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education



engineering



service & repair



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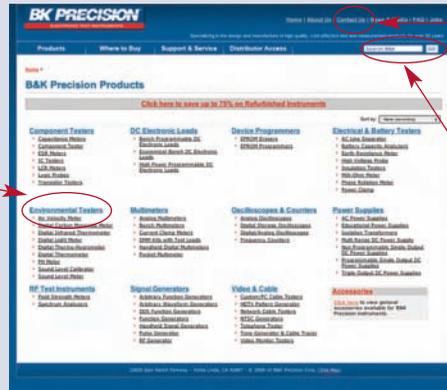
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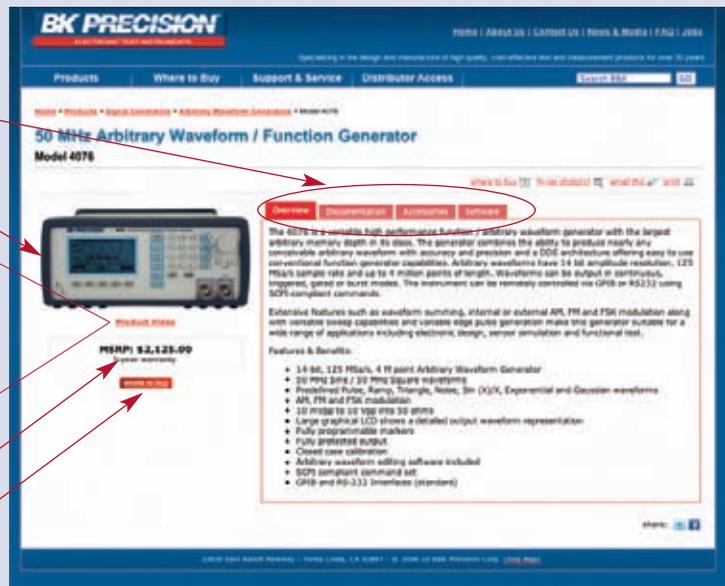
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Product video (for selected instruments)

MSRP and warranty information

"Where to Buy" for individual product



Resource Center

Access an array of useful resources.

Guidebooks

Glossary of terms

Product demo, intro, and how-to videos



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# SIGNAL GENERATORS



**While signal generators** traditionally produce sine waves with accurate frequencies and amplitudes, modern function generators provide capabilities such as pulses, square, triangle, and sawtooth waves. Added features include programmability, modulation, sweeping, gating, bursts, and a variety of triggering methods. Some generators provide specialty waves, such as simulated earthquake or ECG (electrocardiogram) signals. Arbitrary waveform generators (AWG) allow the creation of accurate and sophisticated stimulus signals that reflect real-world applications. For example, an automotive engineer can use an AWG to accurately simulate a fuel injector current signal in order to test some diagnostic electronics.



**Modern circuits** and systems can require a variety of signals for characterization and testing. B&K Precision offers 28 models of signal generators to meet these needs -- from sophisticated R&D lab work to price-conscious school budgets.

- 2 MHz – 120 MHz
- Analog and digital function generators
- True arbitrary waveform generators

There are two common architectures for signal generators today: DDS (direct digital synthesis) and analog.

DDS generators provide flexibility, digital precision, programmability, and sophisticated performance in small packages. Capable of generating sine and square waves up to 50 MHz and 14 bit arbitrary waveforms of up to 4 million points at up to 125 million samples per second, B&K Precision's 407x series of AWGs lead the field in price, flexibility, and performance. Additionally, this AWG family also provides full function generator capabilities.

While DDS generators are at the forefront of generator technology and features, analog generators are the time-tested workhorses of modern technology, troubleshooting/maintenance, and education. They provide excellent value with familiar controls and reliable operation, pleasing users and business managers alike.



Model 4040DDS



Model 4086



# SIGNAL GENERATORS

## Selection Guide

### Arbitrary/Function Generators

Primarily DDS function generators with limited Arb. capability in terms of memory space, vertical resolution and maximum output frequency.

### Arbitrary Waveform Generator (AWG)

True AWG capable of generating almost any waveform combined with full function generator functionality (two in one).

#### Arbitrary Waveform and Function/Arbitrary Generators

	TYPE	MODEL	FREQUENCY RANGE	NUMBER OF CHANNELS	ARBITRARY			MODULATION		OUTPUT RANGE	INTERFACE	SPECIAL FEATURES	Page
					Waveform Length (points)	Sample Rate	Vertical resolution	AM / FM	Other				
Digital (DDS)	Arbitrary Waveform Generator	4079	1 uHz-50 MHz	2	4000000	125 MS/s	14 bit	int/ext	FSK	10 mV-10 Vpp	GPIO, RS232	marker, summing input	5
		4076	1 uHz-50 MHz	1	4000000	125 MS/s	14 bit	int/ext	FSK	10 mV-10 Vpp	GPIO, RS232	marker, summing input	5
		4078	1 uHz-25 MHz	2	400000	100 MS/s	14 bit	int/ext	FSK	10 mV-10 Vpp	RS232, GPIO option	marker	5
		4075	1 uHz-25 MHz	1	400000	100 MS/s	14 bit	int/ext	FSK	10 mV-10 Vpp	RS232, GPIO option	marker	5
Function/Arbitrary Generator	Function/Arbitrary Generator	4086AWG	1 uHz-80 MHz	1	16000	200 MS/s	10 bit	int/ext	FSK, PSK	1 mV-10 Vpp	RS232	counter	8
		4084AWG	1 uHz-20 MHz	1	16000	200 MS/s	10 bit	int/ext	FSK, PSK	1 mV-10 Vpp	RS232	counter	8
		4045	0.1 Hz-20 MHz	1	1000	50 MS/s	12 bit	int/ext		10 mV-10 Vpp	RS232		8

Note: \*) All generators provide basic function generator waveforms sine, square, triangle, TTL/CMOS and ramp/pulse and complex waveforms noise, sin(x)/x, exponential and Gaussian

#### Function Generator

	TYPE	MODEL	FREQUENCY RANGE	WAVEFORMS		MODULATION		SWEEP	BURST	OUTPUT RANGE	INTERFACE	SPECIAL FEATURES	Page
				Basic *)	Other	AM/FM	Other						
Digital (DDS)	Function	4087	1 uHz-120 MHz	√	noise, complex	int/ext	FSK, PSK	√	√	1 mV-10 Vpp	RS232	counter	9
		4086	1 uHz-80 MHz	√	noise, complex	int/ext	FSK, PSK	√	√	1 mV-10 Vpp	RS232	counter	9
		4085	1 uHz-40 MHz	√	noise, complex	int/ext	FSK, PSK	√	√	1 mV-10 Vpp	RS232	counter	9
		4084	1 uHz-20 MHz	√	noise, complex	int/ext	FSK, PSK	√	√	1 mV-10 Vpp	RS232	counter	9
		4040DDS	0.1 Hz-20 MHz	√		int/ext		√		1 mV-10 Vpp		counter	7
		4013DDS	0.1 Hz-7 MHz	√				√		50 mV to 10 Vpp			7
		4007DDS	0.1 Hz-12 MHz	√				√		50 mV to 10 Vpp			7
Analog	Function	4040A	0.2 Hz-20 MHz	√		int/ext		√	√	100 mV-10 Vpp		counter	10
		4017A	0.1 Hz-10 MHz	√				√		100 mV-10 Vpp			10
		4012A	0.5 Hz-5 MHz	√				√		100 mV-10 Vpp			10
		4011A	0.5 Hz-5 MHz	√						100 mV-10 Vpp			10
		4003A	0.5 Hz-3 MHz	√				√		100 mV-10 Vpp		counter	10
		4001A	0.5 Hz-3 MHz	√				√		100 mV-10 Vpp			10
		4010A	0.2 Hz-2 MHz	√						100 mV-10 Vpp			10

Note: \*) basic waveforms include sine, square, triangle, TTL/CMOS and ramp/pulse

	TYPE	Model	Frequency Range	Transition Time	Width	Delay	Number of Outputs	Page
Pulse	Analog	4030	0.1 Hz - 10 MHz	12 ns	50 ns - 50 ms	0 - 2 us	1	11
	Digital	4033**	0.1 Hz - 50 MHz	5 ns - 100 ms	10 ns - 10 s	0 - 10 s	1	--
	Digital	4034**	0.1 Hz - 50 MHz	5 ns - 100 ms	10 ns - 10 s	0 - 10 s	2	--

\*\* = Available Summer 2010

#### Other Signal Sources

	TYPE	MODEL	FREQUENCY RANGE	WAVEFORMS		MODULATION	OUTPUT RANGE	Page
				Sine	Square			
Analog	Signal	2005B	100 kHz-150 MHz	√		int/ext	100 mVrms max.	11
		3003	0.1 Hz-10 MHz	√	√		0-2.25 Vpp	11
		3001	20 Hz-150 kHz	√	√		0-2.5 Vpp	11

# SIGNAL GENERATORS

## 25 MHz & 50 MHz Arbitrary Waveform/Function Generators



Model 4078

The 407x generators combine a full-featured DDS function generator with an arbitrary waveform generator (AWG). This gives the user uncommon flexibility to generate any waveform that can be described by a sampled set of data within the generator's capabilities. AWGs have revolutionized the generation of stimulus signals by greatly reducing the need to build special circuitry to generate custom signals. This reduces costs enormously because multiple design/build/debug steps are avoided. Now, a user can write software to generate the needed waveform shapes or use the simple tools to graphically construct special waveforms. With today's accelerated development schedules, can you afford not to take advantage of this powerful, enabling technology?



### Common Features & Benefits

- High performance and cost effectiveness in a compact package
- Standard function generator capabilities (sine, square, triangle waves) with DDS accuracy and precision. Also included are noise, sync, and exponential waveforms
- Frequencies from 1  $\mu$ Hz (sine and square), and amplitudes from 10 mVpp to 10 Vpp into 50  $\Omega$
- Up to four million points (4076, 4079) or four-hundred thousand points of AWG memory -- the largest waveform memories for instruments in their class. The memory is not partitioned -- use it all to store one waveform or many waveforms at different locations

### Common Features & Benefits

- Sweep, gated, burst, and modulation (AM/FM/FSK) capabilities standard
- AWG provides built-in pulse, ramp, triangle, noise, sinc, exponential, and Gaussian noise waveforms. You can utilize these waveforms to build your own arbitrary waveform using the front panel controls
- Audio frequency sine waves have a very low distortion level of -65 dBc
- Versatile noise generation: In Arb mode you can conveniently add noise to your waveform directly from the front panel and precisely adjust the scale of the noise amplitude. Unlike other generators that only produce a noise waveform, this feature allows you to choose between generating a noise waveform or adding noise to an existing waveform
- RS-232 and GPIB support
- The units are easily programmable with popular programming languages using a SCPI syntax

Features	4075	4078	4076	4079
Number of Channels	1	2	1	2
Frequency (sine)	1 $\mu$ Hz - 25 MHz		1 $\mu$ Hz - 50 MHz	
Flatness	$\pm 0.2$ db @ 1 MHz, $\pm 1$ db @ 25 MHz		$\pm 0.1$ db @ 10 MHz, $\pm 1$ db @ 50 MHz	
Sample rate	100 MS/s		125 MS/s	
Computer interface	RS232 standard, GBIP optional		RS232 and GPIB standard	
Weight	6.6 lbs (3 kg)		5.5 lbs (2.5 kg)	
Dimensions (W x H x D)	8.4" x 3.5" x 12" (213 x 88 x 300) mm		8.4" x 3.5" x 11.8" (213 x 88 x 300) mm	



# SIGNAL GENERATORS

## 25 MHz & 50 MHz Arbitrary Waveform/ Function Generators

### Flexible interface

- The back panel has a 10 MHz reference signal output or it can be used to input a 10 MHz reference signal. This allows you to synchronize multiple generators to one generator or to a lab standard signal. Precisely adjust the output signal's phase with respect to this reference signal
- Marker pulses (50 Ω TTL output) can be output at any point on the waveform for user-defined durations. This lets you synchronize other equipment with your arbitrary waveforms. Trigger other generators phase-locked to the main generator to generate multiple waves with precise timing and phase relationships, or use the marker pulse to trigger a scope to let you view a system's response at a precise point
- Create and edit complex waveforms with WaveXpress™ software

### Intuitive user interface

- Back-lit LCD panels pack lots of information into a small space and can be easily read in a dark lab
- Intuitive layout of panel and screen menus
- Make parameter adjustments with an analog-style knob -- or enter numbers directly using the keypad. Enter frequency or period, whichever is most convenient. Use Vpp, Vrms, or dBm for amplitude (4076/4079). Left-right arrow keys let you choose which digit to adjust with the knob

### Dual channel models (4078 & 4079)

#### Features & Benefits

- Both channels offer full functionality. All waveform parameters such as frequency, amplitude and offset can be set independently
- Synchronize both output signals to the same clock signal (external or internal) and precisely adjust the phase relationship between the two signals
- Economical baseband I/Q signal source
- Saves costs and bench space

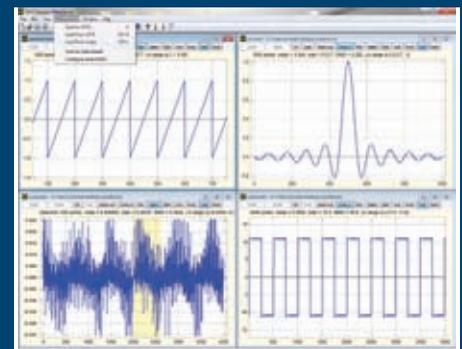


Model 4079 (rear view)



B&K Precision's WaveXpress™ software allows users to create and edit nearly any waveform imaginable, and integrates seamlessly with B&K Precision DSOs and AWGs.

- Seamless integration with B&K oscilloscopes 2534/2540/2542 and AWGs 4075 – 4079 & 4045
- Capture real-world waveforms with your DSO and play them back on a B&K AWG for testing
- Simple and intuitive interface
- Quickly create complex waveforms, and just as quickly edit them when requirements change
- Combine waveforms with addition, subtraction, multiplication and division



Waveform creation capabilities

SIGNAL GENERATORS  
DDS Function Generators



Model 4013DDS



Model 4040DDS

All three 40xx DDS models are versatile sweep function generators utilizing an advanced direct digital synthesis (DDS) design.

