

230



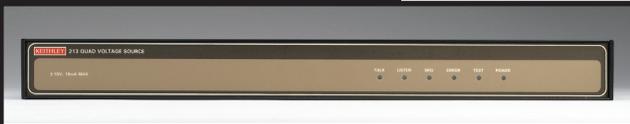
- $\pm 2\text{mA}$, $\pm 20\text{mA}$, $\pm 100\text{mA}$ programmable I-LIMIT
- Remote sensing
- 100-point source memory
- Programmable Digital I/O

Ordering Information

230 Programmable Voltage Source

Extended warranty, service, and calibration contracts are available.

213



- GPIB controlled
- Autoranging or programmable $\pm 1\text{V}$, $\pm 5\text{V}$, or $\pm 10\text{V}$ ranges
- 10mA output current per channel
- Fast waveform buffers

Ordering Information

213 Quad Voltage Source

Extended warranty, service, and calibration contracts are available.

Programmable Voltage Source

The Model 230 Voltage Source is a programmable solution for precision sourcing of low-level DC voltage.

RANGE	MAXIMUM OUTPUT	ACCURACY (1 Year) 18°–28°C	STEP SIZE	TEMPERATURE COEFFICIENT/°C 0°–18°C & 28°–50°C
100 V	± 101.00 V	0.05 % + 50mV	50 mV	0.005% + 0.5 mV
10 V	± 19.995 V	0.05 % + 10mV	5 mV	0.005% + 100 μV
1 V	± 1.9995 V	0.05 % + 1mV	500 μV	0.005% + 25 μV
100 mV	± 199.9 mV	0.075% + 300 μV	50 μV	0.01 % + 25 μV

SELECTABLE CURRENT LIMIT: $\pm 100\text{mA}$, $\pm 20\text{mA}$, $\pm 2\text{mA}$ (–0, +20%).
NOISE: (150 μV + 50ppm range) p-p, 0.1Hz to 300Hz; 5mV p-p, 0.1Hz to 300kHz. Specification applies for local sensing only, typical.
RESPONSE TIME, TRANSIENT RECOVERY TIME: <3ms.
OUTPUT IMPEDANCE: 1m Ω .
EXTERNAL TRIGGER: TTL-compatible.
OUTPUT CONNECTIONS: Five-way binding posts for OUTPUT, OUTPUT SENSE, COMMON, COMMON SENSE, and CHASSIS GROUND; BNC for EXTERNAL TRIGGER INPUT and OUTPUT.

ACCESSORIES AVAILABLE

- 7008-* IEEE-488 Digital Cable
- 1019A-* Single or Dual Fixed Rack Kit
- 4288-4 Rack Mount Kit

GENERAL

SYSTEMS COMPATIBILITY: IEEE-488-1978.
MAXIMUM COMMON MODE VOLTAGE: 250V rms, DC to 60Hz.
EMC: Conforms to European Union Directive 89/336/EEC.
SAFETY: Conforms to European Union Directive 73/23/EEC (meets EN61010-1/IEC 1010).
POWER: 105–125 or 210–250VAC, 50 or 60Hz (80VA). 90–105 or 180–210V AC operation available.
DIMENSIONS, WEIGHT: 127mm high \times 216mm wide \times 359mm deep (5 in \times 8 1/2 in \times 14 1/4 in). Net weight 4.4kg (9 lb 11 oz).

Quad Voltage Source

The Model 213 Quad Voltage Source (QVS) is a convenient and cost-effective instrument for sourcing voltage. Each of four fully independent and stackable channels provides up to $\pm 10\text{V}$ of bias at 10mA.

Digital I/O with 100mA Drive Current

The Model 213 QVS also provides 8 bits each of TTL compatible digital input and output on a DB25 female connector for driving relays and similar applications.

VOLTAGE RANGE	MAXIMUM OUTPUT	STEP SIZE	ACCURACY 18°–28°C $I_{\text{OUT}} = 1\text{mA}$	NOISE (p-p, typical) 0.1–10Hz
1 V	± 1.02375 V	250 μV	$\pm(0.05\% + 1\text{mV})$	<5ppm of range
5 V	± 5.11875 V	1.25 mV	$\pm(0.05\% + 3\text{mV})$	<3ppm of range
10 V	± 10.2375 V	2.5 mV	$\pm(0.05\% + 10\text{mV})$	<3ppm of range

TEMPERATURE COEFFICIENT OF ACCURACY (0°–18°C & 28°–50°C): $\pm(0.002\%$ of setting + 100 $\mu\text{V})$ /°C.
INTERNAL BUFFER: An 8192-location internal buffer is used to store values for waveform generation as fast as 1ms per point.
DIGITAL I/O: 8 TTL compatible level sensitive inputs. 8 outputs, internally selectable TTL compatible or open collector with 100mA drive and capable of withstanding 50V (for driving relays or other devices from an external voltage supply).

ACCESSORIES AVAILABLE

- 213-CON Analog Output Connector (supplied)
- C126-1 DB25 Male to DB25 Female with 1.5m (5 ft) Cable
- CS-400 DB25 Male Solder Cup

RANGING: Autorange or select one of three fixed ranges.
OUTPUT RESISTANCE: <500m Ω , typical.
WIDEBAND NOISE (p-p, typical): 0.1 to 20MHz, 8mV

GENERAL

CHANNEL-TO-CHANNEL, CHANNEL TO DIGITAL LOW ISOLATION: 500V or 105V-Hz, whichever is less.
POWER: 90–125 or 180–250V AC (internally switch selectable); 50–60Hz, 70VA max.
DIMENSIONS, WEIGHT: 425mm wide \times 45mm high \times 309mm deep (16 1/4 in \times 1 3/4 in \times 12 in). Net weight 3.52kg (7.75 lb).

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