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 (volts)	MAXIMUM CURRENT (AMPS) AT AMBIENT TEMPERATURE			
		40°C	50°C	60°C	71°C
LLS-6008	0 to 8	20A	20A	16.5A	13.5A
LLS-6018	0 to 18	9A	9A	8.2A	6.6A
LLS-6040	0 to 40	4A	4A	3.8A	3.1A
LLS-6060	0 to 60	2.8A	2.8A	2.6A	2.1A
LLS-6120	0 to 120	1.4A	1.4A	1.3A	1A
LLS-6300	0 to 300	.56A	.56A	.52A	.40A

Current range must be chosen to suit appropriate maximum 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 or 240 - 350 volts DC.

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

Ripple and Noise ..... (20 MHZ measurement bandwidth)

5 millivolts rms, 35 millivolts peak-to-peak on models LLS-6008 and LLS-6018.

10 millivolts rms, 75 millivolts peak-to-peak on models LLS-6040 and LLS-6060.

20 millivolts rms, 150 millivolts peak-to-peak on models LLS-6120 and LLS-6300.

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

REGULATED VOLTAGE OUTPUT ((Cont'd)

Negative Offset Voltage	Power supplies are shipped from the factory with minimum output calibrated to 0 +/- 10 millivolts. Internal calibration is available to achieve up to -0.1V negative offset, if desired.
Temperature Coefficient	0.03% per degree C.
Stability (drift)	0.1% per 8 hour period after 30 minute warm up.
Remote Programming:	
External Resistor	Adjustable from 1000 ohms per volt to 200 ohms per volt (Rp terminal to -V). LLS-6300 available only as 1000 ohms per volt.
Programming Voltage	One-to-one voltage change (RP terminal to -V).
	Zero to 5 Volt signal from RVP terminal (TB202-2) to Common terminal (TB202-6) programs output from 0 to Vo(max). (Remote programming signal must be floated from both +V and -V.)
Remote Sensing	Provision is made for remote sensing to eliminate effect of power output lead resistance on DC regulation.

REGULATED CURRENT OUTPUT (AUTOMATIC CROSSOVER):

Regulation (line)	0.3% Io (max) for input changes from 85 - 132 volts AC or 170 - 265 volts AC. (240-350V DC)
Regulation (load)	0.3% Io(max) 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 1.
Ripple	1% Io(max)-rms.
Remote programming	Zero to 5V signal from RCP terminal (TB202-4) to Common terminal (TB202-6) programs output from 0 to Io(max). (Remote programming signal must be floated from both +V and -V.)

AC INPUT

Line voltage	85 - 132 volts AC (47-440Hz) or 170 - 265 volts AC (47-440Hz) via rear panel selector switch. Where applicable, regulatory agency approval applies only for input voltages up to 250 volts AC and for input frequencies in the range of 47-63 Hz. Leakage current in the ground connection may exceed the limits allowed by the agencies at frequencies above this range.
Input power	245 watts max.
Input RMS current	4.0 Amperes max.
Efficiency	65% minimum
Input surge protection	Meets IEEE 587-1980 for branch circuits and outlets (class A).
Inrush limiting	Power-up inrush current will not exceed 40 Amps peak.
EMI	Conducted spectrum conforms with requirements of FCC Docket 20780 Class A (85-132 VAC input) and VDE 0871 Class A (170 - 250 VAC input).

DC INPUT - LLS-6000 models will function with a DC input of 240 to 350 volts (Non-polarized). DC input current is 1.1 amps max. (Line select switch must be in 220 position).

PARALLEL OPERATION - LLS-6000 units of the same rated output voltage can be paralleled in a master/slave arrangement.

SERIES OPERATION - LLS-6000 units of the same rated output voltage can be connected in series with auto-tracking so that both units will track to a common reference.

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 front panel meters, will shut down. In addition, a front panel fault indicator light will turn on. AC power must be removed for approximately 10 seconds to reset the shutdown circuit.

