

# INSTRUCTION MANUAL



## KEPCO

# EMR

### 4-output switching module

### Model EMR 500K

## I—INTRODUCTION

**SCOPE OF MANUAL.** This instruction manual contains the specifications and information for installation and operation of the Kepco Model EMR 500K Switching Power Supply.

**DESCRIPTION.** The Model EMR 500K is a switching power supply with one principal output of (+)5 volt, two (2) auxiliary outputs of ( $\pm$ )12 volt, and one of (+)24 volt respectively. The power supply is constructed as a printed circuit board, enclosed by a metal, perforated cover. The cover is mounted onto an aluminum base-plate, serving as the mounting surface and heatsink. Two (2) pin-header connectors (See Outline Drawing) are used for input/output connections.

## II—SPECIFICATIONS

PARAMETER	CONDITION	SPECIFICATION
<b>A-C Source Voltage</b>	Selectable (See Fig. 1)	85V to 130V a-c or 170V to 260V a-c 47-66 Hz, single phase.
<b>A-C Source Current</b>	at 85V a-c, 25°C, max. load at 170V a-c, 25°C max. load	<2.5A <1.3A
<b>Turn-on Half Cycle peak current</b>	at 115V a-c or 230V, 25°C cold start <b>Limited by power thermistor</b>	<45A
<b>Efficiency</b>	Maximum load, Nominal Source Voltage	>78%
<b>Hold up time</b>	Maximum load, Minimum Source Voltage	20 msec., Minimum 30 msec., Typical
<b>D-C Output Ratings</b>	0°C to 50°C ambient temperature	See Rating Table

*NOTE: Total power is 80W at 50°C. From 50°C to 70°C, derate linearly to 40W.*

D-C OUTPUT VOLTS	MIN. LOAD CURRENT	MAX. LOAD CURRENT
+ 5V <sup>(1)</sup> (V1)	2.0A	5.0A
+ 12V (V2)	0.4A	2.3A
- 12V (V3)	0A	0.3A
+ 24V (V4)	0.2A	1.0A

D-C OUTPUT RATINGS

<sup>(1)</sup> Set to this value at full load at 25°C ambient temperature by means of an internal trim pot. (See Fig. 1). All other outputs are fixed and interdependent.

## II—SPECIFICATIONS (Cont'd)

PARAMETER	CONDITION	SPECIFICATION
<b>Source Effect</b>	85V to 130V a-c or 170V to 260V a-c	All outputs < 1%
<b>Load Effect</b>	MIN. LOAD-MAX. LOAD per Rating Table	(V1) + 5V output: < 1.5% (V2) + 12V output: < 5% (V3) - 12V output: < 1% (V4) + 24V output: < 5%
<b>Time Effect</b>	0.5 to 8 hrs, at 25°C, max. load	All outputs: < 0.5%
<b>Combined Effect</b> For all specified changes in Source Voltage, Load- Conditions and Time.	As individually specified.	(V1) + 5V output: < ± 3% (V2) + 12V output: < + 4 - 7% (V3) - 12V output: < ± 5% (V4) + 24V output: < + 4 - 7%
<b>Transient Recovery Time</b>	50% to 100% load change	All outputs: < 2 milliseconds
<b>Temperature Effect</b>	0-50°C	All outputs: 3% maximum
<b>Current Limit Setting</b>	Rectangular Characteristics	(V1) + 5V output: 5.2-7.0A (V2) + 12V output: 2.5-3.5A (V3) - 12V output: 0.5-1.2A (V4) + 24V output: 1.1-2.0A
<b>Over-Voltage</b>	(Reset by removing input power for 50 sec.)	(V1) + 5V output only: 5.8-6.9V
<b>Operating Temperature- Range</b>	Mount vertically on base-plate	0°C to + 50°C. From + 50°C to 70°C, derate linearly to 50% of total rated power.
<b>Storage Temperature- Range</b>	N.A.	- 25°C to + 75°C
<b>Humidity</b>	Non-Condensing	Operating: Up to 85% RH. Non-operating: Up to 95% RH.
<b>Vibration</b>	5-10 Hz.	10 mm, 3 axes
<b>Shock</b>	10-55 Hz. 11 ms ± 5 ms.	2 g, 3 axes 20 g, 3 axes
<b>Size</b> (See also FIG. 2)	inches millimeters	5" x 2.1" x 10" 129 x 54 x 253
<b>Weight</b>	unpacked, approximately	3 lb (1.4 kg.)
<b>Safety</b>	N.A.	UL 478 recognized CSA C22.2-No. 143 and 154, certified.
<b>EMI</b>	Conducted Noise Radiated Noise	FCC Level B VDE 0875/7.71 (Level N)
<b>ISOLATION</b>	Hi-Pot Test Hi-Pot-Test Isolation Resistance	Input/Output: 2KV a-c, 1 min Input/Ground: 2KV a-c, 1 min Output/Ground: 100 Megohm, 500V d-c
<b>Warranty</b>	Operated within given specifications	1 Year

