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# MH500 Series

## 60 Hz to DC

- 500-Watt Switching 100 kHz Power Supply
- High Efficiency, 65% Minimum

- Meets MIL-STD-461B, MIL-STD-810C and MIL-S-901C

- Standard Soft-start, Overvoltage Protection and Short Circuit Protection

### Specifications

#### Input:

103.5 to 126.5 V rms standard, 47 to 440 Hz, single phase. For 207 to 253 V rms input, add "(230)" to model number, i.e., MH500S/15-DE(230). Other inputs available

#### Efficiency:

65% minimum.

#### Line Regulation:

Within 0.2% or 25 mV (whichever is greater) for input change of 103.5 to 126.5 V ac with load constant.

#### Load Regulation:

Within 0.2% or 25 mV (whichever is greater) for change from no load to full load with line constant.

#### Pard (Noise and Ripple):

50 mV rms, 100 mV peak-to-peak maximum at 25 MHz bandwidth.

#### Isolation Voltage:

500 V dc input to output and input to case, 100 V dc output to case.

#### Insulation Resistance:

50 megohms minimum between input and output, input and case, and output and case when measured at 50 V dc.

#### Polarity:

Inputs and outputs are isolated. Either positive or negative side of output may be grounded.

#### Temperature Range:

Operating: 0°C to +71°C maximum at center of mounting base. Storage: -55°C to +85°C.

#### Temperature Coefficient:

0.03%/°C maximum over entire temperature range.

#### Input Transient Protection:

Unit will withstand 180 V ac for 0.1 second in accordance with MIL-STD-704A, Figure 3, Curve 1.

#### Load Transient Recovery Time:

Output voltage returns to regulation limits within 300 microseconds after a 50% change in load current.

#### Holdup time:

20 ms after nominal input is lost at full load.

#### Short Circuit Protection:

Completely protected against an overload or short circuit of any duration. Output automatically restores to normal when the overload is removed. (Foldback to 60%.)

#### Output Overvoltage Protection:

A non-crowbar type OVP. Input must be recycled to restore output.

#### Remote Error Sensing:

Regulator monitors voltage directly at the load using extra "sensing" leads and compensates for a dc voltage drop up to 0.3 volt in the load leads.

#### Electromagnetic Interference:

Units were designed and tested to the requirement of MIL-STD-461B, Class A1B, for generation of and susceptibility to radiated and conducted interference. For details and reports consult your nearest sales office.

#### Reliability:

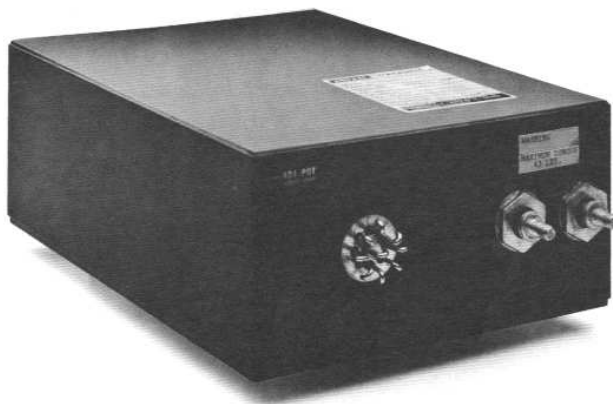
The Mean Time Between Failure (MTBF) calculated per MIL-HDBK-217D, under operating conditions of 50°C baseplate temperature, maximum operating input voltage and maximum rated output power is 54,530 hours for a ground benign environment. Consult factory for other model and environment information.

#### Environment:

Encapsulated and hermetically sealed to meet the environmental requirements of MIL-STD-810C, MIL-S-901C and MIL-E-5400P, Class 2, including altitude (to 70,000 ft.), vibration, shock, acceleration, sand, dust, humidity, saltspray, fungus, explosion, etc.

#### Connectors:

Standard unit is provided with an input solder pin header and an output "hermetic seal" stud-type connector.



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## Options

The following standard options are available on the MH Series power supplies. Please refer to the options section for detailed information.

### Special Connectors:

A military-type hermetically sealed connector is provided as **Option A** in place of our standard input header. (To order, replace the "D" in the model number with "A," i.e., MH500S/5-AE.)

### Wide Input Voltage:

With **Option H**, the units will operate either from 115 V ac  $\pm 15\%$  or 230 V ac  $\pm 15\%$ . (To order, add an "H" after the "E" in the model number, i.e., MH500S/5-DEH or MH500S/5-DEH (230).)

### Remote Turn On/Off:

**Option L** provides isolated terminals to turn output(s) on/off with TTL logic signal. (To order, add "L" after "E" in model number, i.e., MH500S/5-DEL.)

### Remote Output Adjustment:

With **Option R**, an adjustment potentiometer can be remotely located to adjust the output voltage. (To order, add "R" after "E" in model number, i.e., MH500S/5-DER.)

### Wider Operating Temperature:

$-20^{\circ}\text{C}$  to  $+71^{\circ}\text{C}$  is available with **Option T**. (To order, add "T" after "E" in model number, i.e., MH500S/5-DET.)

### Enhanced Reliability:

**-ER Option** provides increased reliability by using higher levels of military-grade components. (To order, add "-ER" after model number, i.e., MH500S/5-DE-ER.)

### WYE Input:

**Option -3** changes input to 3-phase, 4-wire "WYE." (To order, add "-3" to the end of the model number, i.e., MH500S/5-DE-3.)

