

# SPECIFICATION AND PERFORMANCE CHECK

## SPECIFICATION

### Performance Conditions

The electrical characteristics are valid only if the PS 503A has been calibrated at an ambient temperature between +20°C and +30°C and is operating at an ambient temperature between 0°C and +50°C unless otherwise noted.

Items listed in the Performance Requirements column are verified by completing the Performance Check in this manual. Items listed in the Supplemental Information column are not verified in this manual; they are either explanatory notes or performance characteristics for which no limits are specified.

Table 2-1

### ELECTRICAL CHARACTERISTICS

Characteristics	Performance Requirements	Supplemental Information
<b>Plus and Minus 20 V Floating Supplies</b>		
Voltage Outputs		0 V ( $\pm 100$ mV) to at least 20 V dc (20.1, $-1$ , $+4$ V dc) with respect to common terminal, or 0 V to at least 40 V dc across the plus and minus terminals.  Outputs either independently variable or both variable at a constant ratio of a common control (Dual Tracking).
Variable Current Limiting	Less than 100 mA to at least 1A when installed in a high-power compartment.	Maximum limit; 1.5 A
	Less than 100 mA to at least 400 mA when installed in a low power compartment.	Maximum limit; 600 mA
Minimum Resolution		50 mV

Table 2-1 (cont)

Characteristics	Performance Requirements	Supplemental Information
Load Regulation	Within 3 mV with a 1 A load change.	Within 1 mV with a 400 mA load change.
Transient Recover		$\leq 20 \mu\text{s}$ for a constant voltage to recover within 20 mV for a nominal output voltage after a 400 mA change in output current.
Line Regulation	Within 5 mV for a $\pm 10\%$ line voltage change.	
Ripple and Noise (2 Hz to 2 MHz instrument not in current limiting.)	3 mV peak-to-peak or less with a 1 A load.	1 mV peak-to-peak or less with a 400 mA load (noise and ripple increase unpredictably when current is being limited).
Temperature Coefficient		0.025%/°C or less.
Stability		0.1% +5 mV (or less) of drift in 8 hours. Line voltage, load and temperature held constant.
Supply Isolation from Ground		350 V (dc + peak ac).
Dual Tracking Mode Offset Error	If the two supplies are set independently to any given voltage ratio, and if both supplies are then monitored and varied a given amount (by using the VOLTS DUAL TRACKING control), the two supplies will maintain the same voltage ratio as initially set within 50 mV; until one supply reaches either 0 V or 20 V.	
<b>+5 V Ground Reference Supply</b>		
Output	4.75 V dc to 5.25 V dc with a 5 ohm load.	Measured at a temperature between +20°C and +30°C.
Load Regulation	Within 100 mV with a 1 A load change.	
Line Regulation	Within 50 mV for a $\pm 10\%$ line voltage change.	Measured at a temperature between +20°C and +30°C.
Ripple and Noise (2 Hz to 2 MHz)	5 mV peak-to-peak or less with a 1 A load.	
Long Term Stability		0.5% or less of drift.
Overload Protection		Fixed (automatic) current limiting and over-temperature shutdown.

**Table 2-2**  
**ENVIRONMENTAL**

Characteristics	Performance Requirements	Supplemental Information
Temperature		
Operating	0° C to +50° C.	
Storage	−40° C to +75° C.	
Altitude		
Operating	To 15,000 feet, maximum operating temperature decreased by 1° C/1000 feet from 5000 to 15,000 feet.	
Storage	To 50,000 feet.	
Vibration		
Operating and Non-Operating	With the instruments complete and operating, vibration frequency swept from 10 to 55 to 10 Hz at 1 minute per sweep. Vibrate 15 minutes in each of the three major axes at 0.015" total displacement. Hold 10 minutes at any major resonance, or if none, at 55 Hz. Total time, 75 minutes.	
Shock		
Operating and Non-Operating	30 g's, 1/2 sine, 11 ms duration, 3 shocks in each direction along 3 major axes, for a total of 18 shocks.	

**Table 2-3**  
**PHYSICAL**

Characteristic	Information
Overall Dimensions (measured at maximum points)	
Height	5.0 inches 12.7 cm
Width	2.6 inches 6.6 cm
Length	11.75 inches 29.7 cm
Net Weight (Instrument only)	1 lb 13 oz 821 grams