2%
Efficiency	65% for +5 V supply 75% for others

Note 1: Pe
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Note 2: Th
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Environmental Specifications

Storage Temperature:	-30 to +105°C
Operating Temperature:	Permissible output is a function of ambient temperature, as shown in Figure 2.

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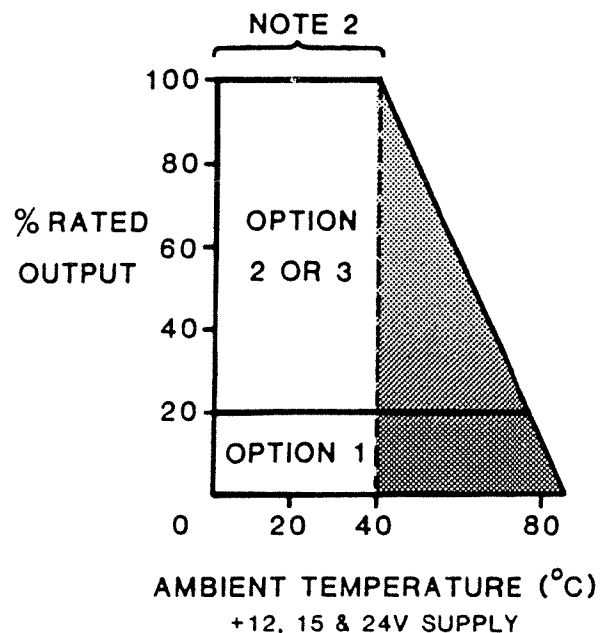
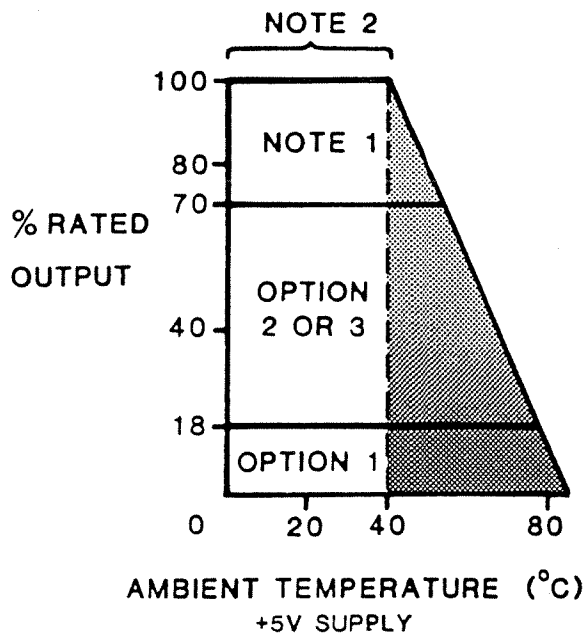
1 Customer must provide fuse to interrupt at this current.
2 from 25% to 100% of full load.
3 from 50% to 100% of full load.

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Note 1: Permissible operating area for either of the following configurations:

- A. Option 1 and auxiliary heatsink with 50 CFM airflow across heatsink.
- B. Option 2 or 3, with either auxiliary heatsink or 50 CFM airflow across frame.

Note 2: The unshaded area indicates the output and ambient temperature conditions evaluated by Underwriters Laboratories Inc. and included in the Conditions of Acceptability.

Figure 2. Effects of Ambient Temperature on Rated Output

3. MECHANICAL SPECIFICATIONS

Power supplies can be purchased in three mechanical configurations:

- PC board only (Option 1)
- PC board mounted in an open frame (Option 2)
- PC board mounted in an enclosed frame (Option 3)
- Auxiliary, external heatsink Sola P/N 299-33571-0100-00 (may be used with options 1, 2, or 3).

Each of these configurations is shown in Figure 3.

