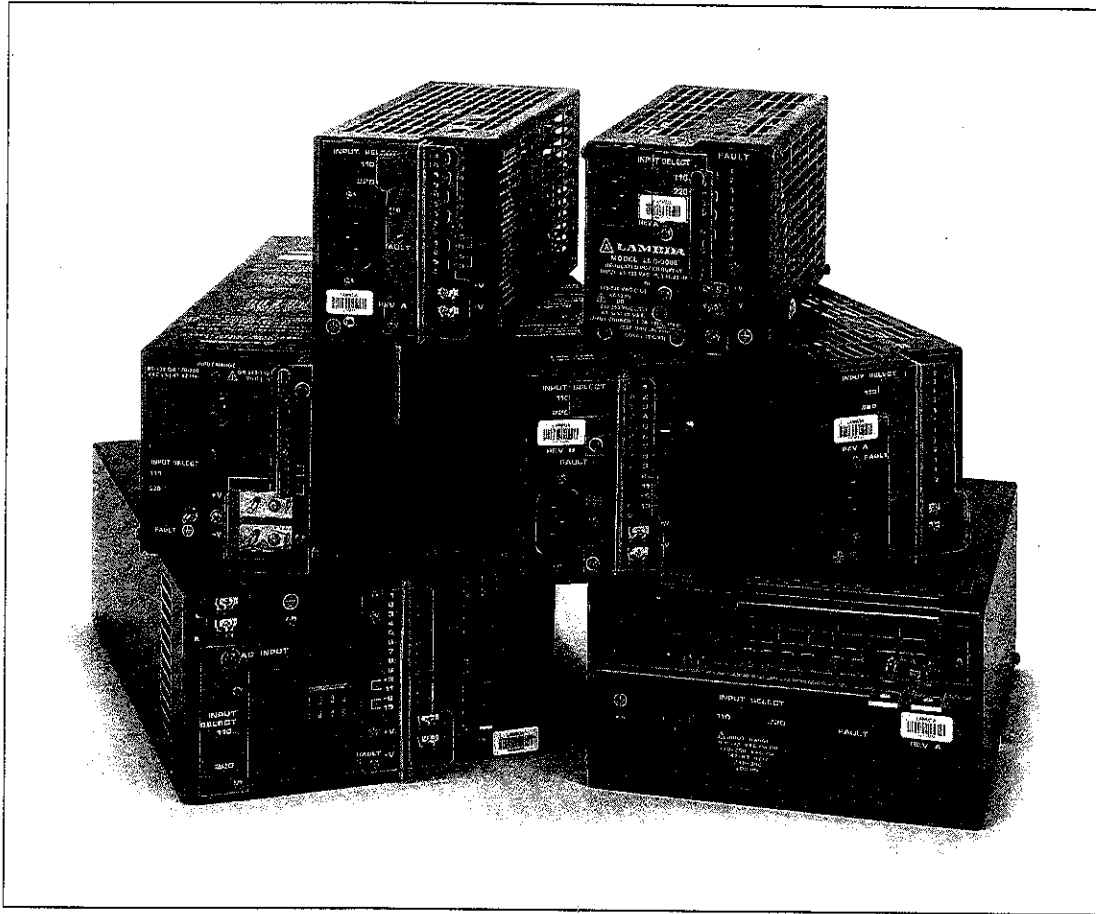


# Part I – AC-to-DC Power Supplies

## LAMBDA'S LMS SERIES



### Programmable Power for Constant Voltage/Current Applications

Lambda's zero-up LMS Series remote programmable power supplies provide 39 modular solutions for wide range voltage applications from 0-300V, up to 100A, up to 800W. The versatility and flexibility of the LMS Series is ideal to meet the changing requirements of in-house test and deliverable test equipment, and reduces the cost of subsequent systems.

The LMS Series features adjustable overvoltage protection, constant voltage/constant current operation and overvoltage/overtemperature indicators. Integral EMI filtering to meet FCC 20780 Class A and VDE 0871 Class A; user selectable 110/220VAC, input surge protection and worldwide safety agency approvals ensure trouble-free operation in any system environment.

# LMS SERIES SPECIFICATIONS

## AC Input

line ..... 85 to 132VAC or 170 to 265VAC, user selectable. 47-440 Hz.

## Input Power and Current

Package Model	Max Power (Watts)	Max Current (A RMS)
LMS-3000	62	1.20
LMS-4000	79	1.35
LMS-5000	135	2.70
LMS-6000	245	4.00
LMS-7000	450	7.50
LMS-8000	620	10.00
LMS-9000	1100	17.50

## Efficiency

Package Model	Minimum Efficiency at Max P <sub>OUT</sub>
LMS-3000	45%
LMS-4008, 4018	55%
LMS-4040, 4060, 4120, 4300, 5008, 5018	60%
LMS-5040, 5060, 5120, 5300, 6008, 6018, 6040, 6060, 6120, 6300	65%
LMS-8008, 8018	68%
LMS-7008	70%
LMS-8040, 8060, 8120, 9008	73%
LMS-7040, 7060, 7120, 9018, 9040	75%
LMS-9060, 9120, 9300	78%

## EMI

All units meet FCC 20780 Class A and VDE 0871 Class A.

