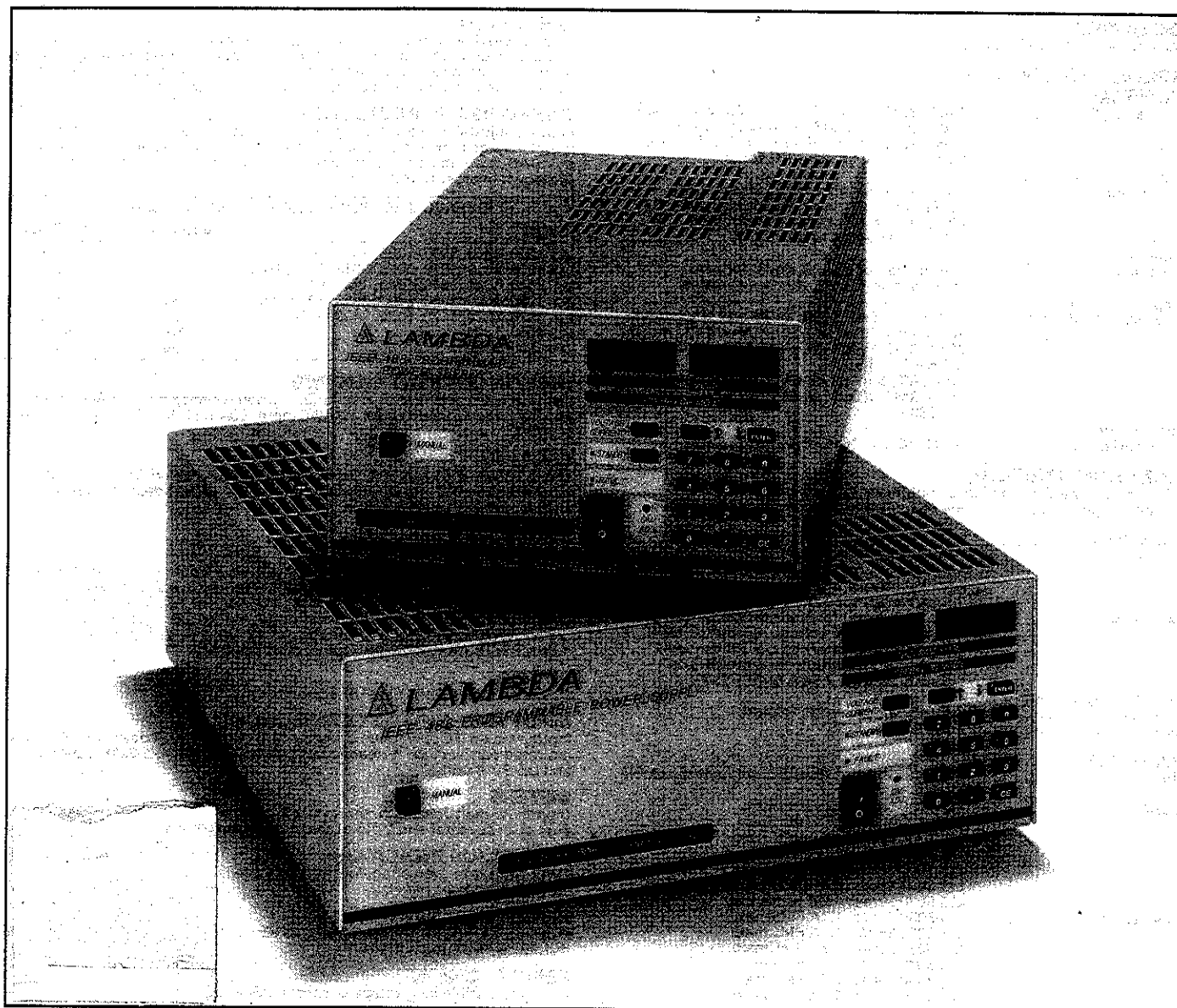


LAMBDA'S LLS-GPIB SERIES



NEW STAND-ALONE IEEE-488 POWER SUPPLY SERIES

Lambda's new LLS-GPIB Series is the largest selection of single output IEEE-488 power supplies available. They include software features which significantly reduce your system cost and development time.