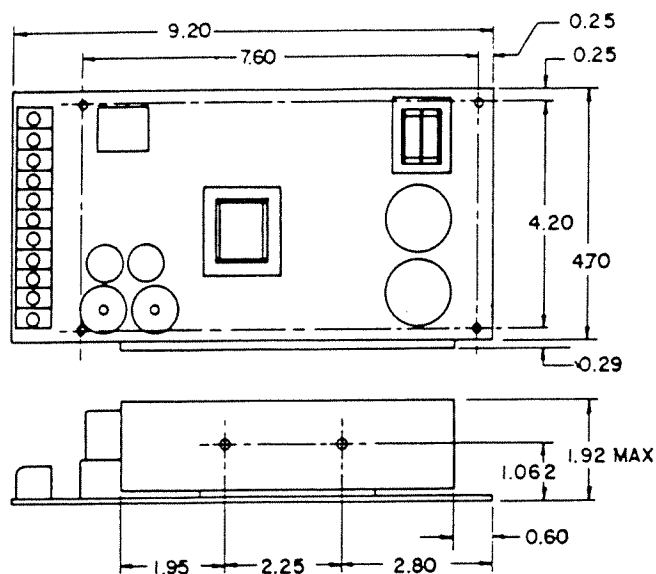
4. INSTALLATION AND ADJUSTMENT

Installation. Mechanical installation is accomplished using the dimensional data in Figure 3. If installing the PC board only, suitable stand-off insulators must be provided at the four locations shown for Option 1. When mounting a power supply with frame, four 6-32 screws must be installed thru the mounting surface and into the four threaded holes shown for Options 2 and 3.

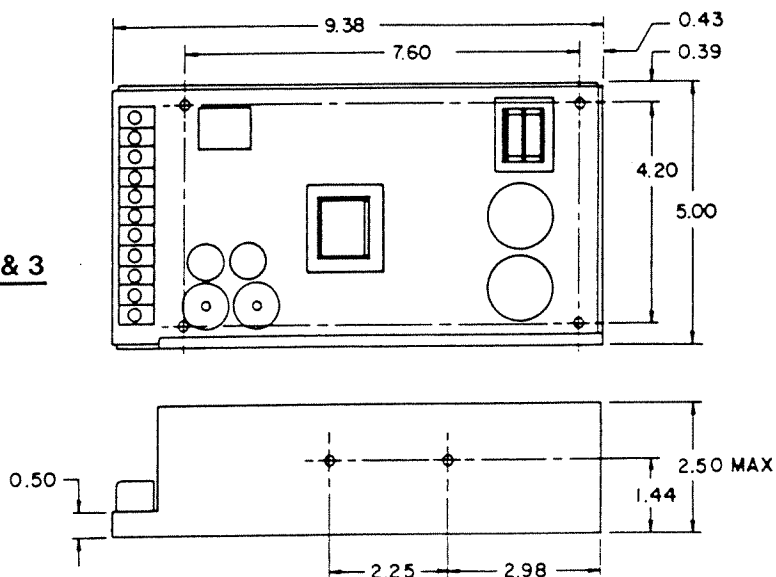
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Electrical supply, in a (terminals not exceed 4 thru 28, a

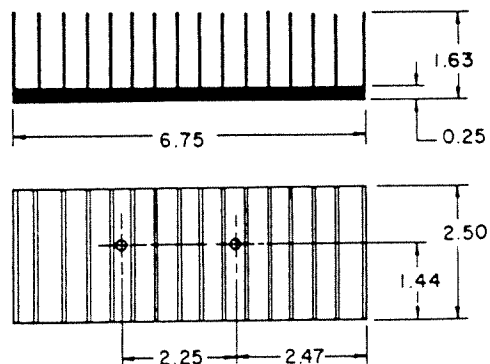
OPTION 1



OPTION 2 & 3



OPTIONAL HEATSINK



NOTE: ALL DIMENSIONS IN INCHES

Figure 3. Mechanical Specifications

Electrical connections are made to the exposed terminal strip at the edge of the power supply, in accordance with Table 2. Wires connecting the load to the power supply output (terminals 7/8 and 9/10) should be sized so that the voltage drop across each wire does not exceed 0.25 V. Table 3 lists the approximate resistance of stranded wire AWG Sizes 4 thru 28, and should be used to determine the minimum acceptable wire size.

Caution

If the power supply output current exceeds 15A, output terminals 9 and 10 must be paralleled, as must be output common terminals 7 and 8.

Table 2. Electrical Connections

Terminal	Connection
1	AC Ground
2	AC Neutral (N)
3	AC Line (L)
4	Signal Common (SG)
5	Remote Shutdown (SG)
6	Remote Sense (-S)
7,8	Output Common (-V)
9,10	Output (+V)
11	Remote Sense (+S)

Table 3. Approximate Resistance of Stranded Copper Wire at +20°C

AWG Size	Ohms/Ft.	AWG Size	Ohms/Ft.	AWG Size	Ohms/Ft.
4	.0003	12	.002	20	.012
6	.0005	14	.003	22	.019
8	.0008	16	.005	24	.030
10	.0012	18	.008	28	.07

Caution

The power supply input is not fused; Customer must provide overcurrent protection to interrupt currents greater than 4A (115VAC source) or 3A (230VAC source).

