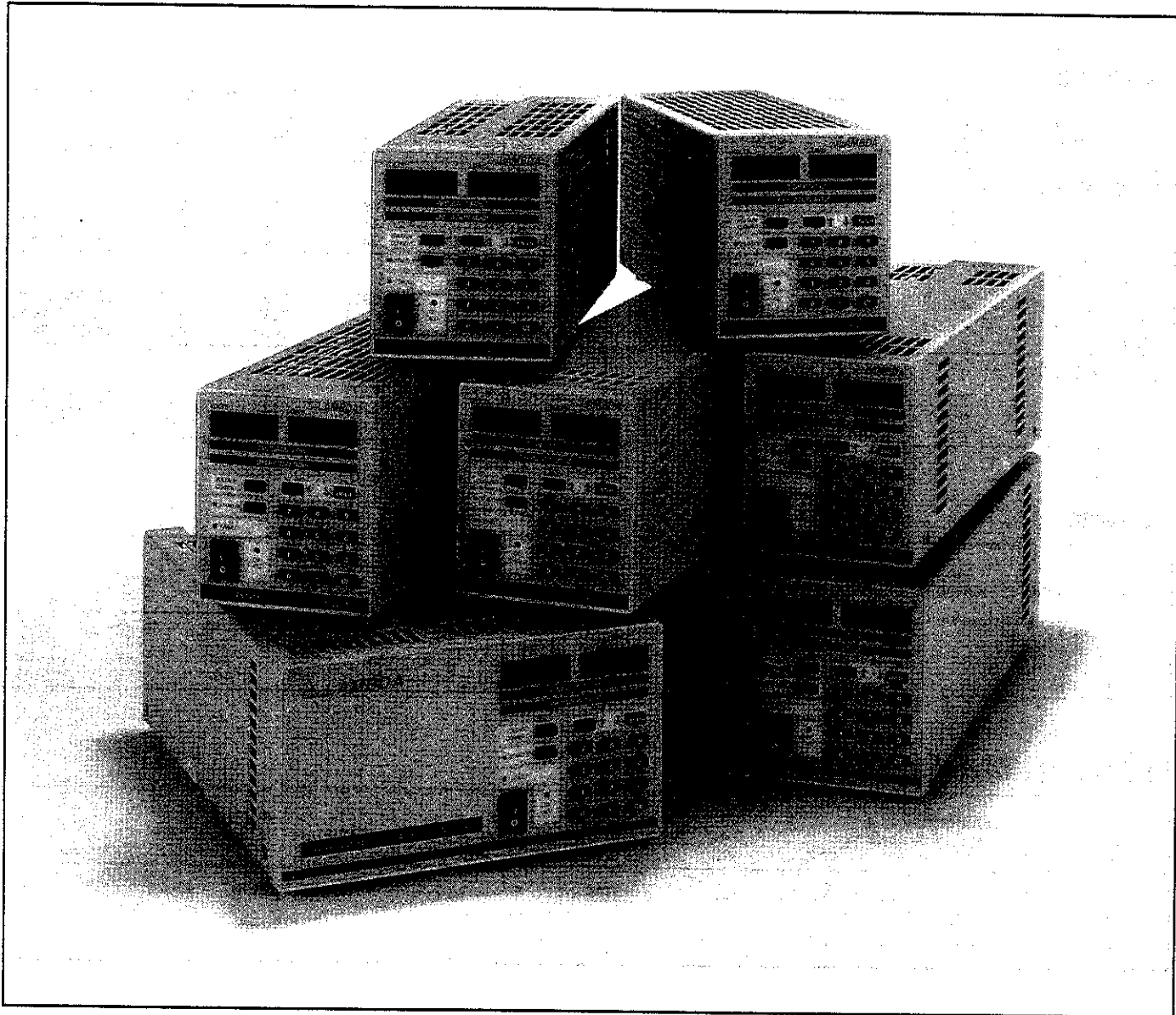


LAMBDA'S LLS SERIES



IDEAL FOR NEW TEST EQUIPMENT AND THE MODERN LABORATORY

- Microprocessor controlled input keypad for precise output control.
- Standby operation allows user to toggle between zero volts and last programmed value.
- Adjustable overvoltage protection.
- Compatible with Lambda's ATE Series of programmable power systems.
- Constant voltage/constant current operation and indication.
- User selectable 110/220VAC operation.
- Half the size of equivalent models.
- Benchtop or 19" rack mounting.
- Remote On/Off (TTL Voltage Compatible Level), Remote Sense, Remote Program.
- Input surge protection per IEEE-587 Class A for branch circuits and outlets.
- Up to 300VDC, up to 100A.
- Simultaneously displays output voltage and load current.
- Grade 1 design.

PART III—TEST, SYSTEMS AND LABORATORY POWER SUPPLIES

LAMBDA'S LLS 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. 0.01% + 1mV for LLS-3000.
regulation, load	0.05% for load variations from 0 to full load. 0.01% + 1mV on LLS-3000 Series.
remote programming resistance	Customer adjustable from 200Ω/volt to 1000Ω/volt. 200Ω/volt on LLS-3008, LLS-3060, 400Ω/volt on LLS-3120, 1000Ω/volt on LLS-4300, LLS-5300, LLS-6300 and LLS-9300.
remote programming voltage	volt per volt or 0-5 volt 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 models and LLS-6300, LLS-9300. 1mV RMS, 5mV pk-pk on all LLS-3000 models. 35mV RMS, 300mV pk-pk on LLS-4300 and LLS-5300.
temperature coefficient	0.03%/°C. 0.01%/°C on LLS-3000 Series.

CONSTANT CURRENT

(Current regulated line and load) Automatic Crossover.	
current range	5% to full load current. 1% on all LLS-3000 models.