- 20 new models from 28 to 800W.
- Up to 120V, up to 100A.
- Ideal for IEEE-based test applications:
 - IEEE controlled voltage & current
 - Output parameter readback over the bus
 - DC out of tolerance monitoring
- Front panel manual mode control/display.
- 110/220VAC user selectable input.
- Output parameter readback over the bus.
- Grade 1 design.

PART III — TEST, SYSTEMS AND LABORATORY POWER SUPPLIES

LAMBDA'S LLS-GPIB SERIES

DC OUTPUT

Voltage range shown in table.

REGULATED VOLTAGE

CONSTANT

regulation, line	0.05% for line variations from 85 to 132VAC or 170 to 265VAC.
regulation, load	0.01% + 1mV for LLS-3000-GPIB models. 0.05% for load variations from 0 to full load. 0.01% + 1mV on LLS-3000-GPIB Series.
remote programming voltage	Volt per volt or 0-5 volt signal for zero to full voltage out, customer selectable.
ripple and noise	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 models.
temperature coefficient	0.04%/°C.

CONSTANT CURRENT

(Current regulated line and load) Automatic Crossover.	
current range	5% to full load current. 1% on LLS-3000-GPIB.
regulation, line	0.3% of I_o (max) for line variations from 85 to 132VAC or 170 to 265VAC. 2.5mA or 1% (whichever is greater) on LLS-3000-GPIB.
regulation, load	0.3% of I_o (max) for load variations from short circuit to rated DC voltage. 2.5 mA or 1% (whichever is greater) on LLS-3000-GPIB.
remote programming current	0-5V signal for zero to I_o (max).
current ripple	1% I_o (max) RMS.

AC INPUT

line	85 to 132VAC or 170 to 265VAC, user selectable 47-440 Hz.
power	LLS-3000-GPIB: 78 watts max. LLS-6000-GPIB: 245 watts max. LLS-8000-GPIB: 620 watts max. LLS-9000-GPIB: 1100 watts max.
input current	LLS-3000-GPIB: 1.6A RMS max. LLS-6000-GPIB: 4.0A RMS max. LLS-8000-GPIB: 10.0A RMS max. LLS-9000-GPIB: 17.5A RMS max.

EFFICIENCY

Model	Minimum Efficiency at Max P_{out}
LLS-3000-GPIB	36%
LLS-6000-GPIB	65%
LLS-8008-GPIB, 8018-GPIB	68%
LLS-9008-GPIB	72.5%
LLS-8040-GPIB, 8060-GPIB, 8120-GPIB	73%
LLS-9018-GPIB, 9040-GPIB	75%
LLS-9060-GPIB, 9120-GPIB	77.5%

OPERATING TEMPERATURE RANGE

Continuous duty from 0°C to 60°C with appropriate deratings (see tables).

STORAGE TEMPERATURE RANGE

-55°C to +85°C.

OVERLOAD PROTECTION

THERMAL

Internal temperature sensing circuit protects unit from excessive ambient temperature on the LLS-3000-GPIB. The LLS-6000-GPIB, 8000-GPIB and 9000-GPIB 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

External overload protection — adjustable, automatic electronic current-limiting circuit limits output current to preset value. Current-limit setting in manual mode to 100% of rated current via front panel adjust. 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 preset voltage is exceeded, the overvoltage protector removes the inverter drive. AC power must be momentarily removed from the unit after overvoltage shutdown in order to restore operation.

