

Model 526

DC Source/Calibrator

- **Voltage Range:** $\pm 100\text{nV}$ to $\pm 110\text{V}$, 4 Ranges with Full Carry and Borrow for each Decade
- **Current Range:** $\pm 10\text{nA}$ to $\pm 110\text{mA}$, 2 Ranges with Full Carry and Borrow for each Decade
- **Resolution:** 1ppm
- **Accuracy:** 1 year, 20ppm.
- **Stability (24 hrs):** 3ppm
- **Settling Time:** 2ms
- **Compliance Voltage:** 100V
- **Settable Voltage and Current Limits**
- **Pass thru Zero Operation**
- **"Crowbar" Zero Reference**
- **Local and GPIB/Optional LAN Remote Control**
- **Replaces the Analogic Model 8200**



GENERAL DESCRIPTION

The Krohn-Hite Model 526 Precision DC Voltage/Current Source/Calibrator is a highly stable and repeatable DC voltage source and DC current source providing N.I.S.T. traceable voltages and currents for use in production, calibration labs, QA and QC departments, design labs, or any place where an accurate voltage and current source is needed.

The 526 provides accurate voltages from $\pm 100\text{nVdc}$ to $\pm 111.1110\text{Vdc}$ to within 20ppm for 1 year, and precise currents from $\pm 10\text{nA}$ to $\pm 111.1110\text{mA}$ to within 50ppm for 1 year. It is an extremely quiet source with $<12\mu\text{Vrms}$ of noise measured over a 10Hz to 100kHz bandwidth.

DECADE CONTROL

Microprocessor assisted decade control allows for continual use of one decade with full carry and borrow capability to and from all more significant decades for easier use and convenient manual operation. Monotonic and linear A/D measurements can be made at any resolution using only one decade control.

DISPLAY AND FRONT PANEL CONTROL

A user friendly 2-line 40 character display and six front panel decade switches with full carry and borrow allow for fast accurate voltage and current settings. Output settings can be modified using the front panel decade switches and the range keys. Output 2-wire, 4-wire are accomplished with one keystroke or over GPIB/LAN. A crowbar function

places the output in a safe mode when desired. The 526 output can be set to 0 volts, allowing the output sense to maintain a true 4-wire low impedance output.

RANGES AND RESOLUTION

The 526 provides four voltage ranges of 100mV, 1V, 10V and 100V with a resolution of 100nV, 1 μV , 10 μV and 100 μV respectively. Two current ranges provide 10mA and 100mA with a resolution of 10nA and 100nA respectively.

NON-VOLATILE MEMORY

Up to 32 storage output settings are provided with the 526, that can be recalled at any time.

VOLTAGE, CURRENT AND COMPLIANCE LIMITS

Selecting voltage and current limits to prevent users from damaging sensitive circuitry or devices under test may be set from the front panel as well as a hardware compliance voltage limit of 120V, 36V, 26V or 16V.

APPLICATIONS

The 526 is well suited for a variety of applications such as: the design, check and calibration of high speed, high resolution A/D converters; design and certification of high speed data logging and process control systems; calibration of digital voltmeters and multimeters; as an "IMBEDDED STANDARD" and/or simulator; design, testing, simulation and certification of thermocouples, strain gages and transducer instrumentation. It is also a replacement for the Analogic Model 8200.

SPECIFICATIONS

VOLTAGE MODE SPECIFICATIONS

Specifications apply at 23°C ±1°C, <70% relative humidity.