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. 2.5mA or 0.3% (whichever is greater) on LLS-4000 models. 2.5mA on LLS-5300.
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 models. 2.5mA or 0.3% (whichever is greater) on LLS-4000 models. 2.5mA on LLS-5300.
remote programming current	0-5V signal for zero to I_o (max).
current ripple	1.0% I_o (max) RMS.

AC INPUT

line	85 to 132VAC or 170 to 265VAC, user selectable 47-440 Hz.
power	LLS-3000 Series: 62 watts max. LLS-4000 Series: 87 watts max. LLS-5000 Series: 135 watts max. LLS-6000 Series: 245 watts max. LLS-7000 Series: 450 watts max. LLS-8000 Series: 620 watts max. LLS-9000 Series: 1100 watts max.
input current	LLS-3000 Series: 1.2A RMS max. LLS-4000 Series: 1.5A RMS max. LLS-5000 Series: 2.7A RMS max. LLS-6000 Series: 4.2A RMS max. LLS-7000 Series: 7.5A RMS max. LLS-8000 Series: 10.0A RMS max. LLS-9000 Series: 17.5A RMS max.

EFFICIENCY

Model	Minimum Efficiency at Max P_{out}
LLS-3000	45%
LLS-4008, 4018	50%
LLS-4040, 4060, 4120, 4300	55%
LLS-5008, 5018	60%
LLS-5040, 5060, 5120, 5300, 6008, 6018, 6040, 6060, 6120, 6300	65%
LLS-8008, 8018	68%
LLS-9008	72.5%
LLS-8040, 8060, 8120	73%
LLS-7040, 7060, 7120, 9018, 9040	75%
LLS-9060, 9120, 9300	77.5%

OPERATING TEMPERATURE RANGE

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

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, 4000, 5000 and 7000 Series. The LLS-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

External overload protection — adjustable, automatic electronic current-limiting circuit limits output current to preset value. Current-limiting setability 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 unit after overvoltage shutdown in order to restore operation.

