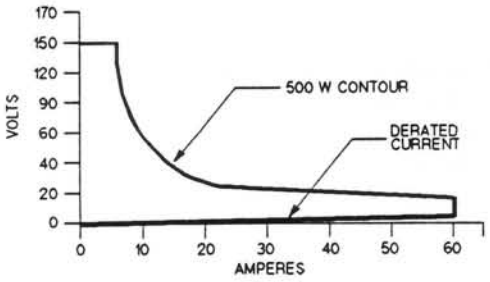
Table 60507-1. Specification and Supplemental Characteristics

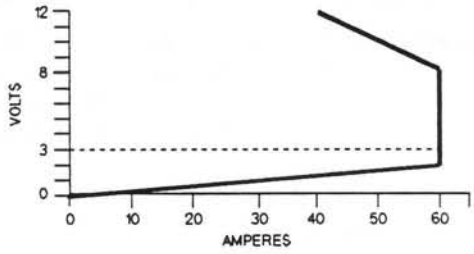
SPECIFICATIONS

DC Input Rating:

Current: 0 to 60 A
Voltage: 3 V to 150 V (minimum dc operation from 0 to 2 V for 0 to 60 A
Power: 500 W at 40°C (derated to 375 W at 55°C)



A. OPERATING CHARACTERISTICS



B. DERATED CURRENT DETAIL

Constant Current Mode:

Ranges: 0 to 6 A; and 0 to 60 A
Accuracy: (after 30 second wait): ±0.1% ±80 mA (both ranges)
Resolution: 1.6 mA (6 A range); 16 mA (60 A range)
Regulation: 10 mA (both ranges)
Temperature Coefficient: 120 ppm/°C ±5 mA/°C (both ranges)

Constant Resistance Mode:

Ranges: 0.033 to 2.5 Ω; 2.5 Ω to 2.5 kΩ; and 25 Ω to 10 kΩ
Accuracy: ±0.8% ±16 mΩ with ≥6 A at input (2.5 Ω range);
±0.3% ±5 mS with ≥15 V at input (2.5 k and 10 kΩ ranges)
Resolution: 0.67 mΩ (2.5 Ω range); 0.10 mS (2.5 kΩ range); 0.01 mS (10 kΩ range)
Regulation: 10 mV with remote sensing (2.5 Ω range); 10 mA (2.5 k and 10 kΩ ranges)
Temperature Coefficient: 800 ppm/°C ±0.8 mΩ/°C (2.5 Ω range);
300 ppm/°C ±0.3 mS/°C (2.5 k and 10 kΩ ranges)

Constant Voltage Mode:

Range: 0 to 150 V
Accuracy: ±0.1% ±125 mV
Resolution: 40 mV
Regulation: 10 mV (remote sense); 50 mV (local sense)
Temperature Coefficient: 100 ppm/°C ±5mV/°C

Transient Operation:

Continuous Mode
Frequency Range: 0.25 Hz to 10 kHz
Frequency Resolution: 4%
Frequency Accuracy: 3%
Duty Cycle Range: 3% to 97% (0.25 Hz to 1 kHz); 6% to 94% (1 kHz to 10 kHz)
Duty Cycle Resolution: 4%
Duty Cycle Accuracy: 6% of setting ±2%

Pulsed Mode
Pulse Width: 50 μs ±3% minimum; 4 s ±3% maximum

Table 60507-1 Specifications and Supplemental Characteristics (continued)

Transient Current Level (0 to 6 A and 0 to 60 A ranges):

Resolution: 26 mA (6 A range); 260 mA (60 A range)
Accuracy: ±0.1% ±85 mA (6 A range); ±0.1% ±350 mA (60 A range
Temperature Coefficient: 150 ppm/°C ±5 mA/°C

Transient Resistance Level (0.033 to 2.5 Ω, 2.5 Ω to 2.5 kΩ, and 25 Ω to 10kΩ ranges):

Resolution: 10.9 mΩ (2.5 Ω range); 1.7 mS (2.5 kΩ range); 0.17 mS (10 kΩ range)
Accuracy: ±0.8% + 24 mΩ with ≥6 A at input (2.5 Ω range)
±0.3% + 7 mS with ≥15 V at input (2.5 kΩ range)
±0.3% + 5 mS with ≥15 V at input (10 kΩ range

Transient Voltage Level (0 to 150 V):

Resolution: 650 mV
Accuracy: ±0.15% ±750 mV
Temperature Coefficient: 150 ppm/°C ±5 mV/°C

Current Readback:

Resolution: 17 mA (via HP-IB); 20 mA (front panel)
Accuracy (after 30 minute wait): ±0.1% ±65 mA
Temperature Coefficient: 100 ppm/°C ±5 mA/°C

Voltage Readback:

Resolution: 40 mV (via HP-IB); 100 mV (front panel)
Accuracy: ±0.1% ±90 mV
Temperature Coefficient: 100 ppm/°C ±5 mV/°C
Maximum Readback Capability: 163 to 175 V (typical)