OVERLOAD PROTECTION (Cont'd)

Electrical

Input ..... 10A/250V Normal Blo fuse F101 protects AC input circuitry. 3A miniature fuse F103 and 0.25A miniature F201 protect 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), thereby providing protection for the load as well as the power supply. In addition, there is an internal inverter peak-current-limit circuit which protects the power supply during load transients.

Note: On LLS-6300 models, repeated abrupt application of 300V to short-circuit transients can cause over-dissipation and eventual damage to internal circuitry. Repetition rate of transients to short circuit should be limited to less than 2 per minute for long-term operation. (Note that once in short-circuit, continuous operation is per normal rating limits)

OVERVOLTAGE PROTECTION

All LLS-6000 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 10 seconds to reset the OV shutdown circuit.

Overvoltage Adjustability Range .....
Model LLS-6008: 4 to 11 VDC
Model LLS-6018: 4 to 24 VDC.
Model LLS-6040: 8 to 50 VDC.
Model LLS-6060: 8 to 70 VDC.
Model LLS-6120: 20 to 130 VDC.
Model LLS-6300: 55 to 330 VDC.

REMOTE TURN-ON / TURN-OFF - A TTL low signal (0 to 0.5V), or a short, between Remote on/off terminal (TB202-5) and common terminal (TB202-6) enables the output. A TTL high (2.8 to 5V), or open circuit, between the Remote on/off terminal and the common terminal will bring the output voltage to zero.

COOLING - Forced-air cooling using ball-bearing, long-life fan (no lubrication needed). Fan draws air in through front portion of chassis and exhausts air through perforations at rear of unit. Leave adequate clearance at all air intake and exhaust openings.

OPERATING AMBIENT TEMPERATURE RANGE AND DUTY CYCLE - Continuous duty from 0 to 71°C ambient with corresponding load current ratings for all modes of operation, and appropriate derating.

STORAGE TEMPERTURE (Non-operating) - -55°C to +85°C

INPUT/OUTPUT CONNECTIONS

AC input and line safety ground	IEC power line connector (recessed 3-pin male).
DC output	Heavy-duty, printed-circuit-board-mounted terminal block at rear of chassis (TB201).
Output ground	Tapped hole in chassis at rear of unit.
DC sensing, Remote voltage programming, Remote current programming, Remote on/off, Remote resistance programming, Parallel operation	Rear panel, printed-circuit-board mounted, lugless connector (TB 202 - 13 positions).

CONTROLS

DC output	Numerical keypad on front panel allows adjustability of either constant voltage or constant current limit points. Resolution of programmed voltage: 10mV on models LLS-6008 and LLS-6018; 100mV on models LLS-6040, LLS-6060, LLS-6120 and LLS-6300. Resolution of programmed current: 100mA on model LLS-6008; 10mA on models LLS-6018, LLS-6040, LLS-6060, LLS-6120 and LLS-6300. Accuracy of programmed value versus delivered output: ±2% or 3 counts, whichever is greater.
Standby Control	Allows for zero output without losing last programmed values for voltage and current.
On/Off Switch	Rocker switch located on front panel.
Overvoltage control	Multi-turn, screwdriver-adjust potentiometer located on front panel.

METERS - Front panel 3 1/2 digit voltmeter and 3 digit ammeter simultaneously monitor 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 Front Panel. These displays indicate whether power supply is operating as a constant voltage source or is in current limit.

MOUNTING - One mounting surface. Mounting position not restricted. Units are shipped with removable rubber mounting feet attached to the unit.

PHYSICAL DATA

Size	4-9/32" x 3-13/16" x 12 3/4"
Weight	7 lbs., 4 oz net; 8 lbs shipping
Finish	Off white, FED STD 595, No. 26622

ISOLATION RATINGS

Input to output	3000 Volts rms
Output to ground	500 Volts rms - -6008 to -6040, 1000 volts rms -6060 and -6120, 1600 volts rms - 6300
Input to ground	1500 Volts rms

WARRANTY - 3 years, parts and labor.

ACCESSORIES

Rack Adapter system	LRA 1, 20

Rack Mounting Kit
Lambda MATE or GPIB systems.
Bench Stand with easy access load terminals.