SPECIFICATIONS AND FEATURES (Specifications apply for all models)

DC Output - Voltage and Current regulated for line and load.

TABLE I: Voltage and Current Ratings

MODEL	VOLTAGE RANGE (volts)	MAXIMUM CURRENT (AMPS) AT AMBIENT TEMPERATURE		
		40°C	50°C	60°C
LLS-9008-GPIB	0 to 8	100A	90A	78A
LLS-9018-GPIB	0 to 18	45A	40A	33A
LLS-9040-GPIB	0 to 40	20A	18A	15A
LLS-9060-GPIB	0 to 60	14A	12A	10A
LLS-9120-GPIB	0 to 120	7.0A	6.0A	5.0A

MODEL	VOLTAGE RANGE (volts)	MAXIMUM CURRENT (AMPS) AT AMBIENT TEMPERATURE		
		40°C	50°C	60°C
LLS-8008-GPIB	0 to 8	50.0A	47.0A	41.0A
LLS-8018-GPIB	0 to 18	24.0A	22.0A	20.5A
LLS-8040-GPIB	0 to 40	10.0A	9.80A	9.20A
LLS-8060-GPIB	0 to 60	7.00A	6.60A	6.10A
LLS-8120-GPIB	0 to 120	3.50A	3.40A	3.20A

MODEL	VOLTAGE RANGE (volts)	MAXIMUM CURRENT (AMPS) AT AMBIENT TEMPERATURE		
		40°C	50°C	60°C
LLS-6008-GPIB	0 to 8	20.0A	20.0A	16.5A
LLS-6018-GPIB	0 to 18	9.0A	9.0A	8.2A
LLS-6040-GPIB	0 to 40	4.0A	4.0A	3.8A
LLS-6060-GPIB	0 to 60	2.8A	2.8A	2.6A
LLS-6120-GPIB	0 to 120	1.4A	1.4A	1.3A

Current range must be chosen to suit appropriate ambient temperature.
Current ratings apply for entire voltage range.

Regulated Voltage Output

Regulation (line)..... 0.05% of Vo (max) for input changes from 85-132 or 170-265 volts AC.

Regulation (load)..... 0.05% of Vo (max) from 0 to full load.

Ripple and noise ..... 5 millivolts rms, 35 millivolts peak-to-peak on Models LLS-X008-GPIB and LLS-X018-GPIB.

10 millivolts rms, 75 millivolts peak-to-peak on Models LLS-X040-GPIB and LLS-X060-GPIB.

20 millivolts rms, 150 millivolts peak-to-peak on Model LLS-X120-GPIB.

Overshoot..... No overshoot at turn on, turn off or power failure.

Temperature Coefficient..... 0.03% per °C.

Stability (drift)..... 0.1% per 8 hour period after 30 minute warm up.

Remote Sensing..... Provisions are made for remote sensing to eliminate the effect of power output lead resistance on DC regulation. Up to 0.5 volts drop per power lead is permissible provided the output voltage of the power supply is no greater than the rated maximum voltage.

Regulated Current Output (Automatic Crossover)

Regulation (line)..... 0.3% Io (max) or 2.5mA, whichever is greater, for input changes from 85-132 volts AC or 170-265 volts AC.

Regulation (load)..... 0.3% Io (max) or 2.5mA, whichever is greater, for output voltage changes from Vo (max) to short circuit.

Current range..... Specifications apply for 5% to full load current.

Voltage range..... As shown in Table I, see Page 7.

Ripple..... 1% Io (max) - rms.

AC Input

Line voltage..... 85-132 volts AC (47-440Hz) or 170-265 volts AC (47-440Hz) via rear panel selector switch.

Input power.....

LLS-9000-GPIB	1100	Watts Max.
LLS-8000-GPIB	620	Watts Max.
LLS-6000-GPIB	245	Watts Max

Input RMS current.....

LLS-9000-GPIB	17.5	Amperes Max.
LLS-8000-GPIB	10.0	Amperes Max.
LLS-6000-GPIB	4.0	Amperes Max.

Inrush limiting..... Power-up inrush current will not exceed 20 Amps peak for 85-132 VAC input, 40 amps peak for 170-265 VAC input (for a cold start).

Overload Protection

Thermal..... Internal airflow sensing circuit shuts down unit's operation if air inlet blockage or fan rotor lockup occurs. When a thermal shutdown occurs, the main oscillator's operation will be terminated and all internal bias supplies, and the fan, will shut down. In addition, a front panel fault indicator light will turn on. AC power must be removed for approximately 30 seconds to reset the shutdown circuit.