**Common Features & Benefits**

- Sine, square and triangle waveforms
- Lin or log sweep function
- Adjustable DC offset
- Adjustable duty cycle
- Bright, informative LCD

The 4007DDS and the 4013DDS are very similar in performance, only differing in maximum output frequency and slight differences in distortion levels and square wave rise/fall times. The 4007DDS can output triangle waves up to 100 kHz whereas the 4013DDS can output them up to 1 MHz. The symmetry of square waves can be adjusted from 15% to 85%. Users familiar with analog generators will appreciate the analog style controls.

The 4040DDS generator is a high-performance DDS generator with some features seen in only higher-end instruments, but at an attractive price.

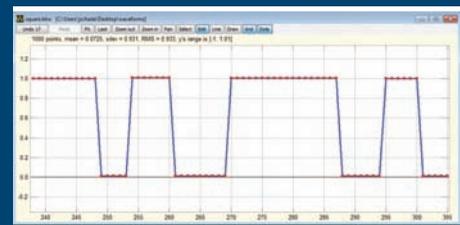
**Features & Benefits**

- Sine and square waves are available to 20 MHz with 0.01% frequency accuracy
- Amplitude flatness is  $\pm 1$  dB over the full frequency range and  $\pm 0.5$  dB up to 1 MHz
- Normal and triggered operation are available along with gated operation, sweeping, and internal or external AM/FM modulation. Internal modulation for both AM and FM is a 1 kHz sine wave
- Built-in counter

Features	4007DDS	4013DDS	4040DDS
Frequency (sine & square)	0.1 Hz - 7 MHz	0.1 Hz - 12 MHz	0.1 Hz - 20 MHz
Output range	1 mV - 10 Vpp		
Distortion	DC-20 kHz = -55 dBc (<0.25%)		DC-20 kHz = -50 dBc
Flatness	$\pm 1$ dB to 7 MHz	$\pm 1$ dB to 12 MHz	$\pm 0.5$ dB @ 1 MHz $\pm 1$ dB to 20 MHz
Sweep time	100 ms - 30 s	100 ms - 30 s	10 ms - 50 s
Weight	4.4 lbs (2 kg)		5.5 lbs (2.5 kg)
Dimensions (W x H x D)	8.4" x 3.5" x 8.3" (213 x 88 x 210) mm		

**Features & Benefits**

- Import waveforms from B&K scopes, AWGs, or load them from CSV or text files
- Autoscan function automatically detects instruments connected via RS232, USB, or GPIB
- Create waveforms from scratch with drawing and editing tools. Insert commonly used waveforms and different types of noise
- Numerous transformations for changing a waveform. You can add user-defined transformations in the python programming language
- Multi-language support: additional languages can be added by the user
- Fast zooming and panning with mouse
- Dialog settings are remembered for faster repetitive work
- Undo/redo allow quick experimentation



Waveform editing capabilities

Free at [www.bkprecision.com/wavexpress](http://www.bkprecision.com/wavexpress)

# SIGNAL GENERATORS

## DDS Arbitrary/ Function Generators



Model 4086AWG

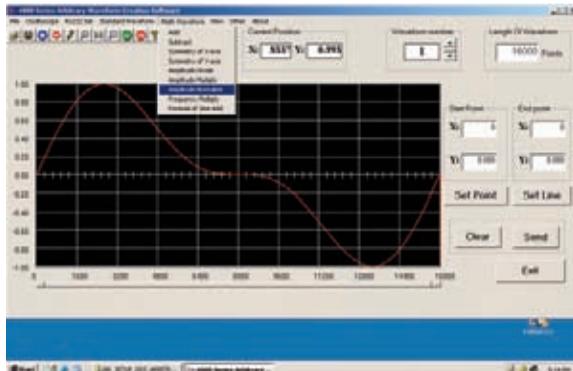
The **4084AWG** and **4086AWG** are laboratory-grade DDS function generators with basic arbitrary waveform capability. They produce low distortion (0.1% THD) sine waves from 1  $\mu$ Hz and 26 other built-in waveforms. Pulses from 0.1% to 99.9% duty cycle can be produced. They can output 1 mVpp to 10 Vpp into 50  $\Omega$ . A 100 MHz counter/totalizer is supplied with 50 mVrms sensitivity. The 200 MSA/s arbitrary waveform generator can provide eight waveforms with up to 16,000 points each with 10 bit vertical resolution.

AM/FM/FSK/PSK modulation types are provided, along with linear/log sweep, burst (up to 10,000 cycles), and gate capabilities. Ten instrument setup states can be stored in non-volatile memory. Setup parameters can be entered with a keypad or knob. These generators can also output  $\pm$ DC voltages from millivolt levels with 1  $\mu$ V resolution up to 9.999 V with 1 mV resolution. A serial port provides programmability with SCPI-compatible syntax.



Model 4045

The **4045** is an entry-level arbitrary waveform generator with 1000 points of user-definable waveform memory. Output amplitudes can be from 10 mV to 10 Vpp into 50  $\Omega$ . It is also a full-featured function generator with sine, square, triangle, and ramp waveforms. AM and FM modulation are provided, along with linear/log sweep, burst, and gate capabilities. Triggering can be either internal, external, or manual. It is a cost-effective choice for educational environments and for budget-conscious engineering managers.



Arbitrary Waveform Generation Software (4084AWG & 4086AWG)



### 4045 Features & Benefits

- 0.01 Hz to 20 MHz sine and square waves with 6 digit frequency resolution
- 0.01 Hz to 2 MHz triangle and ramp waveforms
- 12 bit arbitrary waveform vertical amplitude resolution
- Sampling rate per point from 20 ns to 50 s
- <18 ns square wave rise and fall time
- DC offsets  $\pm$ 4.5 V into 50  $\Omega$
- Symmetry adjustment for square and triangle waves allows you to produce pulses and ramps
- Output and sync terminals on front panel
- Frequency accuracy is 50 ppm
- USB Interface (virtual COM)

Features	4045	4084AWG	4086AWG
Sine	0.1 Hz - 20 MHz	1 $\mu$ Hz - 20 MHz	1 $\mu$ Hz - 80 MHz
Square	0.1 Hz - 20 MHz	1 $\mu$ Hz - 20 MHz	1 $\mu$ Hz - 40 MHz
Amplitude (into 50 $\Omega$ )	10 mV - 10 Vpp	1 mV - 10 Vpp	$\leq$ 40 MHz: 1 mV $\sim$ 10 Vpp $\geq$ 40 MHz: 1 mV $\sim$ 2 Vpp
Frequency Accuracy	50 ppm	$\leq \pm 5 \times 10^{-6}$ (22°C $\pm$ 5°C)	
Weight	5.5 lbs (2.5 kg)	6.6 lbs (3 kg)	
Dimensions (W x H x D)	8.4" x 3.5" x 8.3" (213 x 88 x 210) mm	10" x 3.93" x 14.56" (255 x 100 x 370) mm	

**SIGNAL GENERATORS**  
**Programmable DDS Function**  
**Generator Series**



Model 4087

**B&K Precision's 4080 series generators** are laboratory-quality DDS function generators from 1  $\mu$ Hz output and amplitudes of 1 mVpp to 10 Vpp into 50  $\Omega$  (reduced output above 40 MHz). Besides providing sine, square, triangle, ramp, and pulse waveforms, there are 19 other built-in specialized waveforms.

**Features & Benefits**

- Low distortion sine waves ( $\leq 0.1\%$  THD for 20 Hz to 100 kHz)
- AM/FM/FSK/PSK modulation
- Linear and logarithmic frequency sweeps. Sweep times from 1 ms to 800 s (linear). Sweep over the full frequency range if desired
- 100 MHz counter/totalizer with 50 mVrms sensitivity (input on rear panel)
- 0.1% to 99.9% duty cycle positive or negative pulses (below 10 kHz)
- Other waveforms provided: noise,  $\pm$ DC, staircase, coded pulse, full wave rectified sine, half-wave rectified sine,



Model 4087 (rear view)

- sine transverse cut (i.e., the top of the sine wave is clipped), sine vertical cut (like an AC lamp dimmer), sine phase modulation (a phase-modulated square wave with sine amplitude modulation), logarithmic, exponential, half-round, sinc, square root, tangent, and combination (ramp, DC, and staircase)
- Frequency range for complex (arbitrary-style) waveforms is 1  $\mu$ Hz to 100 kHz
- Output  $\pm$ DC voltages from millivolt levels with 1  $\mu$ V resolution up to 9.999 V with 1 mV resolution
- A configuration setting lets you display the correct amplitude for either a high impedance load or a 50  $\Omega$  load
- Set amplitude in volts peak-to-peak, volts RMS, or dBm (1 mW into 50  $\Omega$ )
- RS-232 interface standard for controlling instrument state with SCPI-compatible syntax
- Easy-to-read VFD (vacuum fluorescent) display
- 10 instrument setup states can be stored in non-volatile memory
- Rear panel terminals: counter/totalize input, modulation out, modulation in, external trigger/FSK/burst
- 1 ppm frequency stability

Features	4084	4085	4086	4087
Sine	1 $\mu$ Hz - 20 MHz	1 $\mu$ Hz - 40 MHz	1 $\mu$ Hz - 80 MHz	1 $\mu$ Hz - 120 MHz
Square	1 $\mu$ Hz - 20 MHz	1 $\mu$ Hz - 40 MHz	1 $\mu$ Hz - 40 MHz	1 $\mu$ Hz - 40 MHz
Amplitude (into 50 $\Omega$ )	1 mV ~ 10 Vpp	1 mV ~ 10 Vpp	$\leq 40$ MHz: 1 mV ~ 10 Vpp $\geq 40$ MHz: 1 mV ~ 2 Vpp	$\leq 40$ MHz: 1 mV ~ 10 Vpp $\geq 40$ MHz: 1 mV ~ 3 Vpp
Weight	6.6 lbs (3 kg)			
Dimensions (W x H x D)	10" x 3.93" x 14.56" (255 x 100 x 370) mm			

# SIGNAL GENERATORS

## Function Generators

These analog function generators offer familiar controls, stable output, and reliable operation at budget-saving price points. While DDS generators have eclipsed analog generators at the high end, these analog generators are the workhorses of industry, education, and hobbyists. They are widely used wherever repeatable signals are needed.

### Common Features & Benefits

- Variable output: 10 Vpp into 50 Ω (includes a 20 dB attenuator)
- 50 Ω output impedance
- TTL/CMOS output
- Adjustable DC offset
- Sine/square/triangle/ramp/pulse outputs

Some models have digital counters for accurate frequency setting and measuring and some are capable of sweeping in frequency. Maximum frequency output ranges from 2 MHz to 20 MHz. Typical uses for these generators are:

- Signal injection into electrical circuits for characterization and troubleshooting
- Experimental setups in college science course laboratories
- Test signals for equipment used in scientific, engineering, and medical research

Note: While only the 4040A offers FM modulation, all units except the 4001A have a VCG (voltage controlled generator) input that can simulate FM modulation when driven by a modulating signal. In addition, providing a ramp signal to this input can effectively sweep the generator's output frequency. On generators with sweep, the VCG jack provides a DC signal proportional to the instantaneous frequency, which can be useful for driving XY plotters or scope displays.



The model 4040A is an analog generator with AM/FM modulation (internal or external), linear/log sweeping, and burst capability. Includes a 5 digit 30 MHz frequency counter with 30 mV sensitivity.



The model 4001A is an economy function generator with the ability to provide linear and logarithmic frequency sweeps -- a feature usually not seen at this price point. This feature is useful for the frequency characterization of system behavior or the discovery of resonances.



The model 4017A is a 10 MHz sweep function generator with a 5 digit LED display, linear/log sweep, variable duty cycle and DC offset.



Model 4003A is similar to the 4001A, but provides digital frequency setting and a 60 MHz frequency counter for external signals with 30 mV sensitivity, at a surprisingly low price.



Models 4011A and 4012A are popular 5 MHz generators for general bench and lab use with an ideal mixture of features at a compelling price. The 4012A is identical to the 4011A, but with a sweep function added.



The model 4010A is an entry level 2 MHz analog generator-- perfect for school labs.

Features	4040A <sup>o</sup>	4017A <sup>o</sup>	4012A	4011A <sup>o</sup>	4010A <sup>o</sup>	4003A <sup>o</sup>	4001A <sup>o</sup>
Frequency Range (sine)	0.2 Hz - 20 MHz	0.1 Hz - 10 MHz	0.5 Hz - 5 MHz	0.5 Hz - 5 MHz	0.2 Hz - 2 MHz	0.5 Hz - 3 MHz	0.5 Hz - 3 MHz
Frequency Resolution	5 digits	5 digits	4 digits	4 digits	--	--	--
Distortion	≤3% typical at 1 kHz				4% typical at 1 kHz	<2%, 1 Hz - 100 kHz	
Rise time (square)	≤30 nS		≤30 nS	≤20 nS	≤120 nS	<90 nS	
Weight	4.5 lbs (2 kg)	4 lbs (1.8 kg)	4 lbs (1.8 kg)			5.5 lbs (2.5 kg)	
Dimensions (W x H x D)	11.75" x 5.5" x 10.57" (298 x 140 x 264) mm	11.75" x 4.5" x 10.57" (298 x 114 x 264) mm	11.75" x 4.5" x 10.37" (298 x 114 x 264) mm			10.83" x 3.6" x 11.8" (275 x 90 x 300) mm	



**SIGNAL GENERATORS**  
Pulse, Handheld, & RF Generators



**20 Hz-150 kHz sine/square wave audio generator**

The model 3001 generates low-distortion sine waves at 46 discrete frequencies. Output impedance is 600 ohms at the dual banana jacks and the output voltage is continuously adjustable up to 1.2 V (RMS) into an open circuit. Output flatness is  $\pm 0.5$  dB. A 5 Vpp square wave is provided at separate banana jacks for synchronization. Frequency accuracy is 3% from 20 Hz to 100 kHz. The unit is powered from a 9 V battery.