| Range | Full Scale | Resolution | Current (dc) | Zo (ohms) |
|-----------------------------------|---------------|------------|--------------|-----------|
| 100mVdc | ±111.1110mVdc | 100nVdc | 100mA | 20μ |
| 1.0Vdc | ±1.111110Vdc | 1μVdc | | |
| 10Vdc | ±11.11110Vdc | 10μVdc | | |
| 100Vdc | ±111.1110Vdc | 100μVdc | | |
| Short Circuit Current: 200mA max. | | | | |

| Range | Full Scale | Absolute Accuracy ±(ppm of setting + μV) |
|---------|---------------|---|
| | | 1Year |
| 100mVdc | ±111.1110mVdc | 20 + 3 |
| 1.0Vdc | ±1.111110Vdc | 20 + 5 |
| 10Vdc | ±11.11110Vdc | 20 + 52 |
| 100Vdc | ±111.1110Vdc | 20 + 500 |

| Range | 24 Hour Stability * ±(ppm of setting + μV) |
|---|---|
| * 24 hour stability applies at a constant temperature | |
| 100mVdc | ±3 + 1.5 |
| 1Vdc | ±3 + 1.5 |
| 10Vdc | ±3 + 10 |
| 100Vdc | ±3 + 100 |

Temperature Coefficient: 18°C to 28°C, ±5ppm of setting, ±1ppm of range/°C; operating limit, ±10ppm of setting, ±2ppm of range/°C.

Settling Times: 100mV, 1V and 10V range, 2ms; 100V range, 15ms; range changes, 35ms.

Line Regulation: ±2ppm of setting for 10% line fluctuation.

Load Regulation 4-Wire operation: <±2ppm + 1μV of setting from no load to 100mA full load. Measurements must be made at sense lead connection point to the load.

Noise and Ripple (rms):

| Range | Bandwidth | |
|---------|---------------|----------------|
| | 0.1Hz to 10Hz | 10Hz to 100kHz |
| 100mVdc | 2μVp-p | 6μVrms |
| 1Vdc | 2μVp-p | 10μVrms |
| 10Vdc | 4μVp-p | 20μVrms |
| 100V | 40μVp-p | 100μVrms |

CURRENT MODE SPECIFICATIONS

| Range | Full Scale | Absolute Accuracy ±(ppm of setting + nA) |
|---------|---------------|---|
| | | 1Year |
| 10mAdc | ±11.00000mAdc | 50 + 50 |
| 100mAdc | ±110.0000mAdc | 50 + 200 |

| Range | Full Scale | Resolution | Voltage Compliance |
|---------|---------------|------------|--------------------|
| 10mAdc | ±11.00000mAdc | 10nAdc | 100Vdc |
| 100mAdc | ±110.0000mAdc | 100nAdc | 100Vdc |

Noise and Ripple (rms):

| Range | Bandwidth | |
|---------|---------------|----------------|
| | 0.1Hz to 10Hz | 10Hz to 100kHz |
| 10mAdc | 25nAp-p | 150nArms |
| 100mAdc | 100nAp-p | 300nArms |

Temperature Coefficient: 18°C to 28°C, ±5ppm of setting, ±1ppm of range/°C; operating limit, ±10ppm of setting, ±2ppm of range/°C.

Maximum Output Current: ±110mA. Output protected from damage with a current limiter.

Line Regulation: ±2ppm of setting for 10% line fluctuation.

Compliance Voltage Effect: <±2ppm + 1μV of setting for a 90V change in compliance voltage change.

GPIB PROGRAMMING

Subsets: SH1, AH1, T6, L4, SR1, RL0, PP1, DC0, DT0, E1.

Line Termination: The GPIB EOI signal is always sent with the last character on a line.

Talker Function: Allows interrogation of the Model 526 by a controller.

Communications Data Rate: Typically 3ms without range change, 35ms with range change.

TERMINALS

Output Terminals are mounted on both the front and rear panels (rear panel includes a mounted 6-pin Amphenol military style connector, mate supplied). Front terminals are 5 way, gold, low thermal, binding posts on ¾" centers. Only one set of terminals may be used at a time. Front and rear terminal sets are configured for remote sensing of the output as follows:

High Output and High Sense
Low Output and Low Sense
Case Ground

MODES OF OPERATION

Local (LCL): Allows full front panel control.

Recall (RCL): Allows viewing and outputting stored front panel set-ups from memory locations 01 thru 32.

Edit (EDT): Allows for editing any memory location from 1 to 32.

Remote (REM): Indicates when the Model 526 is remotely controlled by IEEE-488 or LAN (optional).

