



# Autocal AC Standard

- ACV and ACI Functions
- ACV Outputs from 10 Hz to 1 MHz
- IEEE-488, Autocal, 4101B Compatible
- Calibrates High Accuracy AC DMMs

The model 4200A is the ultimate prime AC source for any standards or calibration laboratory, achieving levels of accuracy and stability in hostile environments previously only attainable in temperature controlled laboratories. It features 90 day,  $\pm 1^\circ\text{C}$  total uncertainties of  $\pm 100$  ppm, and output levels from  $90\mu\text{V}$  to 1100V at frequencies between 10 Hz and 1 MHz. The output drive stages are solid state, providing a compact and highly reliable method of sourcing the high voltage-high frequency test points required by many of today's DMMs.

## SPECIFICATIONS

### AC Voltage

**Ranges:** 1 mV to 1000V in decades.  
**Full scale:** 2 x range except 1000V range, where max output=1100V.  
**Resolution:** 1 digit in 1,999,999 or 100nV, whichever is greater.  
**Frequency:** Ranges: 100 Hz to 1 MHz in decade steps. Resolution: 1% of range. Accuracy  $< \pm 100$  ppm.  
**Sensing:** Selectable remote/local sensing on 1V to 1000V ranges.  
**Guarding:** Selectable remote/local guarding.

**Maximum Capacitive load:** 1000 pF on 1V to 100V ranges, 300 pF on 1000V range.

**Total Uncertainty:** 90 day,  $23^\circ \pm 5^\circ\text{C}$  ( $\pm$ ppm Output  $\pm$ ppm Full Scale).

### 1mV to 100 mV Ranges:

170 $\pm$ 30 $\pm$ 6 $\mu\text{V}$	(10-31 Hz)
140 $\pm$ 20 $\pm$ 6 $\mu\text{V}$	(32-330 Hz)
130 $\pm$ 20 $\pm$ 6 $\mu\text{V}$	(300-10 kHz)
280 $\pm$ 20 $\pm$ 6 $\mu\text{V}$	(10-33 kHz)
800 $\pm$ 20 $\pm$ 6 $\mu\text{V}$	(30-100 kHz)
0.14% $\pm$ 0.01% $\pm$ 11 $\mu\text{V}$	(100-330 kHz)
0.24% $\pm$ 0.1% $\pm$ 21 $\mu\text{V}$	(300k-1 MHz)

### 1V and 10V Ranges:

140 $\pm$ 20	(10-31 Hz)
100 $\pm$ 10	(32-330 Hz)
90 $\pm$ 10	(300 Hz-33 kHz)
170 $\pm$ 20	(30-100 kHz)
500 $\pm$ 100	(100-330 kHz)
0.23% $\pm$ 0.04%	(300k-1 MHz)

### 100V Range:

140 $\pm$ 20	(10-31 Hz)
100 $\pm$ 10	(32-330 Hz)
90 $\pm$ 10	(300-10 kHz)
100 $\pm$ 10	(10k-33 kHz)
200 $\pm$ 20	(30-100 kHz)
650 $\pm$ 100	(100-200 kHz)

### 1000V Range: (Option 10).

150 $\pm$ 25	(45-330 Hz)
130 $\pm$ 25	(300 Hz-10 kHz)
200 $\pm$ 25	(10-33 kHz)
900 $\pm$ 50	(30-100 kHz, up to 750V only)

**Settling Times:** to 100 ppm of step size:  $< 10\text{s}$  (10-31 Hz),  $< 3\text{s}$  (32-330 Hz),  $< 1\text{s}$  ( $> 330$  Hz).

### AC Current (Option 30)

**Ranges:** 100 $\mu\text{A}$  to 1A in decades.

**Full scale:** 2 x range.

**Resolution:** 1 digit in 1,999,999 or 100 pA, whichever is greater.

**Total Uncertainty:** 90 day,  $23^\circ \pm 5^\circ\text{C}$  ( $\pm$ ppm Output  $\pm$ nA).

### 100 $\mu\text{A}$ Range:

600 $\pm$ 10	(10-1 kHz)
1050 $\pm$ 16	(1k-5 kHz)

### 1 mA Range:

320 $\pm$ 100	(10-1 kHz)
450 $\pm$ 100	(1k-5 kHz)

### 10 mA Range:

320 $\pm$ 1 $\mu\text{A}$	(10-1 kHz)
450 $\pm$ 1 $\mu\text{A}$	(1k-5 kHz)

### 100mA Range:

320 $\pm$ 10 $\mu\text{A}$	(10-1 kHz)
450 $\pm$ 10 $\mu\text{A}$	(1k-5 kHz)

### 1A Range:

500 $\pm$ 100 $\mu\text{A}$	(10-1 kHz)
750 $\pm$ 160 $\mu\text{A}$	(1k-5 kHz)

**Guarding:** Selectable remote/local guarding.

## GENERAL

**Calibration:** Autocal from front panel or via the IEEE-488 interface.

### Environmental:

Operating temp:  $0^\circ$  to  $+50^\circ\text{C}$ .

Storage temp:  $-40^\circ$  to  $+70^\circ\text{C}$ .

**Dimensions:** 178 mm (7 in.) high; 455 mm (17.9 in.) wide; 563 mm (22.2 in.) deep.

**Weight:** 36 kg (80 lb).

**Power:** 100/120/220/240 Vac  $\pm 10\%$ , 50 Hz or 60 Hz. Consumption 100VA standby, 450VA full power.

## OPTIONS

**10: 1000V Range**

**30: Current Function**

**42: Alternative Rear Output**

**80: 115V 60 Hz Line Operation**

**81: 115V 50 Hz Line Operation**

**90: Rack Mounting Kit**

## FACTORY/FOB

Indianapolis, IN

Norwich, England