**10 MHz pulse generator with 4-digit LED display**

The model 4030 pulse generator supplies positive and negative 0.5-5 volt pulses into 50  $\Omega$  at up to 10 MHz pulse repetition frequency (pulse periods from 100 ns to 100 ms). Pulse widths are continuously variable between 50 ns and 50 ms and the pulses have rise and fall times of 12 ns. A 4-digit frequency counter and 8 crystal-controlled frequencies let you use the generator for accurate time-domain work. The generator can be triggered from external signals.

**10 MHz handheld sine & square wave signal generator**

The 3003 generates up to 10 MHz sine (adjustable amplitude from 0 to 4.5 Vpp no load) and TTL square waves using DDS technology in steps of 0.1 Hz. Output frequency accuracy is 0.02%. The sine and square waves are available simultaneously from separate BNC female connectors. A 9 V battery supplies power or an external 6-9 VDC adapter can be used. The output frequency is adjusted by push buttons that increment or decrement each digit. The unit is smaller than a typical paperback book and is about 2 inches (50 mm) thick, making it a small, portable package. Battery operation is useful to avoid ground loops and common mode voltages.



**Example Uses**

- Interfacing different logic families
- Providing clock signals for digital design tasks
- Measuring pulse response of circuits
- Providing digital delays of up to 2  $\mu$ s
- Providing clean single pulses to trigger other events
- Converting a repetitive analog signal to clean digital pulses

**150 MHz RF signal generator**

The 2005B supplies sine wave outputs from 100 kHz to 150 MHz (harmonics usable to 450 MHz) at up to 100 mV (RMS). The output can be amplitude modulated with an internal 1 kHz signal or with an external audio signal up to 1 V (RMS). An external crystal can be plugged in for precise frequency control. The output is provided via a BNC female connector.



Features	3001	3003	2005B
Frequency Range	20 Hz - 150 kHz	0.1 Hz - 10 MHz	100 kHz - 150 MHz
Output Voltage	> 1.2 V rms at max setting(no load)	0 to 4.5 Vpp	up to 100 mVrms
Distortion (sine)	200 Hz - 15 kHz	--	--
Output Impedance	600 $\Omega$	50 $\Omega$	50 $\Omega$ - 200 $\Omega$
Weight	7 oz (200 g)	2 lbs (0.9 kg)	5.5 lbs (2.5 kg)
Dimensions (W x H x D)	3.3" x 6" x 0.9" (82 x 150 x 21) mm	3.8" x 5.7" x 1.5" (97 x 145 x 38) mm	9.84" x 5.91" x 5.12" (250 x 150 x 130) mm

# POWER SUPPLIES



**For the ATE user**, ease of system integration is important. The XLN series' compact size, and high power density with fast processing times below 50ms, make for easy integration into test systems, while front to rear airflow circumvents interference with other mounted devices. The list mode feature lets users create up to 150-step test sequences, which are executed from internal memory.



**B&K Precision** offers a full range of quality power supplies to meet your power needs in a variety of applications such as education, design, service, maintenance, and manufacturing.

- Basic to high performance
- 30 W to 1440 W
- Single and multiple outputs
- Non programmable and programmable, supporting all industry standard interfaces (USB, GPIB, LAN)
- Technologies: Linear, switching, mixed mode, multi range (auto), dual range



Model 9130



Model 9150



# POWER SUPPLIES

## Selection Guide

**Performance:** These power supplies offer high speed and accuracy combined with advanced features such as DUT protection, list mode, and full programmability. All supplies offer SCPI compatible command set and come with Labview drivers. Ideal for R&D and ATE applications.

**Value:** These power supplies are targeted towards users who need features not found in the value line such as remote sense. Many models offer a programming interface, but programmability is often limited and not SCPI compliant. Speed and accuracy are less important. Ideal for most general purpose applications.

**Basic:** These power supplies offer the best in simplicity with their easy-to-use functions. All supplies provide can be controlled from the front panel only, and many models come with analog meters. Ideal for students, hobbyists, service and repair personnel and other users that do not need all the extras.

**Specialty:** These AC power supplies and AC transformers are geared towards users with unique applications dealing with AC power.

	Max. Voltage (V)	Max. Current (A)	Power (W)	Number of Outputs	Number of Ranges	Display (Meter)	Model	Page		
Basic	13.8 (Fixed)	4	55.2	1	Fixed	None	1680	22		
	13.8 (Fixed)	12	165.6			None	1682A	22		
	30	1	30			2 analog	1710A	21		
	18	5	90			2 analog	1620A	21		
	18	5	90			Dual 3-digit LED	1621A	21		
	60	1.5	90			Dual 3-digit LED	1623A	21		
	30	3	90			2 analog	1626A	21		
	30	3	90			Dual 3-digit LED	1627A	21		
	30	3	90			2 analog	1730A	21		
	30	3	90			Dual 4-digit LED	1735A	21		
	36	3	108			LCD	1550	23		
	60	2	120			2 analog	1711A	21		
	60	2	120			Dual 4-digit LED	1715A	21		
	16	10	160			1	1	2 analog	1746B	21
	14*	12A @ 14V	168					2 analog	1686A	22
	60	3.3	198					Dual 3-digit LED	1667	22
	19.99	9.999	199.88					Dual 3 1/2-digit LED	1665	22
	40	5	200					Dual 3-digit LED	1666	22
	35	6	210	Dual 4-digit LED	1743B			21		
	60	4	240	2 analog	1740B			21		
	14*	20A @ 14V	280	2 analog	1688A			22		
	35	10	350	2 analog	1744A			21		
	35	10	350	Dual 4-digit LED	1745A			21		
15	28A @ 13.8V	386.4	2 analog	1689	22					
15	28A @ 13.8V	386.4	Dual 3-digit LED	1690	22					
15*	40	600	Dual 3-digit LED	1692	22					
60	5	100 (max.)	1	Auto	Dual 4-digit LED	9110	23			
30, 12 (Fixed), 5 (Fixed)	3, 0.5, 0.5	98.5	3	1	Dual 3-digit LCD	1670A	22			
30, 12 (Fixed), 5 (Fixed)	5, 0.5, 0.5	158.5			Dual 3-digit LCD	1671A	22			
Specialty AC Power Supplies	117-124	1.25	155	-	-	None	1604A	23		
	0-150	2 (continuous)	300	-	-	1 analog	1653A	23		
	0-150	4 (intermittent)	450	-	-	1 analog	1655A	23		
			Direct: 500 VA continuous, Isolated: 350 VA continuous, 500 VA intermittent	-	-	None	TR110	23		

\*= variable from 3 V to Vmax

POWER SUPPLIES  
Selection Guide

	Max. Voltage (V)	Max. Current (A)	Power (W)	Number of Outputs	Number of Ranges	Display (Meter)	Ripple & Noise (mV/p-p)	Programming Accuracy	Transient Response	Computer Interface	Model	Page	
Performance	72	1.2	86.4	1	1	VFD	≤5	<0.03%+6 mV <0.05%+1 mA	<150 us	USB, RS232	9124	18	
	32	3	96			VFD	≤4	<0.03%+3 mV <0.05%+2 mA	<150 us	USB, RS232	9120A	18	
	20	5	100			VFD	≤3	<0.03%+3 mV <0.05%+2 mA	<150 us	USB, RS232	9121A	18	
	60	2.5	150			VFD	≤5	<0.03%+6 mV <0.05%+1.5 mA	<150 us	USB, RS232	9122A	18	
	30	5	150			VFD	≤4	<0.03%+3 mV <0.05%+2.5 mA	<150 us	USB, RS232, GPIB	9123A	18	
	5.2	60	312			VFD	≤4	<0.02%+2 mV <0.1%+30 mA	<100 us	USB, RS232	9150	18	
	20	27	540			VFD	≤4	<0.02%+6mV <0.1%+15 mA	<120 us	USB, RS232	9151	18	
	30	18	540			VFD	≤4	<0.02%+6 mV <0.1%+15 mA	<100 us	USB, RS232	9152	18	
	60	9	540			VFD	≤5	<0.02%+12 mV <0.05%+10 mA	<50 us	USB, RS232	9153	18	
	100	14.4	1440			LCD	≤80	<0.05%+25 mV <0.05%+6 mA	<1 ms	USB, RS485**	XLN10014	16	
	100	14.4	1440			LCD	≤80	<0.05%+25 mV <0.05%+6 mA	<1 ms	USB, RS485**, GPIB, LAN	XLN10014-GL	16	
	36	40	1440			LCD	≤60	<0.05%+10 mV <0.05%+10 mA	<1 ms	USB, RS485**	XLN3640	16	
	36	40	1440			LCD	≤60	<0.05%+10 mV <0.05%+10 mA	<1 ms	USB, RS485**, GPIB, LAN	XLN3640-GL	16	
	60	24	1440			LCD	≤70	<0.05%+15 mV <0.05%+18 mA	<1 ms	USB, RS485**	XLN6024	16	
	60	24	1440			LCD	≤70	<0.05%+15 mV <0.05%+18 mA	<1 ms	USB, RS485**, GPIB, LAN	XLN6024-GL	16	
	80	18	1440			LCD	≤80	<0.05%+20 mV <0.05%+7 mA	<1 ms	USB, RS485**	XLN8018	16	
80	18	1440	LCD	≤80	<0.05%+20 mV <0.05%+7 mA	<1 ms	USB, RS485**, GPIB, LAN	XLN8018-GL	16				
30 (Ch1 & Ch2), 5 (Ch3)	3 (Ch1, Ch2), 5 (Ch3)	195	3	1	VFD	≤3	<0.03%+10 mV, <0.1%+5 mA	<500 us for Ch1&2, <200 us for Ch3	USB, RS232*	9130	18		
Value	Non Programmable	32	20	640	1	1	Dual 3-digit LED	≤1	--	--	None **	1790	20
		64	10	640			Dual 3-digit LED	≤1	--	--	None **	1791	20
		16	50	800			Dual 3-digit LED	≤1	--	--	None **	1796	20
		32	30	960			Dual 3-digit LED	≤1	--	--	None **	1794	20
		64	15	960			Dual 3-digit LED	≤1	--	--	None **	1795	20
		24 (A&B), 5 (Fixed)	0.5 (A&B), 4 (Fixed)	44			3	1	2 analog	≤2, ≤5	--	--	None
	24 (A&B), 5 (Fixed)	0.5 (A&B), 4 (Fixed)	44	Dual 3-digit LED	≤2, ≤5	--			--	None	1652	20	
	30 (A&B), 6.5 ***	2 (A&B), 5	92.5	Dual 4-digit LED	≤1	--			--	None	1760A	20	
	32 (A&B), 5 (Fixed)	0-3 (A&B), 3 (Fixed)	111	Quad 3-digit LED	≤1	--			--	None	1672	20	
	35 (A&B), 6.5***	3 (A&B), 5	137.5	Dual 4-digit LED	≤1	--			--	None	1761	20	
	60 (A&B), 6.5***	2 (A&B), 4	146	Dual 4-digit LED	≤1, ≤2	--			--	None	1762	20	
	Programmable	18	5	90	1	1			Dual 3-digit VFD	≤1	--	--	RS232, USB*
		32	3	96			Dual 3-digit VFD	≤1	--	--	RS232, USB*	1786B	19
72		1.5	108	Dual 3-digit VFD			≤1	--	--	RS232, USB*	1787B	19	
32		6	192	Dual 3-digit VFD			≤1	--	--	RS232, USB*	1788	19	
60		3.3	198	4-digit LCD			≤9	--	--	RS232, RS485*	1698	19	
20		9.99	199.8	4-digit LCD			≤9	--	--	RS232, RS485*	1696	19	
40		5	200	4-digit LCD			≤9	--	--	RS232, RS485*	1697	19	
17.5(R1) / 35(R2)		6, 3	210	1			2	4-digit LCD	≤1	--	--	GPIB	1770

\*= Optional    \*\*= can be controlled remotely via analog interface    \*\*\*= variable, but range is very limited

# POWER SUPPLIES

## Performance



### New Family of High Density System Power Supplies

The B&K Precision XLN series are compact, programmable, single-output DC power supplies, suitable for a wide range of applications. Comparable supplies from other manufacturers primarily address the ATE market only, while the XLN series are designed for both bench-top users and system integrators.

For bench top applications, these power supplies offer built-in voltage and current meters displaying setting and output values concurrently, as well as an intuitive user interface with full keypad and rotary knob.

Free application software is available to provide remote control capabilities without the need for any computer programming. Standard USB & RS485 and optional GPIB & LAN interfaces combined with fast average command processing times of less than 50 ms make the XLN series ideal for ATE applications. The XLN series support SCPI IEEE488.2 and come with LabVIEW™ drivers.