SPECIAL FEATURES

Port Selection: Allows setting IEEE-488 port or optional LAN port if installed.

Menu Selectable Voltage and Current Limits: Allows setting a voltage limit from 0V to 110V, each polarity and/or a current limit from 0mA to 110mA, each polarity.

Failsafe Hardware Voltage Clamp (Compliance) Limits: Allows setting a hardware clamp voltage while in the current mode. Selections are 120V, 36V, 26V and 16V, $\pm 5\% + \pm 1V$.

Power-On Start Sequence: Allows setting the power-on condition to factory default set-up or last setting.

Display Area: Allows partial display of output voltage or full display.

Pass Thru Zero: Allows voltage and current decade controls to pass thru zero.

Remote Protocol: Allows setting remote programming protocol to be Krohn-Hite or Analogic 8200.

GENERAL SPECIFICATIONS

Power Requirements: Line voltage, 105 to 130 or 210 to 260 volts ac, single phase, 50Hz/60Hz, 60 watts max.

Warm-Up Time (from cal temp): 2 hour to rated accuracy.

Display: 2 line, 40 character, LCD. Displays output settings and other pertinent information.

Pushbutton Keys: Membrane.

Isolation: Power transformer-to-analog output, control logic-to-analog output, optically isolated, 100Vdc to chassis.

Protection: Voltage mode, short-circuit and over-load protected. Current mode, open circuit protected. Indication by display message. Crowbar once overload is detected.

Temperature:

Operating Limit: 0°C to 50°C.

Calibration: 23°C $\pm 1^\circ\text{C}$.

Storage: -40°C to 85°C.

SAFETY

The Model 526 is designed to meet the requirements of the following standards of safety for electrical equipment for

measurement, control and laboratory use: IEC61010-1, EN61010-1.

ELECTROMAGNETIC COMPATIBILITY

Emissions and Immunity: EN61326-1, EMC, 61000-4-2; ESD, 61000-4-3; Radiated Immunity, 61000-4-4; EFT, 61000-4-5; Surge, 61000-4-6; Conducted Immunity, 61000-4-8; Magnetic Immunity, 61000-4-11; Voltage Interruption EN61010-1.

CE Compliant for Class B Equipment.

MECHANICAL SPECIFICATIONS

Dimensions and Weights: 4" (10.28cm) high with feet, 3.5" (9cm) high without feet; 14.15" (36.36cm) wide; 14.3" (36.75cm) deep; 12 lbs (5.4kg) net, 14 lbs (6.3kg) shipping.

GENERAL INFORMATION

Certification: A Certificate of Compliance is issued with each new instrument to certify the calibration and traceability to N.I.S.T.

Warranty: ONE FULL YEAR warranty on parts and labor includes specifications and performance.

ACCESSORIES

USA, 3 terminal line cord.

CD Operating Manual.



OPTIONS

Extended 1 Year Warranty: Part No. EW526.

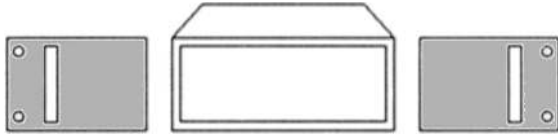
LAN: Local Area Network to remotely control the Model 526 by a computer.

PCR100: Precision 100 Ohm Resistor.



OPTIONAL ACCESSORIES

RK-314: Rack Mount Kit permits the installation of the Model 526 into a 19" rack spacing.



CAB-005: Cable, Multi-stacking Double Banana plug with Shielded Balance Line.



CON13/15: 6-pin Amphenol military style output connector, clamp supplied.



CASE-2720B: Protective carrying case, Black, light weight strong HPX® Resin, water tight with telescoping handle and in-line wheels.



CAB-018: Cable, Multi-stacking Double Banana plug.



CAB-023: Cable Set, Low Thermal EMF Retractable Banana.



CAB-024: Cable Set, Low Thermal EMF Spade Lug

Specifications are subject to change without notice.