Overvoltage Protection Adjustable Ranges		
Model	Vov(Min)	Vov(Max)
LLS-3008-GPIB, 6008-GPIB, 8008-GPIB, 9008-GPIB	4V	11V
LLS-3018-GPIB, 6018-GPIB, 8018-GPIB, 9018-GPIB	4V	24V
LLS-3040-GPIB, 6040-GPIB, 8040-GPIB, 9040-GPIB	8V	50V
LLS-3060-GPIB, 6060-GPIB, 8060-GPIB, 9060-GPIB	8V	70V
LLS-3120-GPIB, 6120-GPIB, 8120-GPIB, 9120-GPIB	20V	130V

IEEE BASED DC OUT OF TOLERANCE

The LLS-GPIB Series includes a provision for user-defined windows around voltage and current programmed values. The host controller will be notified in the event that the DC exceeds these limits.

IEEE BASED DC FAULT MONITORING

The LLS-GPIB Series is designed to protect loads in the event of an internal or external fault. The system response to detected faults is as follows:

Fault	Response
DC out of user set tolerance	SRQ interrupt activated
Overvoltage value exceeded	Reset initiated and SRQ interrupt activated
Current limit exceeded	Reset initiated and SRQ interrupt activated

IEEE PROGRAMMING

(as a percentage of full scale values)

	Voltage	Current
Resolution	0.025%	1.0%
Accuracy	0.10%	2.0%
Programming Range	0.00%-99.99%	1.0%-99%

IEEE METERING

Voltage metering accuracy is $\pm 0.7\%$ of full scale. Current Metering Accuracy is $\pm 1.7\%$ of full scale + 20mA.

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 LLS-3000-GPIB.

COOLING

The LLS-3000-GPIB is convection cooled. The LLS-6000-GPIB, LLS-8000-GPIB and LLS-9000-GPIB are fan cooled. Leave adequate clearance at all air intakes and exhausts.

CONTROLS

DC OUTPUT CONTROLS IN MANUAL MODE

Output voltage and output current adjust is via a front panel digitally controlled keypad when the front panel auto/manual mode button is in the manual position. Output can be set by either keying in a desired value followed by an "enter" keystroke, or by utilizing the "slew up" or "slew down" buttons. These will cause the output to increase or decrease from the last programmed value while the programmed value is presented on a momentary basis via the front panel digital meters.

POWER

On-off switch on front panel of all units.

INPUT AND OUTPUT CONNECTIONS

Input is via an IEC power line connector (Barrier Strip on LLS-9000-GPIB). DC output is via heavy duty, PC board mounted barrier strips (threaded bus bars on LLS-8008-GPIB, LLS-8018-GPIB, LLS-9008-GPIB and LLS-9018-GPIB). IEEE bus front panel connection is through standard D connector.

FRONT PANEL METERS

Digital 3 1/2 digit voltage and 3 digit current meter on front panel.

LED STATUS INDICATORS

Manual mode indicator, CV/CC indicator, overvoltage/overtemperature indicator and standby LED indicators on front panel.

REMOTE SENSING

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

REMOTE ON/OFF

A TTL low or short enables the unit. A TTL high or open circuit turns the unit off.

PHYSICAL DATA

Package Model	Lbs. Net	Lbs. Ship	Size Inches
LLS-3000-GPIB	11.5	14	8 x 4 9/32 x 13 7/8
LLS-6000-GPIB	11.9	14	8 x 4 9/32 x 13 9/16
LLS-8000-GPIB	17.2	19	12 9/32 x 4 9/32 x 12 11/16
LLS-9000-GPIB	19.3	23	12 9/32 x 4 9/32 x 12 13/16

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.

PART III—TEST, SYSTEMS AND LABORATORY POWER SUPPLIES

LABORATORY AND TEST SELECTOR GUIDE

LLS-GPIB Series. Stand Alone IEEE-488 Programmable Power Supplies.