Electrical Input.....LLS-9000-GPIB..... 20A/250V Normal Blo fuse F101 and F102 protect AC input circuitry. 10A/250V Normal Blo fuse F103 protects printed circuit board from damage in the case of internal component failures.

Electrical Input.....LLS-8000-GPIB.....15A/250V Normal Blo fuses F101 and F102 protect AC input circuitry. 8A/250 Normal Blo fuse F103 protects printed circuit board from damage in the case of internal component failures.

Electrical Input.....LLS-6000-GPIB.....10A/250V Normal Blo fuses F101 and F102 protect AC input circuitry. 3A miniature fuse F103 protectrs printed circuit board from damage in the case of internal component failures.

Output..... Automatic constant-current-limiting circuit limits the output current to a customer adjustable value (0% to 102% full load), providing protection for the load as well as the power supply. There is also an internal inverter peak-current-limit circuit which protects the power supply during load transients.

Overvoltage Protection

All LLS-GPIB models include a built-in adjustable overvoltage protection circuit which prevents damage to the load caused by excessive power supply output voltage. Exceeding the overvoltage set point will shut down the unit's operation and cause the front panel FAULT indicator to light up. AC power must be removed from the unit for approximately 30 seconds to reset the OV shutdown circuit.

Overvoltage Adjustability Range..... Model LLS-X008-GPIB: 4 to 11 VDC.
Model LLS-X018-GPIB: 4 to 24 VDC.
Model LLS-X040-GPIB: 8 to 50VDC.
Model LLS-X060-GPIB: 8 to 70VDC.
Model LLS-X120-GPIB: 20 to 130 VDC.

Cooling - The LLS-GPIB Series is fan cooled. Leave adequate clearance at all air intake and exhaust openings.

Operating Ambient Temperature Range and Duty Cycle - Continuous duty from 0 to 60°C ambient with corresponding load current ratings for all modes of operation, with appropriate derating for ambient temperatures above 40°C.

Storage Temperature (Non-operating) -55°C to +85°C.

Input / Output Connections

AC input .....LLS-9000-GPIB.....Heavy duty barrier strip
.....LLS-8000-GPIB,.....IEC power line connector (recessed 3-pin male).
LLS-6000-GPIB

DC output..... LLS-9000-GPIB,.....X008 and X018 model: bus bars; X040,
LLS-8000-GPIB X060 and X120 models: heavy duty
terminal block at the rear of the chassis.

DC output..... LLS-6000-GPIB.....Heavy duty, printed-circuit board-mounted block
at the rear of the chassis.

Controls

DC output.....Numerical keypad on the front panel allows adjustability
of either constant voltage or constant current limit points.

Resolution of programmed voltage: 10mV on Models LLS-X008-GPIB and LLS-X018-GPIB.

100mV on Models LLS-X040-GPIB, LLS-X060-GPIB
and LLS-X120-GPIB.

Resolution of programmed current: 1 Amp on LLS-9008-GPIB.
100 MA on Models LLS-9018-GPIB, LLS-9040-GPIB, LLS-9060-GPIB, LLS-8008-GPIB, LLS-8018-GPIB, LLS-8040-GPIB and LLS-6120-GPIB.
10mA on Models LLS-9120-GPIB, LLS-8060-GPIB, LLS-8120-GPIB, LLS-6018-GPIB, LLS-6040-GPIB, LLS-6060-GPIB and LLS-6120-GPIB.

Accuracy of programmed value versus delivered output: ± 2% or 3 counts, whichever is greater.

Standby Control..... Allows for zero output without losing the last programmed values for voltage and current.

On/Off Switch..... Rocker switch located on the front panel.

Overvoltage control (manual) ..... Multi-turn, screwdriver-adjust potentiometer located on the front panel.

Meters - Front panel 3 1/2 digit voltmeter and 3 digit ammeter simultaneously monitors output voltage and current. Accuracy of metered value versus delivered output: ± 2% or 3 counts, whichever is greater.

Constant Voltage/Constant Current Indicators - Located on the front panel. These displays indicate whether the power supply is operating as a constant voltage source or is in current limit.

Mounting - One mounting surface, one mounting position.

Physical Data

Size (approximate
LLS-9000-GPIB.....12 9/32" x 4 9/32" x 12 13/16"
LLS-8000-GPIB.....12 9/32" x 4 9/32" x 12 11/16"
LLS-6000-GPIB..... 8" x 4 9/32" x 13 5/16"

Weight (net)
LLS-9000-GPIB.....19 lb. 5 oz.
LLS-8000-GPIB.....17 lb. 2 oz.
LLS-6000-GPIB.....11 lb. 3 oz.

Finish.....Off white, FED STD 595, No. 26622

Isolation Ratings