\*) -GL version

### Features & Benefits

- Compact, high density, 1U package
- 1 mV/1 mA resolution
- USB interface (standard) and GPIB/LAN (optional)
- External analog programming interface
- List mode for executing up to 150 step test sequences from instrument memory
- Fast command processing time < 50 ms
- Programmable voltage and current slew rate allow for "soft starting" of loads
- Built-in precise voltage and current measurements
- Internal memory stores up to 10 different instrument settings
- Extensive protection features: OVP, OCP, OPP, and key-lock function
- Control up to 31 XLN power supplies from one PC via the RS485 interface
- 100-240V universal AC input with power factor correction
- Timer-controlled output (1s to 100 hr)
- LabVIEW™ drivers available

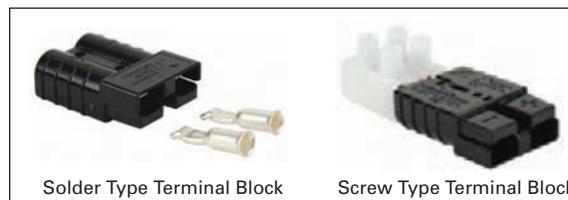
Features	XLN3640	XLN6024	XLN8018	XLN10014
Output Voltage	0-36 V	0-60 V	0-80 V	0-100 V
Output Current	0-40 A	0-24 A	0-18 A	0-14.4 A
GPIB & LAN version	XLN3640-GL	XLN6024-GL	XLN8018-GL	XLN10014-GL
Dimensions (W x H x D)	16.5" x 1.7" x 17" (420 x 43.6 x 432) mm			
Weight	19.8 lbs (9 kg)			

### Rack Mount Kit (included)



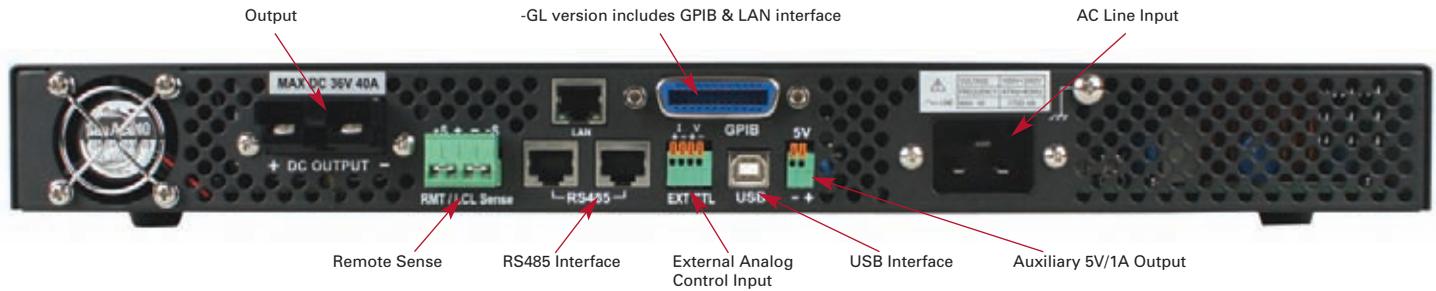
Ears and Handles

### Output Connectors (included)



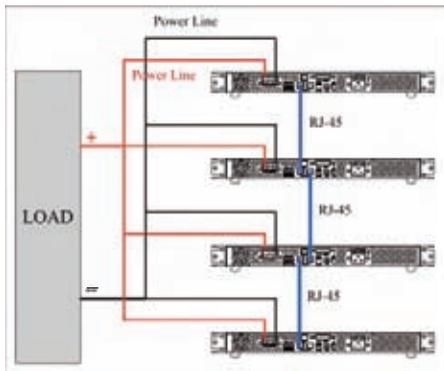
Solder Type Terminal Block

Screw Type Terminal Block

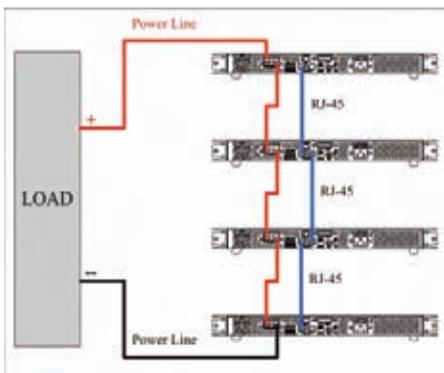


**Master/Slave Operation**

Up to 4 units can be connected in parallel or series and operate in master or slave mode. The RS485 interface is used for communication between the master and slave(s). Once configured, the master will automatically search for and detect slave units and then display the voltage and current of the complete system.



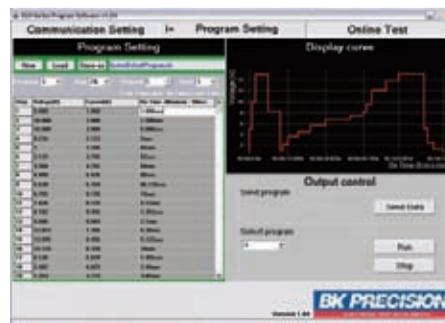
Parallel Configuration



Series Configuration

**Application Software**

Included with the power supply is PC software for creating test sequences for execution in list mode via the GPIB or USB interface.



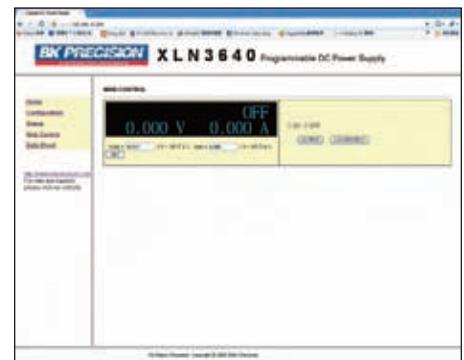
Generate, save & load program lists. View output characteristic curves and export data to a file.

**Test Sequence Execution in List Mode**

The list mode feature allows users to download a list of commands to the power supply's internal memory and execute them. A total of 150 steps can be allocated to each internal memory location, up to a maximum of 10 locations. The test sequence can be programmed remotely via the USB, GPIB or LAN interfaces using SCPI commands or with the included application software. The test sequence can be configured for one time or repeated execution. Each step settings include voltage, current, and duration of the step (50 ms minimum).

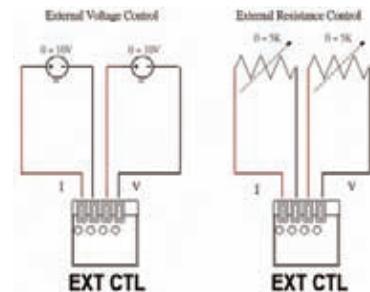
**Web Server Interface**

XLN series power supplies with GPIB/LAN interfaces provide a built-in web server. This allows users to configure, control, or monitor the basic settings of the power supply from a remote computer using a web browser.



Interface for controlling voltage, current, and output state.

**External Analog Programming Interface**



The output voltage and current can be controlled by either analog voltages or resistances. 0-10 V voltages and 0-5 kΩ resistances control from zero to full scale output.

# POWER SUPPLIES

## Performance



9150 series



Model 9130

The 9120A and 9150 series are high performance linear-regulated programmable DC power supplies that provide excellent performance and features not found in other power supplies of the same price category. These power supplies are designed for applications in design verification, production testing, or university labs where the user requires clean, reliable power combined with high resolution/accuracy and a fast transient response time.

### Features & Benefits

- Very low ripple and noise due to linear regulation
- Excellent display resolution
- Fast transient response time (<150 μs all models)

- Programmable via USB and RS232 using SCPI compatible command set
- List mode operation for increased throughput
- Intelligent fan speed control for quiet operation
- For bench use or rack mountable
- Closed case calibration

The 9130 is a fully programmable triple output DC power supply delivering 0-30V/0-3 A on 2 outputs and 0-5 V/0-3 A on 1 output. The 9130 is ideally suited for applications in electronic test, production, and service where multiple independent DC supplies are required and bench space is at a premium.

### Features & Benefits (model 9130)

- 3 independent, fully programmable, floating and electrically isolated outputs
- Series or parallel operation to produce higher voltages or currents
- Display and adjust voltage and current settings for all 3 channels simultaneously
- Very compact footprint
- Programmable via USB to TTL interface
- OVP (Over Voltage Protection) and OTP (Over Temperature Protection)
- Application software for front panel emulation and simple test sequence generation included
- Closed case calibration

Features	9120A	9121A	9122A	9123A	9124	9150	9151	9152	9153	9130
Output Ratings (0° C ~ 40° C)	0~32 V 0~3 A	0~20 V 0~5 A	0~60 V 0~2.5 A	0~30 V 0~5 A	0~72 V 0~1.2 A	0~5.2 V 0~60 A	0~20 V 0~27 A	0~30 V 0~18 A	0~60 V 0~9 A	0~3 V(I&2), 0~5 V(3) 0~3 A(I&2), 0~3 A(3)
Load Regulations ±(% of output+offset)	<0.01%+2 mV <0.05%+1 mA		<0.01%+2 mV <0.05%+0.5 mA	<0.01%+2 mV <0.05%+1.5 mA	<0.01%+2 mV <0.05%+0.3 mA	<0.01%+0.5 mV <0.1%+10 mA	<0.01%+0.5 mV <0.1%+10 mA	<0.01%+1 mV <0.1%+2 mA	<0.01%+3 mV ≤0.01%+3 mA	
Ripple & Noise	≤4 mVp-p	≤3 mVp-p	≤5 mVp-p	≤4 mVp-p	≤5 mVp-p	≤4 mVp-p	≤4 mVp-p	≤5 mVp-p	≤5 mVp-p	≤1 mVrms/3 mVp-p
Weight	19.8 lbs (9 kg)		21.2 lbs (9.6 kg)		19.8 lbs (9 kg)	63.9 lbs (29 kg)			19.8 lbs (9 kg)	
Dimensions (WxHxD)	8.45" x 3.8" x 13.9" (214.5 x 88.2 x 354.6) mm					16.88" x 3.47" x 18.06" (429 x 88.2 x 458.9) mm			3.47" x 8.45" x 13.9" (88.2 x 214.5 x 354.6) mm	

## POWER SUPPLIES Value



Model 1787B



Model 1696



Model 1770

**Models 1785B, 1786B, 1787B, and 1788** are programmable DC power supplies offering a new level of “ease-of-use” and programmability in a low-cost package.

**The 1696, 1697, and 1698** DC switching mode programmable power supplies generate 200 watts of output power at a lower cost than traditional linear power supplies

**The 1770** is a versatile dual range power supply offering excellent reliability. GPIB programming interface is standard.



### Features & Benefits

- Sixteen user programmable preset outputs
- Controllable output On/Off switch
- 10 mV/10 mA display resolution
- Bright VFD display
- Closed case calibration for simple, uninterrupted operation
- Low ripple and noise
- Excellent temperature stability
- Serial interface cable and remote control software included
- OVP, OCP, and OTP protection

### Features & Benefits

- RS 232 and RS485 (adapter required) interface
- Application software providing data logging capability
- Output disable
- Over voltage protection
- Constant voltage and constant current (current limiting) operation
- Large easy-to-read LCD displays

### Features & Benefits

- Dual range outputs, either 0 to 17.5 V, 0 to 6 A or 0 to 35 V, 0 to 3 A
- Excellent programming resolution and accuracy
- Integral system software makes in case calibration quick and accurate
- Large character LCD display assures fast, “easy to read” measurements
- Great reliability (50K hrs. MTBF)

Voltage (V)	Current (A)	Power (W)	Computer Interface	Weight	Dimensions (W x H x D)	Model
0-18	0-5	90	RS232, USB*	11 lbs (5 kg)	8.07" x 4.53" x 10.63" (205 x 115 x 270) mm	1785B
0-32	0-3	96	RS232, USB*			1786B
0-72	0-1.5	108	RS232, USB*			1787B
0-32	0-6	192	RS232, USB*			1788
1-60	0-3.3	198	RS232, RS485*	6.61 lbs (3 kg)	7.6" x 3.85" x 8.46" (193 x 98 x 215) mm	1698
1-20	0-9.99	199.8	RS232, RS485*			1696
1-40	0-5	200	RS232, RS485*			1697
0-17.5; 0-35	0-6; 0-3	210	GPIB	18 lbs (8.1 kg)	8.4" x 5.2" x 15.7" (213 x 132 x 398) mm	1770

\*= optional

# POWER SUPPLIES

## Value

### Non-Programmable DC Power Supplies



Model 1760A



Model 1795

The **1651A and 1652** triple output DC power supplies offer two 0 - 24 VDC/ 0 - 500 mA outputs, and one fixed 5 VDC/ 0 - 4 A output in a compact package.

The **1672** quad display triple output DC power supply provides one fixed output (5 V/ 3 A) and two variable outputs (0 - 32 V/ 0 - 3 A). The four digit displays allow the user to continuously monitor the voltage and current values of the two main outputs.

The **1760 series** triple output DC power supplies with coarse and fine adjustment knobs for volts are ideal for power sensitive applications. The 4-digit LED display offers 10 mV and 1 mA resolution, providing the capability to set voltage and current values more accurately than 3 digit displays found in most comparable power supplies.

The **1790 series** are cost effective, high power, linear DC power supplies, ideal for telecom or any other applications requiring low noise output. Special features include the ability to set constant current with no load and remote sense to compensate for any wire loss.

#### Common Features & Benefits

- Independent or series tracking/parallel mode operation to double voltage or current
- Adjustable current limiting
- Designed to operate continuously at rated output
- Short circuit protection, over voltage protection, reverse polarity protection
- Constant voltage (CV) and constant current (CC) operation

#### Features & Benefits

- Constant voltage (CV) and constant current (CC) operation
- Remote programming
- Separate DC output on/off switch
- High stability and excellent regulation ( $\pm 0.01\%$ )

	Voltage (V)	Current (A)	Display (meter)	Ripple & noise (mVrms)	Weight	Dimensions (W x H x D)	Model
Triple Output	0-24 (A&B), 5 (Fixed)	0-0.5 (A&B), 4 (Fixed)	2 Analog	$\leq 2, \leq 5$	10.5 lbs (4.8 kg)	11.75" x 5.5" x 10.97" (298 x 140 x 264) mm	1651A
	0-24 (A&B), 5 (Fixed)	0-0.5 (A&B), 4 (Fixed)	Dual 3-digit LED	$\leq 2, \leq 5$			1652
	0-30 (A&B), 4-6.5	0-2 (A&B), 5	Dual 4-digit LED	$\leq 1$	21 lbs (9.5 kg)	10.5" x 5.7" x 15" (267 x 145 x 381) mm	1760A <sup>o</sup>
	0-32 (A&B), 5 (Fixed)	0-3 (A&B), 3 (Fixed)	Quad 3-digit LED	$\leq 1$	12.6 lbs (5.7 kg)	6.7" x 9" x 12.2" (170 x 230 x 310) mm	1672 <sup>o</sup>
	0-35 (A&B), 2-6.5	0-3 (A&B), 5	Dual 4-digit LED	$\leq 1$	21 lbs (9.5 kg)	10.5" x 5.7" x 15" (267 x 145 x 381) mm	1761 <sup>o</sup>
	0-60 (A&B), 4-6.5	0-2 (A&B), 4	Dual 4-digit LED	$\leq 1, \leq 2$			1762
High Current	0-32	0-20	Dual 3-digit LED	$\leq 1$	55 lbs (24.9 kg)	19" x 5.25" x 15.75" (483 x 133 x 400) mm	1790
	0-64	0-10	Dual 3-digit LED	$\leq 1$			1791
	0-16	0-50	Dual 3-digit LED	$\leq 1$	62 lbs (28.1 kg)		1796
	0-32	0-30	Dual 3-digit LED	$\leq 1$			1794
	0-64	0-15	Dual 3-digit LED	$\leq 1$			1795



### Single Output DC Power Supplies



Model 1627A



Model 1745A



Model 1735A

The **1620A series** are rugged, compact, low-cost DC regulated power supplies providing clean and stable DC power.