MAX CURRENT AT OPERATING TEMPERATURE OF			COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	PRICE		MODEL
40°C	50°C	60°C					QTY. 10	25	
0-8 VOLTS									
3.50	2.90	1.75	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁷ / ₈	\$2250	\$2149	\$2041	LLS-3008-GPIB
20.00	20.00	16.50	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁵ / ₁₆	2450	2340	2223	LLS-6008-GPIB
50.00	47.00	41.00	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹¹ / ₁₆	2850	2722	2586	LLS-8008-GPIB
100.00	90.00	78.00	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹³ / ₁₆	3200	3056	2903	LLS-9008-GPIB
0-18 VOLTS									
1.60	1.30	.80	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁷ / ₈	2250	2149	2041	LLS-3018-GPIB
9.00	9.00	8.20	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁵ / ₁₆	2450	2340	2223	LLS-6018-GPIB
24.00	22.20	20.50	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹¹ / ₁₆	2850	2722	2586	LLS-8018-GPIB
45.00	40.00	33.00	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹³ / ₁₆	3200	3056	2903	LLS-9018-GPIB
0-40 VOLTS									
.70	.60	.35	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁷ / ₈	2250	2149	2041	LLS-3040-GPIB
4.00	4.00	3.80	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁵ / ₁₆	2450	2340	2223	LLS-6040-GPIB
10.00	9.80	9.20	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹¹ / ₁₆	2850	2722	2586	LLS-8040-GPIB
20.00	18.00	15.00	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹³ / ₁₆	3200	3056	2903	LLS-9040-GPIB
0-60 VOLTS									
.50	.42	.25	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁷ / ₈	2250	2149	2041	LLS-3060-GPIB
1.40	2.80	2.60	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁵ / ₁₆	2450	2340	2223	LLS-6060-GPIB
7.00	6.60	6.10	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹¹ / ₁₆	2850	2722	2586	LLS-8060-GPIB
14.00	12.00	10.00	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹³ / ₁₆	3200	3056	2903	LLS-9060-GPIB
0-120 VOLTS									
.25	.21	.13	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁷ / ₈	2250	2149	2041	LLS-3120-GPIB
1.40	1.40	1.30	125	188	8 × 4 ⁹ / ₃₂ × 13 ⁵ / ₁₆	2450	2340	2223	LLS-6120-GPIB
3.50	3.40	3.20	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹¹ / ₁₆	2850	2722	2586	LLS-8120-GPIB
7.00	6.00	5.00	125	188	12 ⁹ / ₃₂ × 4 ⁹ / ₃₂ × 12 ¹³ / ₁₆	3200	3056	2903	LLS-9120-GPIB

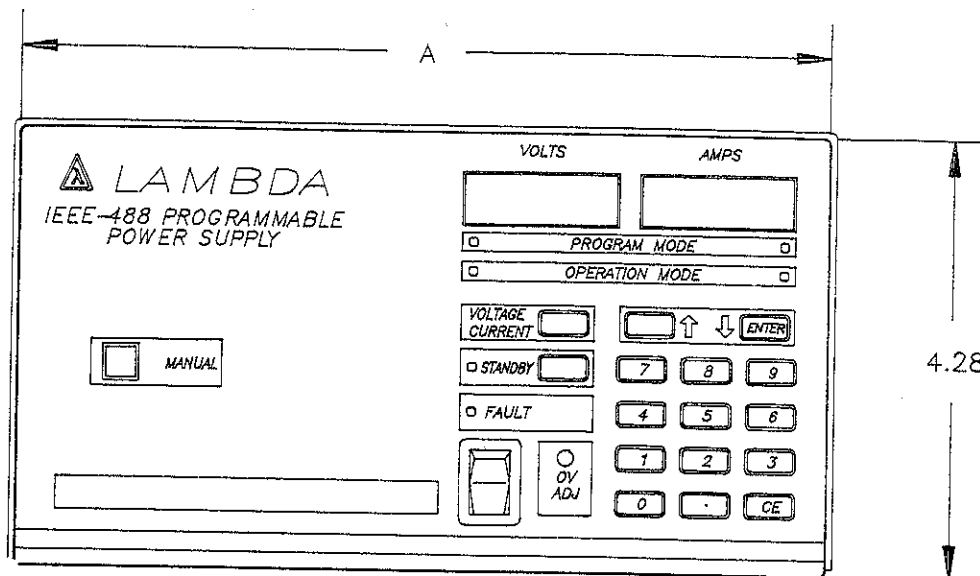
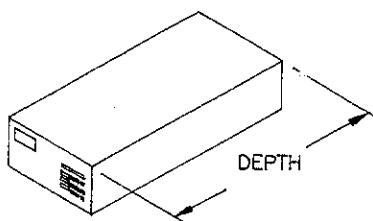
Note: Maximum output current applies over entire voltage range.

