



(NSN 6625-01-083-3801) 5220A

5220A Transconductance Amplifier

- 20 amps output dc or rms ac
- 0.025% basic dc accuracy
- Over-voltage and over-current protection
- Over-temperature protection
- May be programmed through a 5700A or 5100B

The 5220A Transconductance Amplifier lets you calibrate alternating or direct current meters and shunts and the current functions of digital multimeters that measure up to 20A. A known input voltage of 1 to 20 volts produces a known output current of 1 to 20A.

The 5220A is designed to be controlled by a 5700A or 5100 Series B calibrator but may be driven by another voltage source such as the 5200A. When used with a 5100 Series B, the current range of those instruments is extended by a factor of 10 to 1. Options are available for the 5100 Series B that make the system GPIB/IEEE-488* and RS-232-C compatible.

Built-in Protection

Protection is designed in to eliminate problems caused by excessive inputs, open inputs, and overcompliance. Indicators on the front panel tell the user about any of these conditions. Automatic shut down occurs should the internal temperature rise excessively.

Remote Operation

Drive voltage to the 5220A may be introduced through the front panel or the rear panel. The

connector on the rear, however, allows the 5220A to become an extension to the current range of a 5700A or 5100 Series B Calibrator.

The two instruments operate as one integrated calibration system with all the advantages of single control-point calibration; automatic error calculation, entry limit protection, etc.

A 5100 Series B Calibrator requires a Y5000 Interface/Buffer to control a 5220A. A single Y5000 Interface/Buffer may also be used to control a 5205A Power Amplifier.

Specifications

The specifications below apply for 180 days for instruments operated between 20°C and 30°C in a relative humidity of 70% or less.

Transconductance: 1 siemens (1 ampere per volt)

Output Range: 0 to 20A dc or rms ac (28.3A peak)

Maximum Compliance Voltage: $\geq \pm 4V$ dc, or 3V rms ac (4.25V peak)

DC Accuracy: $\pm(0.025\%$ of output +1 mA)

AC Accuracy: $\pm(0.05\%$ of output +1 mA) from 30 Hz to 1 kHz, and $\pm(0.05\%$ of output +1 mA) x f from 1 kHz to 5 kHz, where f = frequency in kHz

Short Term DC Stability: Output changes less than $\pm(0.005\% + 200 \mu A)$ in 10 minutes, with constant line, load, and temperature

Short Term AC Stability: Output changes less than $\pm(0.01\% + 500 \mu A)$ in 10 minutes, with constant line, load, and temperature

Harmonic Distortion and Noise: $\pm(0.05\%$ of output ± 1 mA) over frequency range of 30 Hz to 1 kHz and measured with a noise bandwidth of 300 kHz, $\pm 0.05\%$ of output +1 mA) x f from 1 kHz to 5 kHz, where f = frequency in kHz

Temperature Coefficient: $\pm(0.0025\%$ of output +100 $\mu A)$ per degree C, above 30°C or below 20°C

Transient Recovery: Output will settle to within 0.01% of final value within 2 seconds following a programmed change in output current or frequency (10 ms for 5220A alone)

Load Capability: Drives all resistive and capacitive loads consistent with current and compliance voltage capability. Drives inductive loads (with reduced accuracy) up to 200 microhenries, consistent with current and compliance voltage capability

Maximum Isolation Voltage: $\pm 20V$ dc or 20V ac rms

Temperature Range: 0°C to 50°C (operating) and -20°C to 65°C non-operating

Relative Humidity: $\leq 50\%$ to 50°C, $\leq 75\%$ to 40°C, $\leq 95\%$ to 25°C

Altitude: 0 to 10,000 feet (operating) and 0 to 40,000 feet (non-operating)

Vibration: 2G maximum, 5 Hz to 55 Hz for 15 minutes

Shock: 15G maximum, half sinewaves

Power: 100, 110, 115, 120, 200, 220, 230, or 240V ac +10%, switch-selectable, 50 Hz to 60 Hz, 300 watts

Size: 17.8 cm H x 43.2 cm W x 55.9 cm D (7 in H x 17 in W x 22 in D), case only

Weight: 227 kg (50 lb)

Included with Instrument: Manual, power cord, serialized and dated calibration certificate

Ordering Information

Models	January 1990 prices
5220A Transconductance Amplifier	\$5900

Accessories (Also see Section 17)

Y5020 Current Shunt	\$ 700
Y5000* Interface/Buffer	600
Y5002* Cable (Y5000 to 5220A)	240
Y5702 Cable (5700A to 5220A)	250
M07-205-600 7" Rack Mount Kit	110
M00-270-610 20" Slides for Rack Mount Kit	130
M00-280-610 24" Slides for Rack Mount Kit	130

*Required when controlled from 5100B or 5101B

*The terms GPIB and IEEE-488 may be used interchangeably throughout this catalog.