#### Common Features & Benefits

- Constant voltage (CV) and constant current (CC) operation
- Operate continuously at full load without overheating
- Multiple units can be connected in series or parallel to provide higher output voltage or current
- Continuously monitor voltage and current output on two meters

The **1740B series** offers analog and digital displays, coarse and fine voltage and current controls and a convenient output-shorting button, allowing the user to short the output terminals to set the current limit.

- Coarse and fine voltage controls
- Excellent line and load regulation
- Low ripple and noise
- Overload protection
- Ideal for service shops, engineering labs, production testing, and home use by hobbyists

The **1710A and 1730A series** are high quality, general purpose DC power sources. They provide exceptional control and accuracy with dual high-resolution, 4-digit LED or analog readouts at a very reasonable price.

Output Voltage	Output Current	Ripple & noise (mV rms)	Display (meter)	Weight	Dimensions (W x H x D)	Model
0-18 V	0-5 A	0.5 mV rms (Typical)	2-Analog	13.2 lbs (6 kg)	4.53" x 8.07" x 10.63" (205 x 115 x 270) mm	1620A
0-18 V	0-5 A	0.5 mV rms (Typical)	Dual 3-digit LED	16.3 lbs (7.4 kg)		1621A
0-60 V	0-1.5 A	0.5 mV rms (Typical)	Dual 3-digit LED	16.3 lbs (7.4 kg)		1623A
0-30 V	0-3 A	0.5 mV rms (Typical)	2-Analog	13.2 lbs (6 kg)		1626A
0-30 V	0-3 A	0.5 mV rms (Typical)	Dual 3-digit LED	16.3 lbs (7.4 kg)		1627A
0-30 V	0-1 A	1 mV rms	2-Analog	8 lbs (3.6 kg)	5.5" x 6.2" x 12.5" (140 x 158 x 318) mm	1710A <sup>0</sup>
0-60 V	0-2 A	1 mV rms	2-Analog	12 lbs (5.4 kg)		1711A <sup>0</sup>
0-60 V	0-2 A	1 mV rms	Dual 4-digit LED	12 lbs (5.4 kg)		1715A <sup>0</sup>
0-30 V	0-3 A	1 mV rms	2-Analog	10.5 lbs (4.7 kg)		1730A <sup>0</sup>
0-30 V	0-3 A	1 mV rms	Dual 4-digit LED	10.5 lbs (4.7 kg)		1735A <sup>0</sup>
0-60 V	0-4 A	1 mV rms (Typical)	2-Analog	23 lbs (10.4 kg)	10.5" x 5.7" x 15" (267 x 145 x 381) mm	1740B <sup>0</sup>
0-35 V	0-6 A	1 mV rms (Typical)	Dual 4-digit LED	24 lbs (10.8 kg)		1743B
0-16 V	0-10 A	1 mV rms (Typical)	2-Analog	20 lbs (9 kg)		1746B <sup>0</sup>
0-35 V	0-10 A	1 mV rms (Typical)	2-Analog	31 lbs (14.1 kg)		1744A
0-35 V	0-10 A	1 mV rms (Typical)	Dual 4-digit LED	31 lbs (14.1 kg)		1745A



# POWER SUPPLIES

## Basic

### Switching DC Power Supplies



Model 1692

#### Model 1692

- Variable output 3 V to 15 V at 40 A
- Lightweight, and compact
- High efficiency
- Current fold-back circuitry with illuminated indicator prevents overloading the power supply
- Over temperature protection (OTP)
- Over voltage protection (OVP) prevents abnormal high output voltage

#### 1686A & 1688A

- 3 to 14 V variable output with fixed 13.8 V output switch
- 20 A guaranteed @ 13.8 V (1688 A), 12 A guaranteed @ 13.8 V (1686 A)
- Current foldback overload protection
- Thermostatically controlled cooling fan
- Ideal for automotive applications



Model 1665

**Models 1665, 1666 & 1667** power supplies use new switching technologies to offer more power at a lower cost than traditional linear power supplies.

- Bright LED display
- Coarse and Fine voltage and current control
- Over voltage and short circuit protection
- Constant voltage (CV) and Constant Current (CC) operation

#### Models 1689 & 1690

- 1 to 15 V variable output
- 28 A @ 13.8 V
- Current foldback overload protection
- High RFI stability
- Thermostatically controlled cooling fan
- Ideal for automotive applications

### Triple Output DC Power Supplies



Model 1670A

#### Models 1670A & 1671A



- 3-digit, triple output regulated DC power supplies
- One variable 0-30 VDC / 3 A (1670A), 5 A (1671A) output
- One 12 VDC, one 5 VDC fixed output
- Bright 3 1/2 digit LED display
- CV and CC operation
- Ideal for school electronics labs, and hobbyists projects

### Fixed DC Power Supplies

#### Models 1680 & 1682A

- Fixed 13.8 VDC output for automotive applications
- 6 A peak (1680), 15 A peak (1682A)
- Current foldback overload protection
- Thermostatically controlled cooling fan (Model 1682A)
- Convenient cigar lighter output (1680)

	Output Voltage	Output Current	Ripple & Noise	Meter Type	Weight	Dimension (W x H x D)	Model
Switching	1-19 V	0-10 A	20 mV	2 Digital 3 1/2 Digit LED	6.6 lbs (3 kg)	8" x 4.5" x 10.8" (203 x 114 x 274) mm	1665
	1-40 V	0-5 A		2 Digital 3 Digit LED			1666
	1-60 V	0-3.3 A		Precision Analog			1667
	3-14 VDC	12 A @ 13.8 V	12 A @ 13.8 V	Precision Analog	12.1 lbs (5.5 kg)	8.5" x 4.9" x 11.5" (216 x 124 x 292) mm	1686A
	3-14 VDC	20 A @ 13.8 V	20 A @ 13.8 V	Precision Analog	19.8 lbs (9 kg)		1688A
	1-15 V	28 A @ 13.8 V	28 A @ 13.8 V	Precision Analog	19.9 lbs (9kg)	5.5 x 9.84 x 8.86" (140 x 250 x 2250) mm	1689
	1-15 V	28 A @ 13.8 V	28 A @ 13.8 V	Digital LED	19.9 lbs (9kg)		1690
	3 - 15 V or fixed 13.8 VDC	40A continuous	40A continuous	Dual color digital LED	7.7 lbs (3.5 kg)	4.33 x 8.67 x 11.82" (110 x 220 x 300) mm	1692
Triple Output	Main 0-30 VDC Fixed 12 VDC ±5% Fixed 5 VDC ±5%	0-3 A Main Fixed 0-500 mA continuous Fixed 0-500 mA continuous	≤5 mVrms	2 Digital 3 Digit LED	10.5 lbs (4.5 kg)	8.5" x 4.9" x 11.5" (216 x 124 x 292) mm	1670A
	Main 0-30 VDC Fixed 12VDC ±5% Fixed 5 VDC ±5%	0-5 A Main Fixed 0-500 mA Fixed 0-500 mA	≤1 mVrms		14.3 lbs (6.5 kg)		1671A
Fixed	Fixed 13.8 V ±0.5 V	6 ADC peak, 4 ADC continuous	≤ 6 mVrms	--	6.5 lbs (2.9 kg)	6.31" x 3.62" x 6.75" (160 x 92 x 170) mm	1680
	Fixed 13.8 V ±0.5 V	15 ADC peak, 12 ADC continuous	≤ 10 mVrms	--	15 lbs (6.75kg)	4.5" x 8.1" x 10.6" (115 x 205 x 270) mm	1682A

## POWER SUPPLIES Basic & Specialty

### Multi Range DC Power Supply

Unlike conventional power supplies with fixed output ratings, the 9110 is a new type of power supply that automatically recalculates voltage/current limits for each setting. The 9110 provides 100 W output power in any Volt/Amp combination within the rated voltage (60 V) and current (5 A) limits.



#### Features & Benefits

- 60 V/ 5 A, max 100 W output
- 10 mV/1 mA resolution over the full range
- Bright, easy to read display
- Very compact size and lightweight
- Low ripple and noise
- Output On/Off control
- Store and recall 4 x 100 groups of pre set voltage and current values
- Intelligent fan control

### Switching DC Power Supply with USB Charger

The 1550 is a compact 108 watt power supply delivering 1-36 V and 0-3 A from its main isolated output. A unique feature of the 1550 power supply is the USB 1.1 charging port located on the front panel allowing the user to charge a cell phone or MP3 player.



#### Features & Benefits

- USB charging port on front panel\*
- Rear panel security loop
- Output On/Off control
- Large bright, easy to read LCD display
- Constant voltage and constant current operation

\* Charging port is USB 1.1 & 2.0 compatible. It will not charge USB 2.0 only devices

### AC Power Supplies (Specialty)



Model 1655A

The **1653A** and **1655A** variable isolated AC power supplies are great for testing AC line voltage variations or any given product requiring AC power.

#### Model 1653A

- Variable isolated 0-150 VAC
- 2 A continuous output
- Displays voltage or current readings
- Isolation transformer to eliminate shock hazard while servicing "hot chassis" equipment



Model TR110



Model 1604A

The **1604A** (single output) and **TR110** (dual output) isolation transformers provide the necessary safety factor for servicing any transformerless AC powered equipment.

#### Model 1604A

- Leakage: less than 0.1 mA
- Output Voltage: 117-124 V nominal (120 V input)
- Output Current: 1.25 A continuous

#### Model TR110

- Direct: Convenience duplex outlet provides line voltage for auxiliary equipment up to 500 VA
- Isolated: Two 3-position slide switches provide 9 combinations of voltage selection from 90 to 140 V, up to 350 VA continuous or 500 VA intermittent
- Self-contained power switch with pilot lamp

#### Model 1655A

- Variable-isolated output-0-150 VAC
- 3 A continuous, 4 A intermittent output
- Built-in soldering iron temperature control (additional AC receptacle for soldering iron on rear panel)
- Expanded leakage scale
- Circuit breaker overload protection
- Displays V, A, VA, leakage

# DC ELECTRONIC LOADS



## DC electronic load applications

- Power supply performance testing
- Characterize and analyze batteries
- Solar panel IV curve simulation



**DC electronic loads** are suitable for testing and characterizing a wide range of DC power sources, such as DC power supplies, batteries, fuel cells, solar cells and other power components. Unlike passive resistive loads, DC electronic loads offer a wide variety of voltage/current ranges and can operate under multiple modes such as constant current (CC), constant voltage (CV), constant power (CW), and constant resistance (CR).

B&K Precision's 8500 family line of affordable programmable DC electronic loads consist of a wide selection of models in the 300 W – 5000 W range. Each model shares user-friendly features such as flexible operating modes, high resolution meter and VFD display, built-in transient generator, and list mode functionality for custom programmed dynamic load testing.

Model 8540 was designed for users requiring a basic DC load with a compact form factor at a rock bottom price. The 8540's specification are similar to the 8500 line, but without the extras such as programming interface, triggering, and ability to create dynamic test conditions.



Model 8540



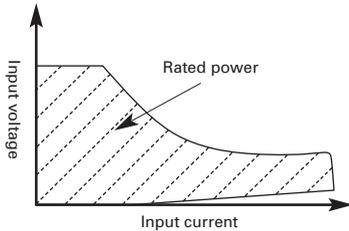
Model 8510



# DC ELECTRONIC LOADS

## Selection Guide

DC Electronic Loads								
Category	Model #	Operation Voltage	Rated Current	Max. Power	Weight	Dimensions (W x H x D)	Page	
8500 Series	Basic	8540	0.1 V to 60 V	30 A	150 W	6 lbs (2.7 kg)	3.5" x 6.9" x 11.1" (88 x 175 x 282) mm	26
	Bench Programmable	8500	0.1 V to 120 V	30 A	300 W	11.5 lbs (5.2 kg)	8.46" x 3.46" x 14" (215 x 88 x 355) mm	27-29
		8502	0.1 V to 500 V	15 A	300 W			
		8510	0.1 V to 120 V	120 A	600 W	31 lbs (14 kg)	16.9" x 3.46" x 14" (429 x 88 x 355) mm	
		8512	0.1 V to 500 V	30 A	600 W			
	High Power Programmable	8514	0.1 V to 120 V	240 A	1200 W	66 lbs (30 kg)	17.48" x 7.09" x 21.22" (444 x 180 x 539) mm	
		8518	0.1 V to 60 V	240 A	1200 W			
		8520	0.1 V to 120 V	240 A	2400 W	148 lbs (67 kg)	17.48" x 14.06" x 21.22" (444 x 357 x 539) mm	
		8522	0.1 V to 500 V	120 A	2400 W			
	8524	0.1 V to 60 V	240 A	5000 W	148 lbs (67 kg)	17.48" x 14.06" x 21.22" (444 x 357 x 539) mm		
8526	0.1 V to 500 V	120 A	5000 W					



When selecting a DC load, it is important to consider not only voltage and current requirements, but also power ratings. The power used when testing must fall within the hashed region for the appropriate DC load.

Some applications may require high voltage/low current and low voltage/high current, which a single load may not be able to handle. B&K Precision's broad range of DC loads will allow you to select the optimal model for your requirements.

### 150 W DC Electronic Load

The 8540 DC electronic load is a very compact, economically priced instrument that is at home on both the bench and the production floor.

Though this is a DC load in a small package, it can reliably test a 5 volt power supply to 30 amps and do it continuously.

The 8540 DC electronic load can operate in CC, CV, or CR mode while voltage/current or resistance/power values are measured and displayed in real time, making it well suited to test a variety of DC power sources.

The 8540's performance is comparable to most full size bench DC loads, yet it does the job at half the price and takes up half the space on your bench.