## DC Output

Voltage range shown in tables.

### Regulated Voltage Constant

regulation, line ..... 0.05% for line variations from 85 to 132VAC or 170 to 265VAC. 0.01% + 1mV for LMS-3000.

regulation, load ..... 0.05% for load variations from 0 to full load. 0.01% + 1mV on LMS-3000 Series.

remote programming resistance ..... Customer adjustable from 200Ω/volt to 1000Ω/volt. 200Ω/volt on LMS-3008, LMS-3060. 400Ω/volt on LMS-3120. 1000Ω/volt on LMS-4300, LMS-5300, LMS-6300 and LMS-9300.

remote programming voltage ..... volt per volt or 0-5 volt isolated signal for zero to full voltage out, customer selectable.

ripple and noise (20MHz Bandwidth) ..... 5mV RMS, 35mV pk-pk on 8V and 18V models. 10mV RMS, 75mV pk-pk on 40V and 60V models. 20mV RMS, 150mV pk-pk on 120V and 300V models. 1mV RMS, 5mV pk-pk on all LMS-3000 models. 35mV RMS, 300mV pk-pk on LMS-4300 and LMS-5300.

temperature coefficient ..... 0.03%/°C. 0.01%/°C on LMS-3000 Series.

### Constant Current

(Current regulated line and load) Automatic Crossover.

current range ..... 5% to full load current. 1% for LMS-3000 models.

regulation, line ..... 0.3% of I<sub>o</sub> (max) for line variations from 85 to 132VAC or 170 to 265VAC. 2.5mA or 0.1% (whichever is greater) on LMS-3000. 2.5mA or 0.3% (whichever is greater) on LMS-4000 models. 2.5mA on LMS-5300.

regulation, load ..... 0.3% of I<sub>o</sub> (max) for load variations from short circuit to rated DC voltage. 2.5mA or 1% (whichever is greater) on LMS-3000 models. 2.5mA or 0.3% (whichever is greater) on LMS-4000 models. 2.5mA on LMS-5300.

remote programming current ..... 0-5V isolated signal for zero to I<sub>o</sub> (max).

current ripple ..... 1.0% I<sub>o</sub> (max) RMS.

### Thermal Overload Protection

Internal temperature sensing circuit protects unit from excessive ambient temperature on the LMS-3000, 4000, 5000 and 7000 Series. The LMS-6000, 8000 and 9000 Series are protected from inadequate air velocity by an internal airflow sensing circuit. When shutdown occurs, a front panel LED indicator will turn on. AC power must be momentarily removed from the unit after thermal shutdown in order to restore operation.

## Electrical Overload Protection

Adjustable, automatic electronic self-resetting current-limiting circuit. Current-limiting setability to 100% of rated current via an externally accessible potentiometer. An internal peak inverter current limit circuit protects the power supply during load transients.

## Overvoltage Protection

Built-in, adjustable overvoltage protection is standard on all sets. When pre-set voltage is exceeded, the overvoltage protector removes the inverter drive. AC power must be momentarily removed from unit after overvoltage shutdown in order to restore operation.

Package Model	Overvoltage Protection Adjustable Ranges	
	V <sub>ov</sub> (Min)	V <sub>ov</sub> (Max)
LMS-3008, 4008, 5008, 6008, 7008, 8008, 9008	4V	11V
LMS-3018, 4018, 5018, 6018, 7018, 8018, 9018	4V	24V
LMS-3040, 4040, 5040, 6040, 7040, 8040, 9040	8V	50V
LMS-3060, 4060, 5060, 6060, 7060, 8060, 9060	8V	70V
LMS-3120, 4120, 5120, 6120, 7120, 8120, 9120	20V	130V
LMS-4300, 5300	200V	330V
LMS-6300, 9300	55V	330V

## In-rush Current Limiting

Limits in-rush current at turn-on to 20A when connected for 110VAC input and 40A when connected for 220VAC input. 90A on LMS-3000 Series. 30A on LMS-7000.

## Cooling

The LMS-3000, 4000 and 5000 Series are convection cooled. The LMS-6000, LMS-7000, LMS-8000 and LMS-9000 are fan cooled. Leave adequate clearance for air intakes and exhausts.

## Operating Temperature Range

Continuous duty from 0°C to 71°C with appropriate derating from 40°C to 71°C (0°C to 60°C for LMS-3000, 4000, 5000 Series).

## Storage Temperature Range

-55°C to +85°C.

## Remote Sensing

Provision is made for remote sensing to eliminate effect of power output lead resistance on DC regulation.

## Remote On/Off

A TTL compatible isolated source or contact closure low voltage or short enables the unit. A TTL compatible high voltage or open circuit turns the unit off.

## Series/Parallel Operation

Due to the nature of test applications, expandability is a critical design parameter. The LMS Series allows series or parallel operation with like units in order to address the growing power or voltage requirements of test applications.

## DC Output Controls

Simple screwdriver adjustment over the entire voltage range.