PART V—MECHANICAL DRAWINGS

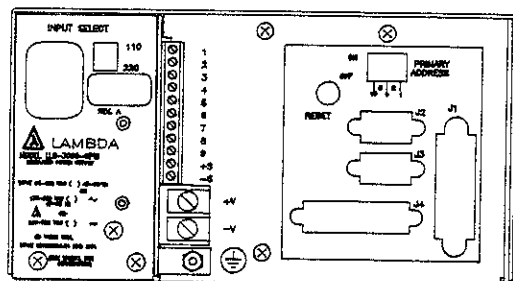
LLS-GPIB SERIES

DIMENSIONS INCHES
(MM)

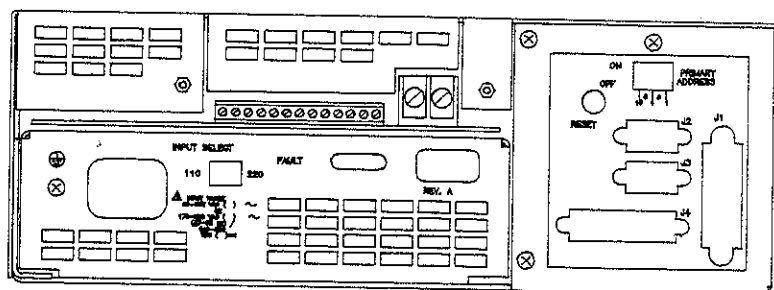
MODEL	A	DEPTH
LLS-3000-GPIB	7.97 (202.25)	13.59 (344.92)
LLS-6000-GPIB	7.97 (202.25)	13.31 (337.81)
LLS-8000-GPIB	12.14 (308.12)	12.68 (321.82)
LLS-9000-GPIB	12.14 (308.12)	12.94 (328.43)



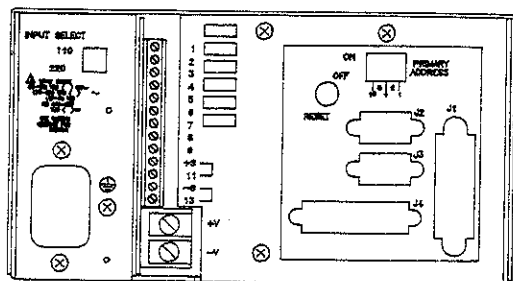
FRONT VIEW



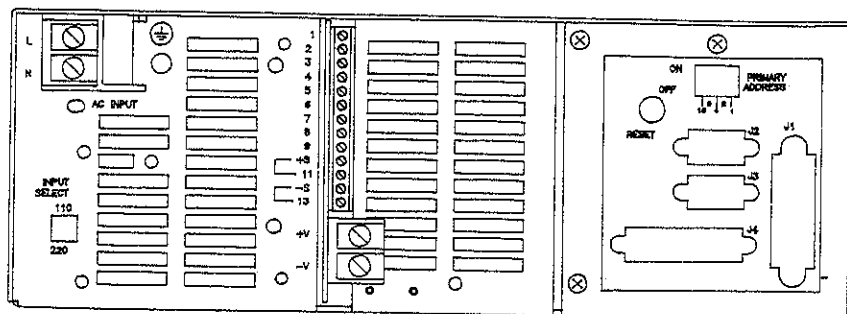
REAR VIEW
LLS-3000-GPIB



REAR VIEW
LLS-8000-GPIB



REAR VIEW
LLS-6000-GPIB



REAR VIEW
LLS-9000-GPIB