## II—SPECIFICATIONS, CONT'D.

PARAMETER	CONDITION	SPECIFICATION
<b>Ripple Envelope</b> Source and Switching frequency (p-p)	At nominal input voltage and load	All outputs: 50 mV typical 100 mV maximum
<b>Spike - Noise</b> d-c to 15 MHz. (p-p)	At nominal input voltage and load, to 15 MHz.	All outputs: 2% $E_o$ + 50 mV maximum
<b>Cross-Regulation</b>	Minimum to maximum load- change per Rating Table on any other output	(V1) + 5V output: <1% (V2) + 12V output: <6% (V3) - 12V output: <0.5% (V4) + 24V output: <6%

## III—OPERATION

**INPUT VOLTAGE SELECTION (See FIG. 1).** The Model EMR 500K power supply is delivered for operation on 85 to 130V a-c power lines (wire-jumper in the "115V" position.) For operation on 170-260V a-c power lines, change the jumper to the "230V" position.

**TERMINATIONS:** See FIG. 1.

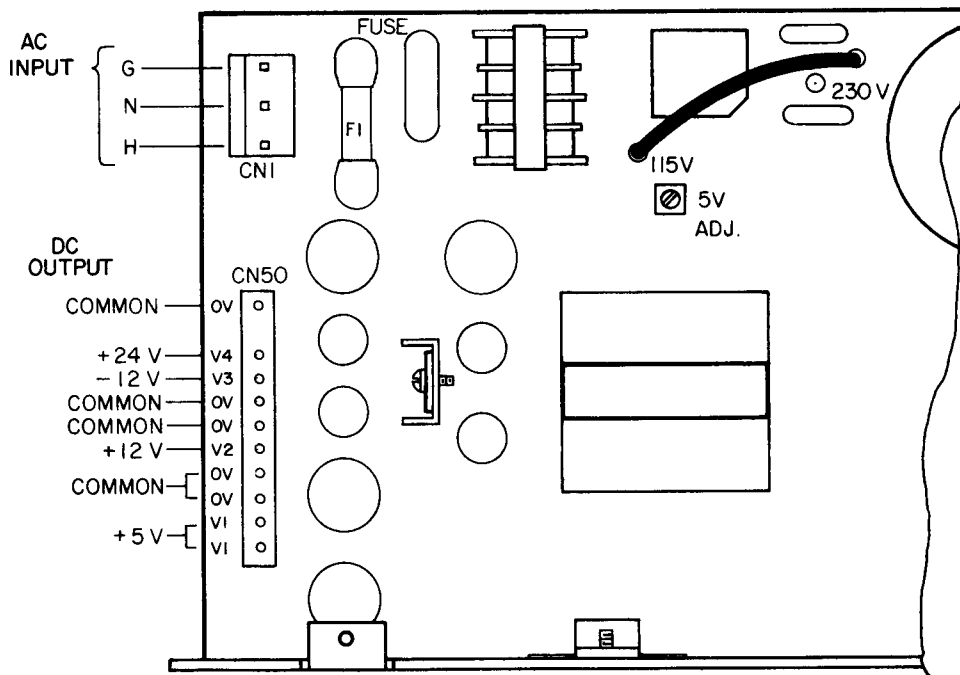


FIG. 1 SIMPLIFIED TOP VIEW, MODEL EMR 500K POWER SUPPLY.