OVERVOLTAGE PROTECTION ADJUSTABLE RANGES

Model	Vov(Min)	Vov(Max)
LLS-3008, 4008, 5008, 6008, 7008, 8008, 9008	4V	11V
LLS-3018, 4018, 5018, 6018, 7018, 8018, 9018	4V	24V
LLS-3040, 4040, 5040, 6040, 7040, 8040, 9040	8V	50V
LLS-3060, 4060, 5060, 6060, 7060, 8060, 9060	8V	70V
LLS-3120, 4120, 5120, 6120, 7120, 8120, 9120	20V	130V
LLS-4300, 5300	200V	330V
LLS-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 LLS-3000 Series. 30A on LLS-7000.

COOLING

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

CONTROLS

DC OUTPUT CONTROLS

Output voltage and output current adjust is via a front panel digitally controlled keypad. 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. DC output is via heavy duty, PC board mounted barrier strips (threaded bus bars on LLS-8000, LLS-8018, LLS-9008 and LLS-9018 units).

METERS

Digital 3½ digit voltage meter and 3 digit current meter on front panel. 3 digit voltage meter and 2 digit current meter on LLS-4300 and LLS-5300.

LED STATUS 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 compatible low voltage or short enables the unit. A TTL compatible high voltage or open circuit turns the unit off.

PHYSICAL DATA

Package Model	Lbs. Net	Lbs. Ship	Size inches
LLS-3000	7	8	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 10
LLS-4000	5	6	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11
LLS-5000	7	8	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12
LLS-6000	7.25	8	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 13
LLS-7000	8.56	9.31	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 15
LLS-8000	12.2	16.7	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂
LLS-9000	14.5	19	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈

ACCESSORIES

All units are provided with line cords.

Rack Mount Kits For LRA-1 Rack Adapter				Benchtop Front Panel Jack Kits		
Kit #	Color	Kit Type	Price	Kit #	Unit	Price
KT-44	Off-white	¼ Rack	\$32.00	KT-46	LLS-3000	\$53.00
KT-45	Brown	¼ Rack	\$32.00	KT-47	LLS-4000	\$53.00
KT-51	Off-white	½ Rack	\$53.00	KT-48	LLS-5000	\$53.00
KT-52	Brown	½ Rack	\$53.00	KT-49	LLS-6000	\$53.00
				KT-50	LLS-7000	\$53.00

When using the bench mount accessory, the outputs are taken from banana jacks located at the front of the power supply for the LLS-3000 through LLS-7000 Series.