#### Features & Benefits

- Operates between 0-60 VDC, 1 mA-30 A (150 W maximum)
- Easy operation
- Bright, easy-to-read display
- Very compact and light weight
- Two current ranges: 3 A (1 mA resolution) and 30 A (10 mA resolution)
- Constant current (CC), constant resistance (CR), and constant voltage (CV) operation
- Overcurrent and overvoltage protection
- Short mode to simulate shorts
- Save up to 400 instrument settings



DC ELECTRONIC LOADS  
8500 Series



Features & Benefits

- Constant current (CC), resistance (CR), voltage (CV), and power (CP) operation
- Wide voltage and current range, 0 to 500 V, 0 to 240 A (5000 W max)
- Low minimum operating voltage of < 0.1 V and minimum input resistance of 5 mΩ (model 8518) allowing the load to sink high current at low voltages, required for fuel and solar cell applications
- Selected models operate up to 500 V, suitable for high voltage applications
- Built-in transient generator
- Short circuit test
- Built-in high resolution (0.1 mA/1 mV) voltage and current measurement (models 8500 & 8502)
- Bright, easy to read display (VFD technology)
- Overcurrent/overvoltage/overpower/overtemperature protection
- RS232 & USB to TTL serial converter cable and application software included
- List mode operation for increased throughput
- Battery testing mode to provide A\*hr rating of battery (ending voltage level is adjustable)
- Flexible triggering: create trigger events by front panel keystroke, back panel TTL signal, or software
- Remote voltage sensing to compensate for the effect of voltage drop in wires
- Store 25 instrument setups
- Thermostatically-controlled fans allow operation in quiet environments with minimal disruption
- All models are rack mountable. Compact 300 W and 600 W models for bench use

The 8500 series programmable DC electronic loads can be used for testing and evaluating a variety of DC power sources. Their wide operating ranges of up to 500 V and 240 A, flexible operating modes and excellent measurement accuracy make the 8500 series well suited for characterizing DC power supplies, DC-DC converters, batteries, fuel cells, and solar cells.

The loads can operate in CC, CV, CR, or CP mode while voltage/current or resist-

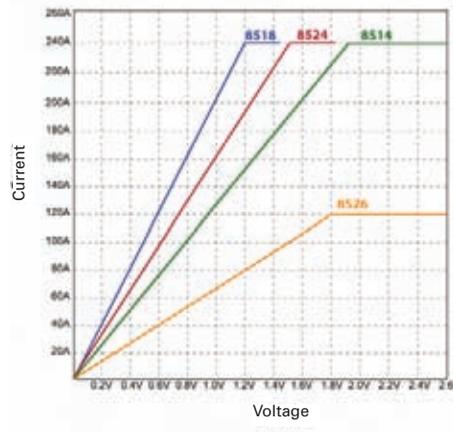
ance/power values are measured and displayed in real time. Load terminals are isolated and floating. Extensive protection, including overtemperature, overpower, overvoltage, overcurrent and reverse polarity will help protect your valuable prototype.

These DC loads are easy to use. All parameters can be set quickly and precisely from the front panel, or programmed via RS232 or USB interfaces.

Low voltage operation

The 8500 series can operate well below 1 V which is important for low voltage application such as fuel cell and solar cell testing. All models can regulate (provide a stable input) down to 0.1 V. Model 8518, due to its particularly low input resistance, can operate at full scale current of 240 A at 1.2 V (see image).

Low voltage operation graph



Typical minimum operating voltage at full scale current

8500	8502	8510	8512	8514	8518	8520	8522	8524	8526
1.05 V	3 V	1.8 V	3 V	1.92 V	1.2 V	10.8 V	3.6 V	1.56 V	1.8 V

# DC ELECTRONIC LOADS

## 8500 Series



300 W form factor



600 W - 1200 W form factor



2400 W form factor

### Hex-head screw terminals

Hex-head screw terminals allow for greater application of torque to reduce contact resistance between interface cables and terminal screws.

Present on high-power models 8518 through 8526.



### Applications:

- DC power supply testing
- Characterization of rechargeable batteries. A battery test mode is provided that will measure the ampere\*hour (A\*hr) characteristic of a battery
- Fuel and solar cell test
- High voltage applications

### Triggered operation

Triggering is used to allow synchronization of the DC Load's behavior with other events. You can generate a trigger event by front panel keystroke, by applying an external TTL signal to the back panel terminal, or by sending a command over the serial bus. The trigger can be used in pulse mode, transient mode, list mode, and works in CC, CR, CV and CP modes.

### Rear features

#### 1) Air circulation

Thermostatically-controlled cooling fan channels air front-to-rear through these vents to keep the temperature constant inside the system.

#### 2) Trigger and remote sensing terminal block

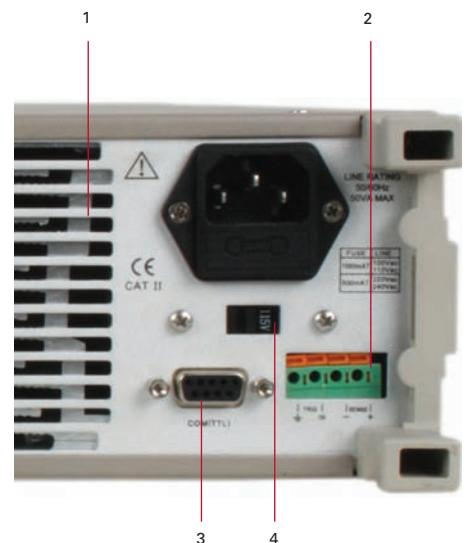
Connect sensing lines to this terminal to compensate for voltage drops due to load wire resistance. This terminal block also contains the two connections for the remote TTL trigger input signal.

#### 3) Interface connection

Serial interface connector for RS232 or USB communication.

#### 4) Voltage switch

Line voltage selection switch (110 VAC or 220 VAC).



DC ELECTRONIC LOADS  
8500 Series

**Flexible operating modes**

**CC, CR, CV and CP mode**

In constant current (CC) mode, the load will sink a current according to the programmed current value regardless of the input voltage. (CC) mode can be used for load regulation testing of DC power supplies or for characterizing the discharge profile of a battery.

Constant power (CP) mode simulates a load whose power consumption is independent of the applied voltage. Constant power (CP) mode is useful for battery testing and simulating a realistic discharge curve.

In constant voltage (CV) mode, the load will attempt to sink enough current to control the source voltage to the programmed

value. This mode is suitable for testing battery chargers. In constant resistance (CR) mode, the load will sink a current linearly proportional to the input voltage in accordance with the programmed resistance. Unlike conventional resistors, the load resistance stays constant regardless of the power level.



Model 8500

**Transient generator**

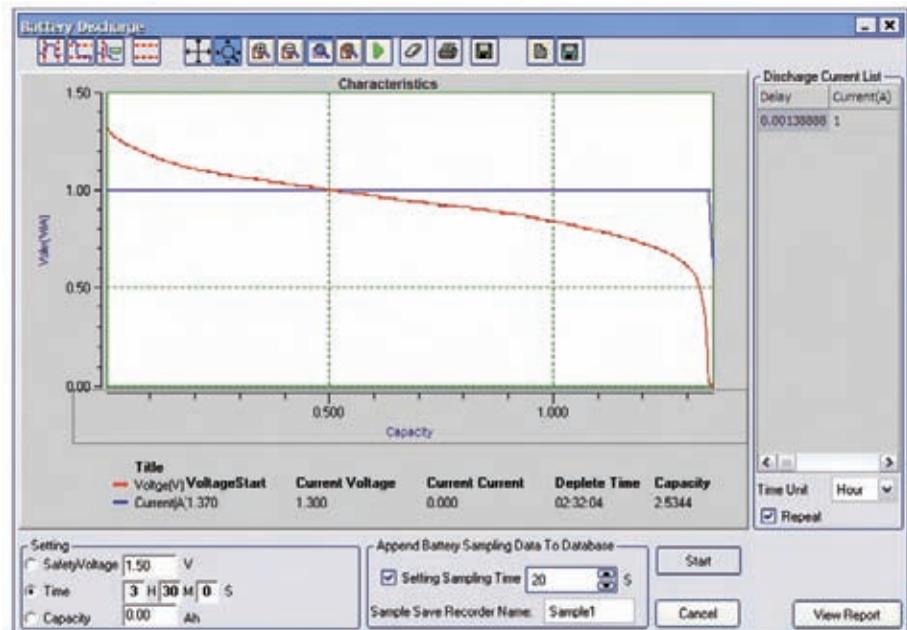
The 8500 series offers a variable frequency generator which can be used in all operating modes. The DC load will toggle between two preset levels at a frequency between 0.1 Hz to 1 kHz, either continuously or controlled by a trigger.

**Remote control & application software**

These DC loads can be remotely controlled from any PC with USB or RS232 interface, allowing the user to fully program and monitor all parameters. An RS232 & USB to TTL serial converter cable is included. For users wanting to write their own custom software, a set of example programs are available for download via the B&K Precision website.

**List mode**

A list of command sequences can be stored in non-volatile memory and executed independently of a computer. Execution in list mode greatly reduces command processing time and computer interaction during product testing. The command sequence can be entered manually from the front panel or downloaded from a PC via RS232 or USB interface.



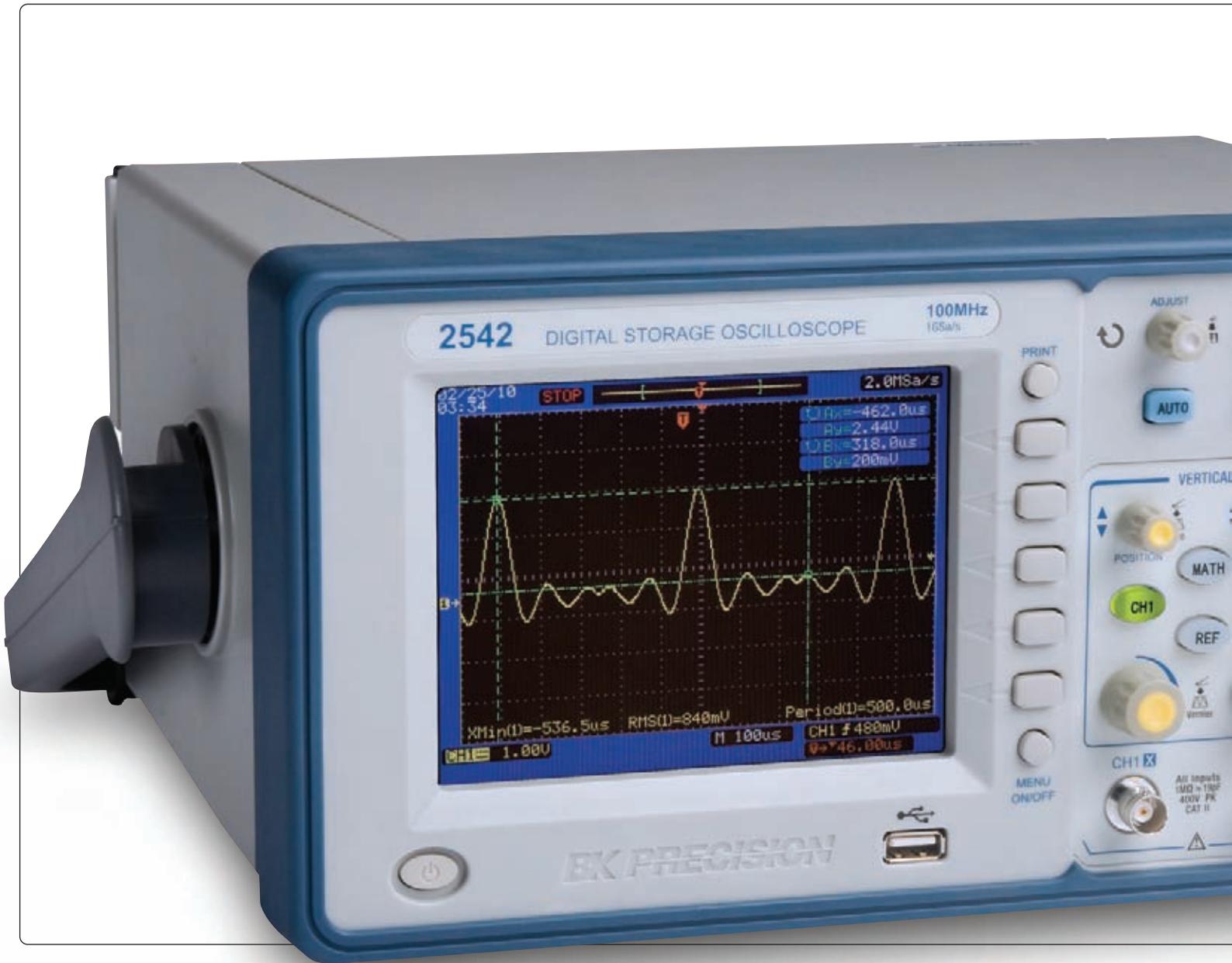
An example of battery discharge characteristics of an AA alkaline battery

**Application software**

The included application software supports front panel emulation of the load and includes a battery test application which provides A\*hr rating of a battery and adjustable ending voltage levels (safety voltage).

Whether designing a device with Nickel-Metal Hydride or Lithium-Ion batteries, the 8500 series DC electronic loads have the capabilities to test their characteristics.

# OSCILLOSCOPES



**Applications:** Oscilloscopes display a signal or waveform by plotting a graph of voltage (y-axis) versus time (x-axis). Oscilloscopes can also plot the relationship between 2 different voltages applied to channels 1 and 2 which is called XY mode.



**Oscilloscopes** are essential tools in today's electronic world. Used in a wide variety of applications such as education, design, service, and manufacturing, B&K Precision's broad line of digital and analog oscilloscopes help engineers, technicians, and scientists solve their measurement challenges quickly and accurately.