### Three Phase Delta Input:

**Option -6** changes input to 3-phase Delta. (To order, add "-6" to the end of the model number, i.e., MH500T/5-DE-6.)

### Variable Input:

**Option -8** allows input to be either 115 V ac or 230 V ac, selectable by input pin, wiring, 47 to 440 Hz. (To order, add "-8" to the end of the model number, i.e., MH500S/5-DE-8.)

## Standard Models

Output Voltage Range <sup>1</sup>	Output Current (amps)	Weight <sup>2</sup> (Lbs.)	Weight <sup>2</sup> (Kgs.)	Model Number
4.75-5.25	100	15	6.75	MH500S/5-DE
11.40-12.60	41.67*	15	6.75	MH500S/12-DE
14.25-15.75	33.33*	15	6.75	MH500S/15-DE

Output Voltage Range <sup>1</sup>	Output Current (amps)	Weight <sup>2</sup> (Lbs.)	Weight <sup>2</sup> (Kgs.)	Model Number
22.80-25.20	20.83*	15	6.75	MH500S/24-DE
26.60-29.40	17.86*	15	6.75	MH500S/28-DE

\*Rounded figures. Total watts equal 500.

1. Output voltage is continuously adjustable between the limits shown by means of an externally accessible screwdriver adjustment potentiometer.

Adjustment resolution is 50 mV for nominal output voltages 5 to 15 V dc and 60 mV for outputs 24 to 28 V dc.

2. Maximum weight, not including options.

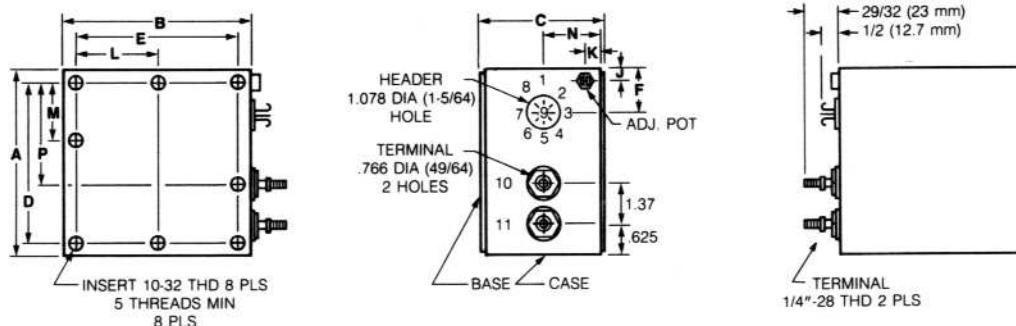
## Model Numbering System

Product Line Series	Nominal Output Power (Watts)	Number of Outputs	Slash	Output Voltage Nominal	Dash	Header Type	Encapsulation (Standard)	Options
MH	500	S	/	5	—	D	E	





## Case Drawings



## Dimensions

Inches  
mm

A	B	C	D	E	F	J	K	L	M	N	P
7	10	3-1/2	6.46	9.45	2-3/32	1/4	3/8	4.73	2.14	1-11/16	4.32
177.8	254	88.9	164	240	53.2	6.35	9.53	120.1	54.4	42.86	109.7

**Tolerances:** If English unit is a fraction,  $\pm 1/32$  inch, (0.8 mm); if English unit is a decimal,  $\pm .015$  inch, (0.4 mm).

**Material:** Base — Aluminum 6061-T6,  
Case — Steel

**Finish:** Black flat lacquer per  
FED-STD-595, Color 37038.

**Mounting:** 10-32 THD inserts  
5/32" minimum depth are provided in  
baseplate. Steel 10-32 bolts American

Standard, unified national fine series,  
slotted studs are supplied with each unit.  
Metric hardware and inserts available as  
a special order.

## Pin Designations

(Standard model, not  
including options.  
Consult factory for  
details.

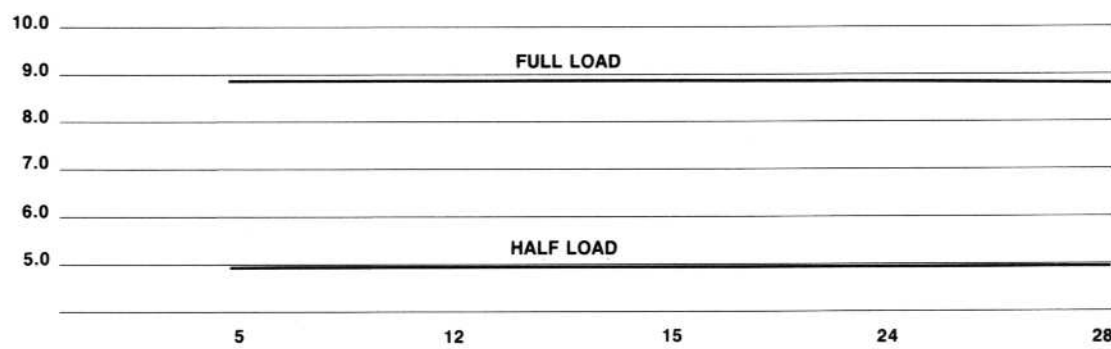
1. AC Input
2. AC Input
3. Not Used
4. -Sense

5. +Sense
6. Not Used
7. Not Used
8. Not Used

9. Ground
10. + Output DC
11. - Output DC

## Input Current

(Typical)  
Amps



Power Factor: 0.7  
5% Pre-load, Internal

## OUTPUT VOLTAGE (VDC)

The input current is described by the  
vertical column of numbers on the left of  
the chart. The diagonal lines describe the  
load of the specific power supply model.

The output voltage is described by the  
horizontal row of numbers on the bottom  
of the chart.

By locating the intersection of the proper  
output voltage and the model curve, the  
input current is read from the vertical  
column on the left.