Power Readback:

Accuracy: ±0.2% ±8 W

External Analog Programming 0 to 10 V (dc or ac):

Bandwidth: 10 kHz (3 db frequency)
Accuracy: ±4.5% ±75 mA (0 to 6 A range)
±4.5% ±200 mA (0 to 60 A range)
±0.8% ±375 mV (0 to 150 V range)
Temperature Coefficient: 150 ppm/°C ±6 mA/°C (current ranges)
120ppm/°C ± 12.5 mV/°C (voltage range)

External Current Monitor (0 to 10 V):

Accuracy: ±3% ±85 mA (referenced to analog common)
Temperature Coefficient: 100 ppm/°C ±6 mA/°C

External Voltage Monitor (0 to 10 V):

Accuracy: ±0.4% ±120 mV (referenced to analog common)
Temperature Coefficient: 100 ppm/°C ±5 mV/°C

Remote Sensing: 5 Vdc maximum between sense and input binding posts

Table 60507-1 Specifications and Supplemental Characteristics (continued)

Maximum Input Levels:
Current: 61.2 A (programmable to lower limits)
Voltage: 175 V

Minimum Operating Voltage: 2 V (derated to 0 V at 0 A)

PARD (20 Hz to 10 MHz noise):
Current: 4 mA rms/40 mA p-p
Voltage: 10 mV rms

DC Isolation Voltage: ±240 Vdc between + or − input binding post and chassis ground

Digital Inputs:
Vlo: 0.9 V maximum at Ilo = −1 mA
Vhi: 3.15 V minimum (pull-up resistor on input)

Digital Outputs:
Vlo: 0.72 V maximum at Ilo = 1 mA
Vhi: 4.4 V minimum at Ilo = −20 μA

SUPPLEMENTAL CHARACTERISTICS

Programmable Slew Rate (For any given input transition, the time required will be either the total slew time or a minimum transition time, whichever is longer. The minimum transition time increases when operating with input currents under 1 A. The following are typical values; ±25% tolerance):

Current Slew Rate:*

Rate #	60 A Range Step	6 A Range Step	Transition Time
1	1 A/ms	0.1 A/ms	8.0 ms
2	2.5 A/ms	0.25 A/ms	3.2 ms
3	5 A/ms	0.5 A/ms	1.6 ms
4	10 A/ms	1 A/ms	800 μs
5	25 A/ms	2.5 A/ms	320 μs
6	50 A/ms	5 A/ms	160 μs
7	0.1 A/μs	10 A/ms	80 μs
8	0.25 A/μs	25 A/ms	36 μs
9	0.5 A/μs	50 A/ms	24 μs
10	1 A/μs	0.1 A/μs	18 μs
11	2.5 A/μs	0.25 A/μs	18 μs
12	5 A/μs	0.5 A/μs	18 μs

*AC performance specified from 3 to 150 V.

Voltage Slew Rate:

Rate #	Voltage Range Step	Transition Time*
1	2.5 V/ms	8.0 ms
2	6.25 V/ms	3.2 ms
3	125 V/ms	1.6 ms
4	25 V/ms	800 μs
5	62.5 V/ms	320 μs
6	12.5 V/ms	160 μs
7	0.25 V/μs	80 μs
8	0.625 V/μs	55 μs
9	1.25 V/μs	55 μs

*Transition time based on low capacitance current source.

Resistance Slew Rate (2.5Ω range): Uses the value programmed for voltage slew rate.

Resistance Slew Rate (2.5 k and 10 kΩ ranges): Uses the value programmed for current slew rate.

Table 60507-1. Specifications and Supplemental Characteristics (continued)

Transient Current Overshoot (When programmed from 0A):

Range	Transient Current Level	Current Slew Rate	Overshoot*
60 A	30-60 A	All slew rates	0
	3 A	1 A/μs to 5 A/μs	3%
	3 A	1 A/ms to 0.1 A/μs	0
	6 A	0.5 A/μs, only	4%
	6 A	All other slew rates	0
	12 A	0.5 A/μs to 5 A/μs	2%
	12 A	1 A/ms to 0.25 A/μs	0
6 A	6 A	All slew rates	0
	3 A	All slew rates	0

*Overshoot may be higher during first five seconds of programming if unit has been operating at full current. Overshoot values assume a total inductance of 1μH, or less, in the load leads connected to the D.U.T.

Source Turn-On Current Overshoot: Less than 5% of final value (in CC and CR modes when connected to power supplies with voltage rise times of greater than 500μs).

Programmable Short Circuit: 0.033 Ω (0.02 Ω typical)

Programmable Open Circuit: 20 kΩ (typical)

Drift Stability (over an 8 hour interval):
Current: ±0.03% ±10 mA
Voltage: ±0.01% ±25 mV

Reverse Current Capacity: 60 A when unit is on; 30 A when unit is off

Weight: 5.4 kg (12 lbs.)