Oscilloscopes are versatile and indispensable engineering tools which can help:

- Measure the rise time of a logic gate
- Determine the bandwidth of an amplifier
- Characterize the frequency domain of your input signal using a DSO's built-in FFT function



Model 2540



Model 2120B



## OSCILLOSCOPES

### Selection Guide

Digital Storage Oscilloscopes							
	Sample Rate	Memory Depth	PC Interface	USB host port	Display	Model	Page
25 MHz	250 MSa/s	4000 points	USB device	No	Mono-chrome	2530	33
40 MHz	500 MSa/s	4000 points	USB device	No	Color	2532	33
60 MHz	400 MSa/s	4000 points	USB device	Yes	Color	2534	34
60 MHz	1 GSa/s	4000 points	USB device	Yes	Color	2540	34
100 MHz	1 GSa/s	4000 points	USB device	Yes	Color	2542	34

Analog Oscilloscopes								
Bandwidth	Vertical Sensitivity	Max. Sweep Rate	Delayed Dual/Sweep TimeBase	Signal Delay Line	Component Tester	Z-Axis	Model	Page
20 MHz	5 mV/div to 5 V/Div	0.1 $\mu$ s/div	NO	NO	NO	NO	2522C**	35
30 MHz	5 mV/div	0.1 $\mu$ s/div	NO	NO	NO	NO	2121*	35
30 MHz	5 mV/div	0.1 $\mu$ s/div	NO	NO	NO	NO	2120B	35
30 MHz	5 mV/div	0.1 $\mu$ s/div	YES	NO	YES	NO	2125A	35
40 MHz	5 mV/div	10 ns/div	NO	NO	NO	NO	1541D	35
60 MHz	5 mV/div	0.1 $\mu$ s/div	YES	NO	YES	YES	2160A	35
100 MHz	5 mV/div	20 ns/div	YES	YES	NO	YES	2190B	35

All B&K Precision analog oscilloscopes are dual channel and have Video Sync (TV-V and TV-H).

\*= built-in 50 MHz frequency counter    \*\*= digital section features 40 MS/s sampling rate, 2 K memory per channel

### Glossary of terms

#### Bandwidth:

The bandwidth is one of the most important specifications when defining an oscilloscope as it represents the range in which an oscilloscope can display frequency accurately. The bandwidth is defined by the frequency response curve when the attenuation is at the -3 dB mark. As a general rule of thumb, the oscilloscope's bandwidth should be at least five times the highest frequency of the signal under test.

#### Delayed Time Base:

A feature in some oscilloscopes that allows a single signal to be viewed at two different time bases with the second time base expanding a portion of the waveform and starting at some point after the main time base begins. This is often useful for magnifying display.

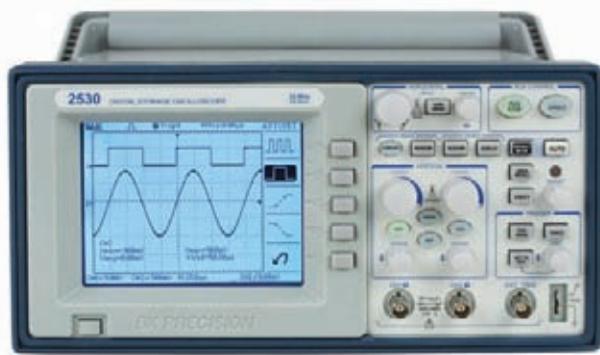
#### Sampling Rate:

Specifies the rate at which a waveform or signal is sampled. It is one of the main specifications typically defined for oscilloscopes to demonstrate the number of data samples they can display, often measured in the units of samples per second.

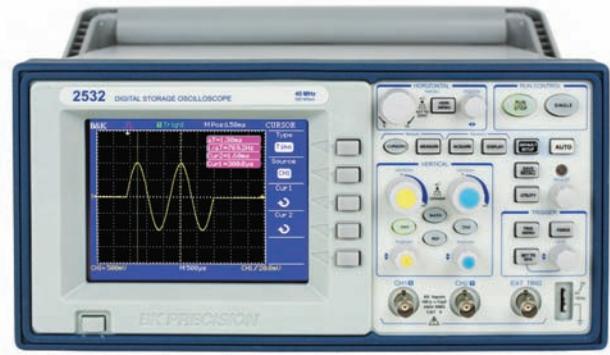
#### Sweep Rate:

Rate at which a sweep generator repeats a sweep cycle.

OSCILLOSCOPES  
Digital Storage Oscilloscopes



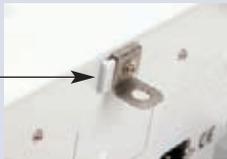
Model 2530



Model 2532

The 2530 and 2532 digital storage oscilloscopes (DSO) deliver essential features and reliable performance at an affordable price. Analog style controls combined with Auto functions make these oscilloscopes easy to use.

Security loop

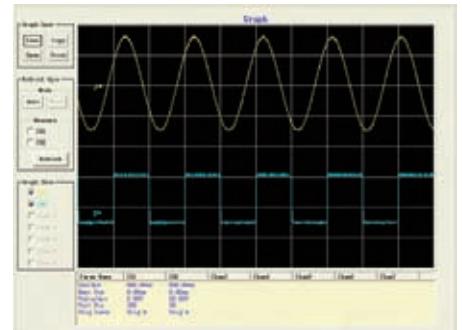


Use the built-in cable channel to secure your oscilloscope to your location

Features & Benefits

- One-touch automatic setup for ease of use
- 4000 point record length for each channel
- Eleven automatic measurements
- FFT standard plus 4 additional math functions
- Extensive trigger capabilities including pulse width and line-selectable video trigger
- Save/Recall settings and waveform data
- Multiple language interface

Simple Documentation and Analysis



The included EasyScope software provides seamless integration between the oscilloscope and PC. Capture and transfer waveforms, screen images, setups, and measurement results to a Windows PC via the USB device port on the back of the instrument.

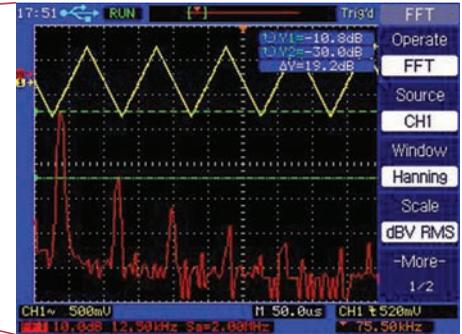
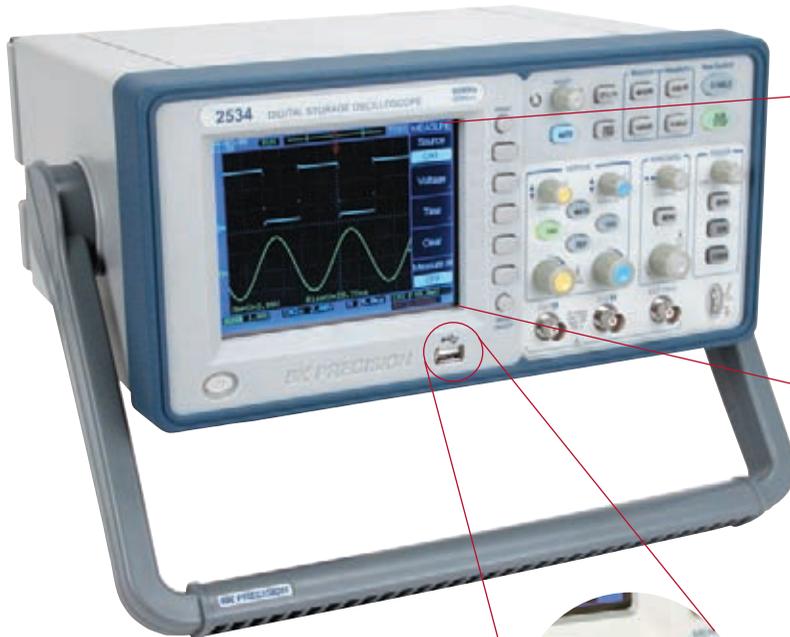
Specifications	2530	2532
Bandwidth	25 MHz	40 MHz
Sample Rate	250 MSa/s	500 MSa/s
Channels	2	2
Display	Monochrome LCD	Color LCD
Record Length	4000 points	4000 points
I/O interface	USB device port for connection to PC	
Vertical Resolution	8 bits	
Vertical Sensitivity	2 mV - 5 V/div	
Weight	10 lbs (4.6 kg)	8 lbs (3.6 kg)
Dimensions (W x H x D)	11.4" x 5.9" x 11.8" (290 x 150 x 300) mm	

Features & Benefits

- Save waveform data in csv (Microsoft Excel) format for post acquisition analysis
- Document your results: print, save, or copy/paste waveform data and measurement results. Save and print bitmap images and setups
- Capture waveforms and measurement results manually or automatically at user-defined intervals
- Auto mode with fast refresh rate of 0.5 seconds, allowing for virtually real time waveform capture

# OSCILLOSCOPES

## Digital Storage Oscilloscopes



FFT spectrum analysis screen



**Models 2534, 2540, and 2542** dual channel DSOs deliver an unmatched combination of performance and value. Advanced features such as FFT function, digital filtering, waveform recorder, delayed sweep, mask testing, and automatic measurements provide you with powerful tools to debug your circuits.

These DSOs come with PC software that lets you easily capture, save, and analyze waveforms and measurement results. Unlike many other DSOs in this price category, they also include two 150 MHz high performance passive probes that will not limit the bandwidth of your measurement system.

### Common Features & Benefits

- 4000 point record length for each channel
- Color LCD display
- USB front panel host port and device connectivity standard
- Digital filter with adjustable limits
- Mask testing
- Waveform recorder mode
- 24 automatic measurements
- FFT standard plus 3 additional math functions
- Extensive trigger capabilities including pulse width and line-selectable video trigger
- Multiple language interface

Specifications	2534	2540	2542
Bandwidth	60 MHz	60 MHz	100 MHz
Sample Rate	400 MSa/s	1 GSa/s	1 GSa/s
Channels	2	2	2
Display	Color LCD	Color LCD	Color LCD
Record Length	4000 points		
I/O interface	Front panel USB host port, USB device port for connection to PC		
Vertical Resolution	8 bits		
Vertical Sensitivity	2 mV - 5 V/div		
Weight	8 lbs (3.6 kg)		
Dimensions (W x H x D)	12.2" x 5.8" x 10.6" (310 x 147 x 269) mm		

## OSCILLOSCOPES Analog Oscilloscopes

**B&K Precision** offers a wide selection of analog oscilloscopes. From entry-level to high performance, these oscilloscopes provide many features at a low cost.

### Common Features & Benefits

- Dual or single trace operation
- 5 mV/div sensitivity
- Calibrated 23-step time base with X10 magnifier
- Video sync trigger
- Alternate/chop sweep
- Sum and difference capability



Model 2190B



Model 2121



Model 2522C

### Features & Benefits

- Built-in component tester (2125A and 2160A only)
- Bandwidth limiter (2190B only)
- Built-in 50 MHz frequency counter (2121 only)
- Delayed time base\*
- Main, Mix, Delay, X-Y sweep modes\*

\*2125A, 2160A, and 2190B only

**The 2522C** is one of the lowest cost digital storage/analog oscilloscopes in the industry and includes basic features needed by most technicians and engineers.

### Features & Benefits

- Digital storage function (2 kB/ch with direct sampling, 1 kB/ch with equivalent time sampling)
- 1 GHz equivalent time sampling (at 0.1 us/div)
- Pretrigger capture
- USB host port for saving screen images to USB flash drive
- 40 MS/s sampling rate

Specifications	2522C <sup>o</sup>	2121	2120B	2125A <sup>o</sup>	1541D <sup>o</sup>	2160A <sup>o</sup>	2190B <sup>o</sup>
Bandwidth	20 MHz	30 MHz	30 MHz	30 MHz	40 MHz	60 MHz	100 MHz
Vertical Sensitivity	5 mV/div to 5 V/div, 1 mV/div to 1 V/div at X5 MAG						
Attenuator	10 calibrated steps in 1-2-5 sequence. Vernier. Control provides fully adjustable sensitivity between steps; range 1/1 to at least 1/3.						
Vertical Accuracy	±3%, 5 mV to 5 V/div; ±5% at X5 MAG						
Rise Time	18 ns *	12 ns *	12 ns *	12 ns *	8.8 ns *	5.8 ns *	3.5 ns *
Sweep Modes			Main	Main, Mix, Delay, X-Y	Main	Main, Mix, Delay, X-Y	Main, Mix, Delay, X-Y
Sweep Time	0.1 s/div to 0.5 s/div			0.1 s/div to 2 s/div			20 ns/div to 0.5 s/div
Sweep Magnification	X10 ±10%						
Weight	18.7 lbs (8.5 kg)		16.8 lbs (7.6 kg)			16.75 lbs (7.6 kg)	18.7 lbs (8.5 kg)
Dimensions	12.8" x 5.2" x 15.7" (324 x 132 x 398) mm						

\* = (Overshoot < 5%)



**Spectrum analyzers** are essential tools for observing the frequency domain of a signal. Key specifications of spectrum analyzers are dynamic range, phase noise, level accuracy, and resolution bandwidth. These parameters determine how well the analyzer performs common measurement tasks such as frequency, power, modulation, distortion, and noise measurements.

B&K Precision's professional handheld spectrum analyzers are indispensable tools for engineers and technicians who conduct field measurements in the 50 kHz to 8.5 GHz range. Despite their compact form factor and weight of only 1.8 kg, the 2650A series deliver performance and features comparable to many full-size bench spectrum analyzers. For example: The 2650A features a DANL (displayed average noise level) of -127 dBm, which allows it to detect very small signals. In comparison, the 1.05 GHz bench top analyzer model 2630, with a DANL of -100 dbm, is less sensitive, however the performance is sufficient for many applications in service and repair, and an ideal solution for users looking for a very cost-effective, basic spectrum analyzer that comes with extra features such as built-in tracking generator and AM/FM modulation.

Field strength meters characterize the electric field strength of radio and microwave signals, providing users a tool for basic signal investigations at only a fraction of the cost of a full-featured conventional spectrum analyzer.



Model 2652A



Model 2640



# SPECTRUM ANALYZERS



## Applications

- Detection of signal interference and undesired emissions
- TV and broadcasting
- Antenna alignment
- Electric field strength measurement
- Installation, maintenance, and troubleshooting of wireless communication systems such as W-CDMA/CDMA, GSM, WLAN, WiMAX and Bluetooth

# SPECTRUM ANALYZERS

## Handheld Spectrum Analyzers



The **2650A series** handheld spectrum analyzers are compact, light weight, and cost-effective instruments for quick and precise signal investigations, especially away from the bench. At a weight of only 1.8 kg, the 2650A series are by far the lightest full-featured spectrum analyzer available, yet they deliver performance and features comparable to full-size bench spectrum analyzers and can operate up to 4 hours on a single battery.