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 Series

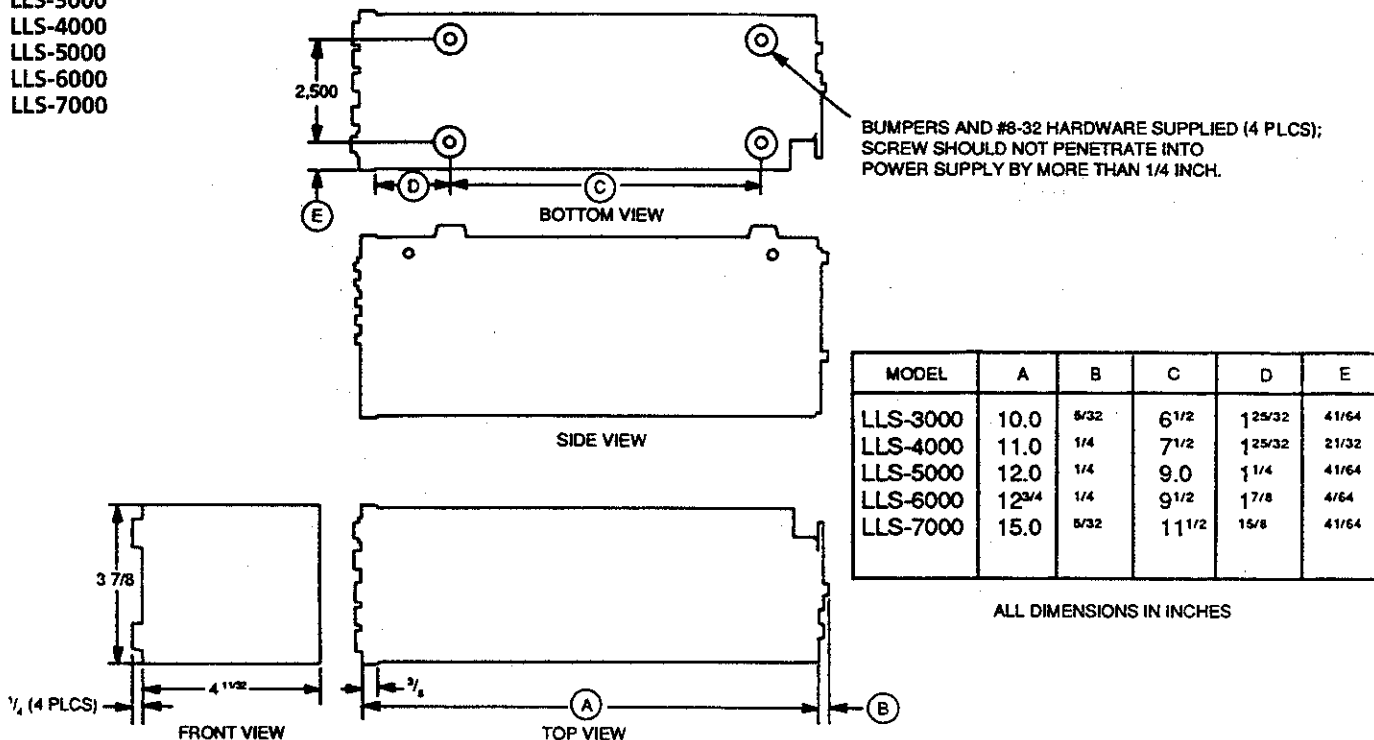
MAX CURRENT AT OPERATING TEMPERATURE OF				COMPLETE ELEC. SPEC. PG.	COMPLETE MECH. SPEC. PG.	DIMENSIONS (inches)	QTY. 1	PRICE QTY. 10	QTY. 25	MODEL
40°C	50°C	60°C	71°C							
0-8 VOLTS										
3.50	2.90	1.75	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 10	\$ 598	\$ 572	\$ 562	LLS-3008
5.00	4.30	3.20	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11	655	624	603	LLS-4008
10.00	7.90	6.30	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12	743	707	687	LLS-5008
20.00	20.00	16.50	13.50	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 13	902	858	832	LLS-6008
35.00	35.00	30.00	25.00	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 15	1061	1009	975	LLS-7008
50.00	47.00	41.00	33.70	123	187	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂	1202	1144	1105	LLS-8008
100.00	90.00	78.00	57.00	123	187	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈	1508	1436	1394	LLS-9008
0-18 VOLTS										
1.60	1.30	0.80	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 10	598	572	562	LLS-3018
2.40	2.10	1.50	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11	655	624	603	LLS-4018
4.50	3.50	2.80	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12	743	707	687	LLS-5018
9.00	9.00	8.20	6.60	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 13	902	858	832	LLS-6018
16.00	16.00	13.50	11.00	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 15	1061	1009	975	LLS-7018
24.00	22.20	20.50	18.00	123	187	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂	1202	1144	1105	LLS-8018
45.00	40.00	33.00	25.00	123	187	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈	1508	1436	1394	LLS-9018
0-40 VOLTS										
0.70	0.60	0.35	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 10	598	572	562	LLS-3040
1.00	1.00	0.85	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11	655	624	603	LLS-4040
2.00	1.60	1.30	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12	743	707	687	LLS-5040
4.00	4.00	3.80	3.10	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 13	902	858	832	LLS-6040
7.00	7.00	6.00	5.00	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 15	1061	1009	975	LLS-7040
10.00	9.80	9.20	8.00	123	187	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂	1202	1144	1105	LLS-8040
20.00	18.00	15.00	11.00	123	187	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈	1508	1436	1394	LLS-9040
0-60 VOLTS										
0.50	0.42	0.25	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 10	598	572	562	LLS-3060
0.70	0.70	0.60	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11	655	624	603	LLS-4060
1.40	1.10	0.90	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12	743	707	687	LLS-5060
2.80	2.80	2.60	2.10	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 13	902	858	832	LLS-6060
4.80	4.80	4.10	3.40	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 15	1061	1009	975	LLS-7060
7.00	6.60	6.10	5.30	123	187	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂	1202	1144	1105	LLS-8060
14.00	12.00	10.00	8.00	123	187	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈	1508	1436	1394	LLS-9060
0-120 VOLTS										
0.25	0.21	0.13	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 10	598	572	562	LLS-3120
0.36	0.36	0.30	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11	655	624	603	LLS-4120
0.70	0.55	0.45	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12	743	707	687	LLS-5120
1.40	1.40	1.30	1.00	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 13	902	858	832	LLS-6120
2.40	2.40	2.10	1.70	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 15	1061	1009	975	LLS-7120
3.50	3.40	3.20	2.70	123	187	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂	1202	1144	1105	LLS-8120
7.00	6.00	5.00	4.00	123	187	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈	1508	1436	1394	LLS-9120
0-300 VOLTS										
0.14	0.12	0.11	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 11	754	717	693	LLS-4300
0.28	0.22	0.18	—	123	187	4 ⁹ / ₃₂ × 3 ¹³ / ₁₆ × 12	853	810	787	LLS-5300
0.56	0.56	0.52	0.40	123	187	4 ⁹ / ₃₂ × 8 × 10 ¹ / ₂	1118	1061	999	LLS-6300
2.80	2.40	2.00	1.60	123	187	4 ⁹ / ₃₂ × 8 × 12 ⁷ / ₈	1961	1862	1808	LLS-9300