**NOTE:** F1 is a slow acting fuse, 3.15A-250V, equivalent to SAN-O, P/N ST7-3.2A or LITTELFUSE, P/N 315 03.2

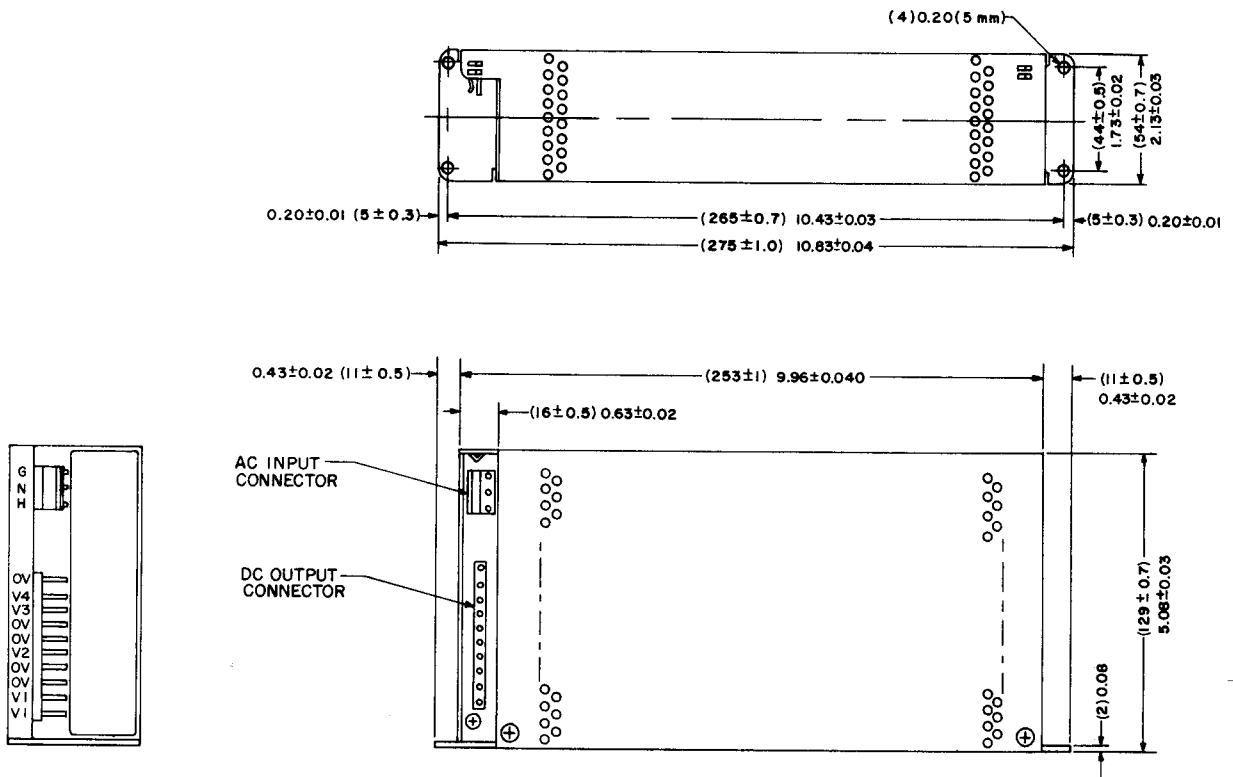


FIG. 2 MECHANICAL OUTLINE DRAWING, MODEL EMR 500K.

**NOTES:**

- 1) DIMENSIONS in parentheses are millimeters, others are inches.
- 2) TOLERANCES: 0.04" (1 mm) unless noted otherwise.
- 3) A-C INPUT CONNECTOR (CN1) Molex "SPOX" system, Series 5277, 0.045" (1.14 mm) square pins, spaced 0.156" (3.96 mm). Mating connector may be selected from Molex Series 5196 or equivalent.
- 4) D-C OUTPUT CONNECTOR (CN50) Molex "SPOX" system, Series 5275, 0.045" (1.14 mm) square pins, spaced 0.156" (3.96 mm). Mating connector may be selected from Molex Series 5196 or Series 2139 or equivalent.