ATTENTION

L'entree de la source d'alimentation ne comporte pas de fusibles. Le client doit prévoir d'une protection contre les surintensites d'une courant alternatif excedent 4A (d'une source de 115VAC) ou 3A (d'une source de 230VAC).

The power supply is wired for use with a 115VAC source. If 230VAC operation is required, the power supply is easily modified by removing jumper wires JU1, JU2, and JU4 from the PC board and installing jumper wire JU3. These jumpers can be removed with a pair of pliers (by pulling) or with a screwdriver inserted between the jumper and the PC board (by prying). Any of the removed jumpers can be installed in location JU3. These jumpers are labelled on the PC board, and shown in Figure 4.

The power supply is wired for local voltage sense control. If remote (load) voltage sensing is required, remove jumper between terminal strip connections 6 & 7 and 10 & 11. Terminals number 6 (negative sense) and number 11 (positive sense) should be connected to the remote sensing points with 22 gauge wire. If the length of the leads exceeds 24", a shielded cable or twisted pair should be used. A capacitor may also be necessary to reduce the high-frequency output impedance when using remote sensing.

Adjustment. Refer to Figure 4. The DC output voltage is adjustable. The output voltage is adjusted about the nominal voltage with potentiometer R30.

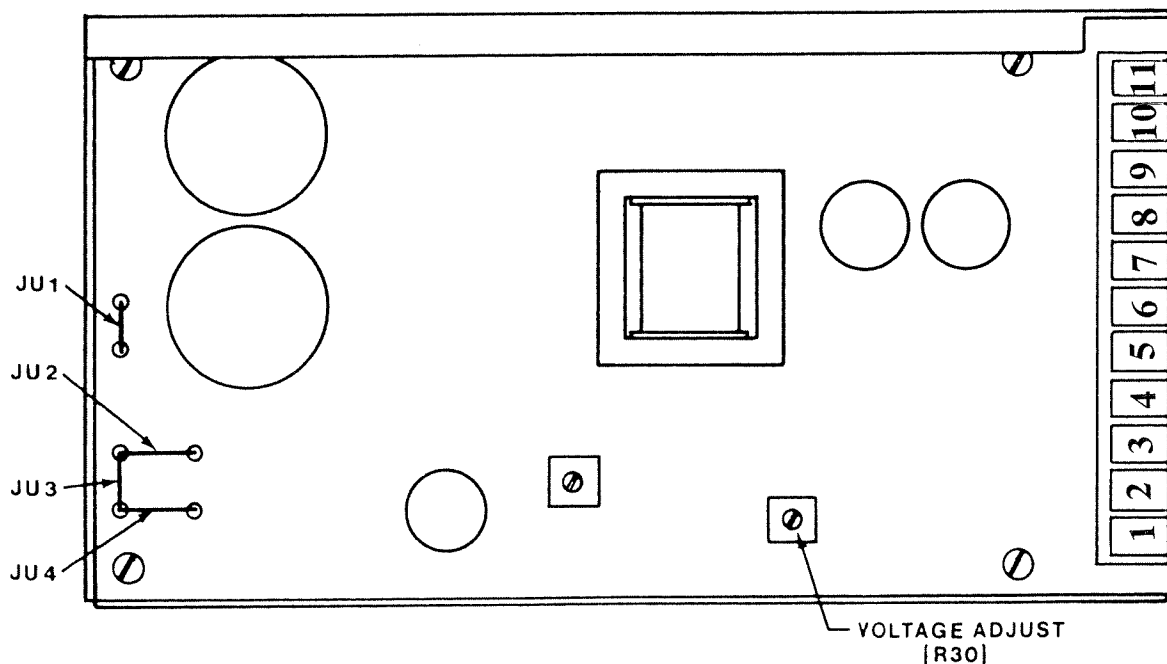


Figure 4. Power Supply Adjustments

WARRANTY

Sola will, at its option, either repair or replace any Class 086 class power supply that fails, during normal use, to operate within specifications for a period of one year.



Sola / A Unit of General Signal Corporation
1717 Busse Road
Elk Grove Village, Illinois 60007

CUSTOMER SERVICE: 708/228-1250 HEADQUARTERS: 708/439-2800
TECHNICAL SERVICE: 708/228-1393 TELEX: 28-0538
FAX: 1-800-626-6269

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