NOTE: Maximum output current applies over entire output voltage range.

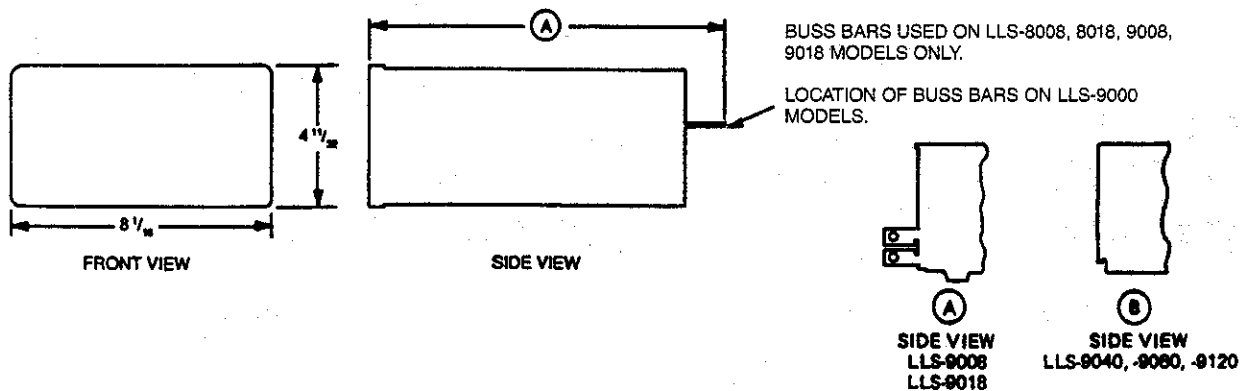
PART V—MECHANICAL DRAWINGS

LLS SERIES

LLS-3000
LLS-4000
LLS-5000
LLS-6000
LLS-7000



LLS-8000
LLS-9000



BUMPERS AND #8-32 HARDWARE SUPPLIED (4 PLCS); SCREW SHOULD NOT PENETRATE INTO POWER SUPPLY BY MORE THAN 1/4 INCH.

MODEL	A	B	C	D	E	F
LLS-8000	11 7/8	10 7/8	2 1/8	1.0	8 3/4	8.0
LLS-9000	13 3/4	13 1/4	3 3/8	63/64	8 1/2	8 1/8

ALL DIMENSIONS IN INCHES