## Input and Output Connections

Input connections via an IEC power line connector. DC output connections via heavy duty, PC board mounted barrier strips (bus bars on LMS-9008 and LMS-9018 units). (AC mating connector available, consult factory.)

## LED Status Indicator

Overvoltage or overtemperature indicator on rear panel.

## Accessories

Rack adapters and line cords available.

## Physical Data

Package Model	Lbs. Net	Lbs. Ship	Size Inches
LMS-3000	6	7	4 <sup>9</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>16</sub> × 8
LMS-4000	4.5	5.5	4 <sup>9</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>16</sub> × 9
LMS-5000	7	8	4 <sup>9</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>16</sub> × 10
LMS-6000	7.25	8	4 <sup>9</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>16</sub> × 11
LMS-7000	8.6	9.3	4 <sup>9</sup> / <sub>32</sub> × 3 <sup>13</sup> / <sub>16</sub> × 13
LMS-8000	12.2	16.7	4 <sup>9</sup> / <sub>32</sub> × 8 × 9.5
LMS-9000	14.5	19	4 <sup>9</sup> / <sub>32</sub> × 8 × 11 <sup>1</sup> / <sub>2</sub>

## Safety Agency Approvals

The LMS-3000, 4000, 5000 and 6000 are UL recognized, CSA certified and TUV licensed. The LMS-7000, 8000 and 9000 are under evaluation.

## Guaranteed For 3 Years

3 year guarantee includes labor as well as parts. Guarantee applies to operation at full published specifications at end of 3 years.

# Industrial Ratings Table – Wide Range Output

40°C	MAX CURRENT (AMPS) AT OPERATING TEMPERATURE OF			COMPLETE ELEC. SPEC. PG.	QTY. 1	PRICE QTY. 10	QTY. 25	MODEL
	50°C	60°C	71°C					
<b>0-8V OUTPUT</b>								
3.50	2.90	1.75	—	43	\$ 282	\$ 268	\$ 263	LMS-3008
5.00	4.30	3.20	—	43	418	397	386	LMS-4008
10.00	7.90	6.30	—	43	*495	472	455	LMS-5008
20.00	20.00	16.50	13.5	43	*664	632	611	LMS-6008
35.00	35.00	30.00	25.0	43	*810	771	745	LMS-7008
50.00	47.00	41.00	33.7	43	*959	911	880	LMS-8008
100.00	90.00	78.00	57.0	43	1261	1200	1158	LMS-9008
<b>0-18V OUTPUT</b>								
1.60	1.30	0.80	—	43	282	268	263	LMS-3018
2.40	2.10	1.50	—	43	418	397	386	LMS-4018
4.50	3.50	2.80	—	43	495	472	455	LMS-5018
9.00	9.00	8.20	6.6	43	664	632	611	LMS-6018
16.00	16.00	13.50	11.0	43	810	771	745	LMS-7018
24.00	22.20	20.50	18.0	43	959	911	880	LMS-8018
45.00	40.00	33.00	25.0	43	1261	1200	1158	LMS-9018
<b>0-40V OUTPUT</b>								
0.70	0.60	0.35	—	43	282	268	263	LMS-3040
1.00	1.00	0.85	—	43	418	397	386	LMS-4040
2.00	1.60	1.30	—	43	495	472	455	LMS-5040
4.00	4.00	3.80	3.1	43	664	632	611	LMS-6040
7.00	7.00	6.00	5.0	43	810	771	745	LMS-7040
10.00	9.80	9.20	8.0	43	959	911	880	LMS-8040
20.00	18.00	15.00	11.0	43	1261	1200	1158	LMS-9040
<b>0-60V OUTPUT</b>								
0.50	0.42	0.25	—	43	282	268	263	LMS-3060
0.70	0.70	0.60	—	43	418	397	386	LMS-4060
1.40	1.10	0.90	—	43	495	472	455	LMS-5060
2.80	2.80	2.60	2.1	43	664	632	611	LMS-6060
4.80	4.80	4.10	3.4	43	810	771	745	LMS-7060
7.00	6.60	6.10	5.3	43	959	911	880	LMS-8060
14.00	12.00	10.00	8.0	43	1261	1200	1158	LMS-9060
<b>0-120V OUTPUT</b>								
0.25	0.21	0.13	—	43	282	268	263	LMS-3120
0.36	0.36	0.30	—	43	418	397	386	LMS-4120
0.70	0.55	0.45	—	43	495	472	455	LMS-5120
1.40	1.40	1.30	1.0	43	664	632	611	LMS-6120
2.40	2.40	2.10	1.7	43	810	771	745	LMS-7120
3.50	3.40	3.20	2.7	43	959	911	880	LMS-8120
7.00	6.00	5.00	4.0	43	1261	1200	1158	LMS-9120
<b>0-300V OUTPUT</b>								
0.14	0.12	0.11	—	43	482	459	447	LMS-4300
0.28	0.22	0.18	—	43	568	540	522	LMS-5300
0.56	0.56	0.52	0.40	43	830	789	762	LMS-6300
2.80	2.40	2.00	1.60	43	1640	1558	1503	LMS-9300