With their ease of use, measurement flexibility, and unmatched portability, the 2650A series analyzers are indispensable tools for engineers and technicians who conduct field measurements in the 50 kHz to 8.5 GHz range.

### Applications

- Installation, maintenance, and troubleshooting of wireless communication systems such as W-CDMA/CDMA, GSM, WLAN, WiMAX and Bluetooth
- Detection of signal interference and undesired emissions
- TV and broadcasting
- Antenna alignment
- Electric field strength measurement with dipole antennas optimized for typical frequencies used in wireless systems
- Magnetic field strength measurement with magnetic field probe (PR 26 M)
- Frequency response measurements of passive components such as RF cables, filters, and attenuators using the built-in tracking generator (2652A)



Tracking generator specifications (2652A)	
Frequency range	5 MHz to 3.3 GHz
Output level	-10 dBm ± 1 dB @ 1 GHz (output level is fixed)
Output flatness	± 1.5 dB

Specifications	2650A/2652A	2658A
Frequency range	50 kHz to 3.3 GHz	50 kHz to 8.5 GHz
Resolution bandwidth	3 kHz to 3 MHz (1-3 sequence) and AUTO	
SSB phase noise	-90 dBc/Hz (typical) @ 100 kHz offset	
Average noise level	-127 dBm (typical) @ CF : 1 GHz, RBW : 3 kHz, VBW : 100 Hz, Ref. level < -40 dBm (preamp automatically ON)	
Input VSWR	< 2.0	
Weight	approx. 1.8 kg or 4 lbs (including battery)	
Dimensions	162(W) x 71(H) x 265(D) mm, 6.38 (W) x 2.80 (H) x 10.43 (D) inch.	

### Features & Benefits

- Frequency range from 50 kHz – 8.5 GHz
- A truly portable spectrum analyzer weighing only 1.8 kg including the battery
- Impressive 4 hour battery life; easy-to-replace rechargeable Lithium-Ion battery
- USB interface for PC connectivity
- Intuitive PC software for remote control and documentation of measurement results
- Conveniently store measurement results and screen shots in bitmap format to USB flash drive (USB host interface)
- Large easy-to-read color display
- Measurement functions: channel / adjacent channel power, occupied bandwidth, electric and magnetic field strength
- Convenient Auto Tune function automatically sets center frequency to the maximum signal within full span and optimum settings for RBW, VVB and sweep time
- External trigger for zero span measurements
- SCPI-like remote control commands

### Superb performance improves your productivity

Advanced synthesizer-based design enables the 2650A series to provide you with an accurate and detailed picture of the spectrum you are investigating.

- Fast sweep speed, minimum 10 ms, to help locate and identify elusive, transient interference signals
- DANL (displayed average noise level) of -127 dBm
- Single sideband phase noise – 90 dBc @ 100 kHz offset

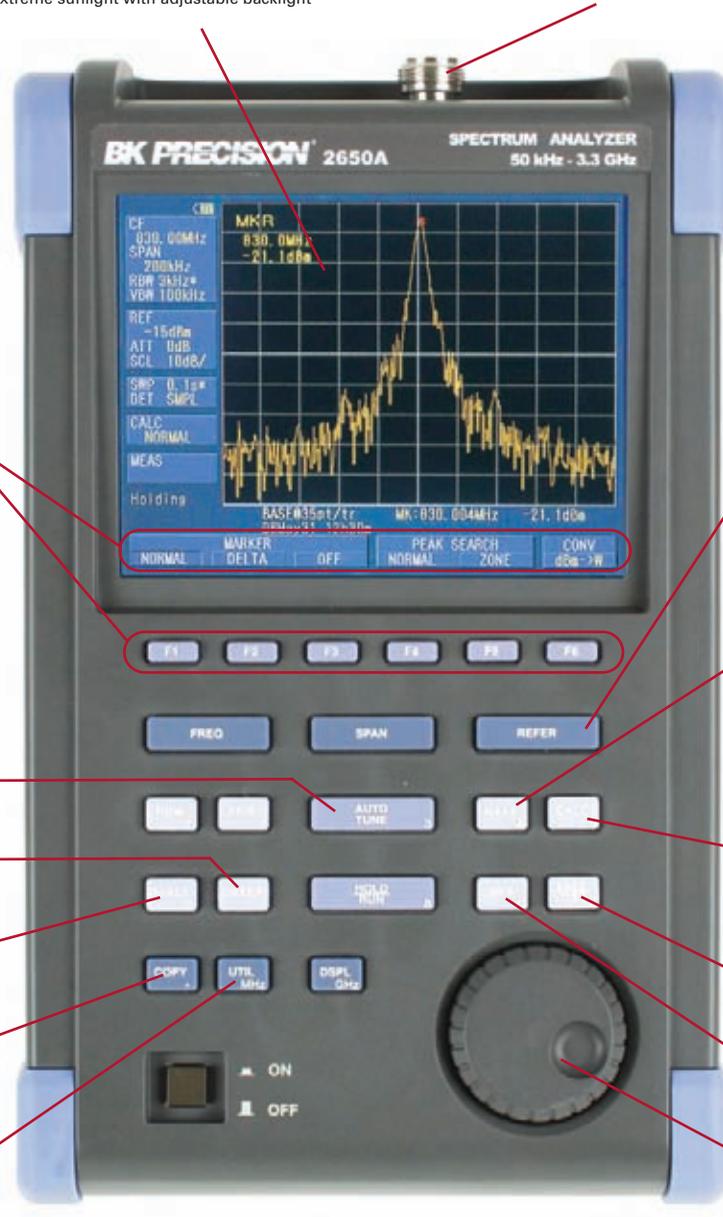
# SPECTRUM ANALYZERS

## Handheld Spectrum Analyzers

### Front Panel

Large color screen (640 x 480 pixels) can be switched to high contrast monochrome display in extreme sunlight with adjustable backlight

RF Input (N-connector), able to withstand 27 dBm (CW average power)/25 V DC max



Simple menu-based operation via soft keys

Set reference level from +1 dBm to -60 dBm in 1 dB steps

- Measurement Functions:
- Channel power
  - Adjacent channel power
  - Occupied bandwidth
  - Electric field strength
  - Magnetic field strength

Automatically tune to maximum level with full span

- Calculation Functions:
- Max hold
  - Min hold
  - Averaging
  - Overwrite

Set sweep time and detection mode

2, 5 and 10 dB/div

Save/Load trace data and setups to/from internal memory or USB flash drive

Store screen images in bitmap format to flash drive or hard copy to USB printer

Marker measurement and peak search

Enter custom labels for filenames, set the time and date

Rotary knob for parameter selection

### Interfaces

PC interface - USB device (A plug)

Easily save and recall measurement data and settings in CSV format directly to and from the USB flash drive. Filenames can be customized and have a time and date stamp

External trigger input (SMA)

Charge status indicator



DC power input

# SPECTRUM ANALYZERS

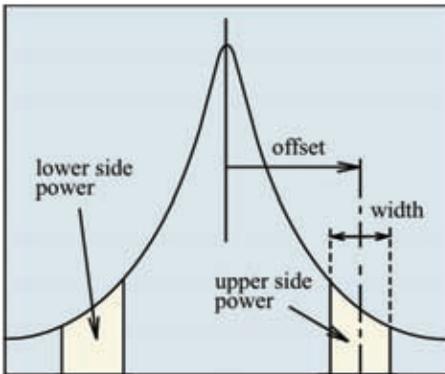
## Handheld Spectrum Analyzers

### Channel power measurement

Allows you to measure the total power or noise power in a user-specified bandwidth.

### Adjacent channel power

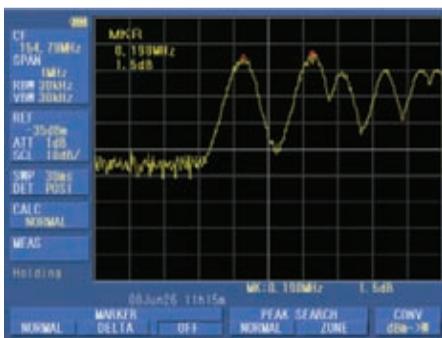
Measure the ratio of power leakage (from the wanted signal) into adjacent channels. Center frequency, adjacent channel bandwidth, and offset between main carrier and adjacent channels can be set.



### Marker function

Two different modes are available for marker measurements:

- Normal marker mode measures the frequency and level of the marked point
- Delta marker mode measures the frequency and level differences between the two markers (see image below)

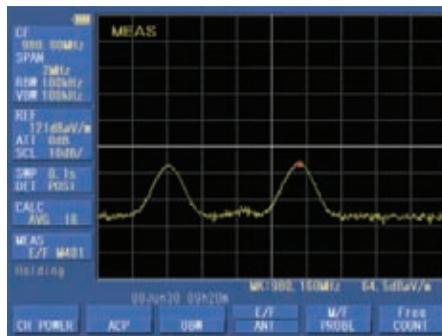


### Electric field strength measurement

A dipole antenna (options M401 – M406) connected to the RF input enables the measurement of electric field strength.

Users can choose from 6 antennas based on the frequency range under investigation.

Combined with the MAX HOLD function and a 10 ms sweep time, the M404 dipole antenna is capable of measuring the electric field strength of Bluetooth systems and systems using direct sequence spread spectrum/frequency hopping modulation techniques.



### Magnetic field strength measurement

Using a magnetic field probe (option PR 26M), the 2650A series is capable of accurately measuring the magnetic field distribution on a PCB (printed circuit board) or IC (integrated circuit) over a wide frequency range of 10 MHz to 3 GHz. Since the probe's compensation data is already pre-loaded into the analyzer, the magnetic field strength is displayed directly in dBuA/m.



### Easy operation

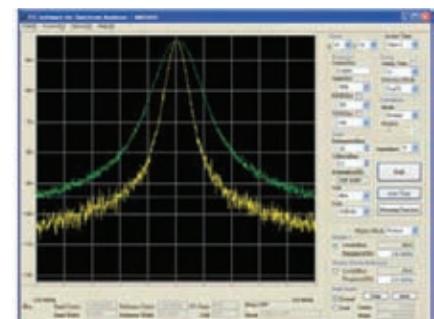
The 2650A series are straightforward to operate and provide many functions to facilitate quick and easy measurements:

- Smart one button "Auto Tune" function which automatically scans the full frequency range, detects and centers the maximum signal, and configures optimum values for RBW, VBW, sweep time and reference level
- Input attenuator and internal preamp are set automatically to optimal values
- 200 setups and reference spectrum measurements can be stored and recalled from either internal memory or USB flash drive

### PC software for simple and flexible documentation of your measurements

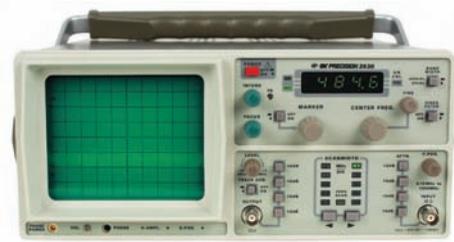
The 2650A series includes easy-to-use software for documentation and further analysis of your measurements. Connect the analyzer via USB cable to your PC, configure the analyzer remotely, then download measurement data and instrument settings for storage and further analysis.

- Continuously sweep and transfer trace data to the PC
- Capture 1001 trace data points (twice the number of display dots) and store the data in CSV format
- Save the screen to a bitmap file



## FIELD STRENGTH METER

### Handheld RF Field Strength Meter



Model 2630

The 2630 bench top spectrum analyzer with tracking generator is a value packed tool for service and repair professionals in the cable TV industry and telecommunication field that need to investigate signals up to 1.05 GHz.

This analyzer is also suitable for pre-compliance testing during development prior to third party testing. An optional near-field sniffer probe set (PR 261) can be used to locate cable and PC board emission "hot spots" and evaluate EMC problems at the breadboard and prototype level.

The spectrum analyzer/sniffer probe combination is an excellent solution for RF leakage/radiation investigation, CATV/MATV system troubleshooting, cellular telephone /pocket pager test and EMI diagnostics. Convenient carrying case is available.

#### Key performance specifications

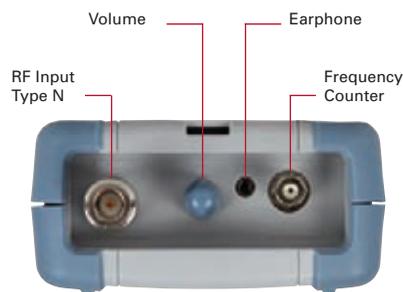
- 150 kHz to 1.05 GHz (1050 MHz)
- Dynamic range 80 dB (113 dB with attenuation)
- AM & FM demodulator included
- 20 and 400 kHz resolution bandwidth
- 150 kHz/hour stability
- Built-in tracking generator



Model 2640

Model 2640 is a battery operated, hand-held RF field strength meter capable of measuring RF levels and electric field strength. The synthesizer-based design provides you with reliable measurements across a wide reception range of 100 kHz to 2000 MHz, a remarkably low noise floor of -110 dBm to detect weak signals and basic spectrum analyzer functionality.

The 2640 provides field technicians and engineers with a cost-effective measurement tool for basic signal investigations at only a fraction of the cost of a full-featured conventional spectrum analyzer.



#### RF field strength analyzer

- Spectrum: peak search, marker to center, channel power function
- Internal attenuation: The input range can be extended by enabling the internal 10 dB attenuation function
- Sweep mode: single run, free run, squelch run selectable
- Squelch function: the squelch level may be adjusted across the full dynamic range



#### Features & Benefits

- 100 kHz to 2 GHz measurement range with a maximum display span of 400 MHz
- Hand-held and battery operated portability (0.65 kg, 102 mm x 229 mm x 46 mm)
- Built-in 2 GHz frequency counter
- Detects wide band (180 kHz) and narrow band FM (12.5 kHz), AM & SSB (2.4 kHz) signals
- Phase-locked loop for precise frequency tuning
- Up to 160 channels may be scanned and displayed
- Audio output of the detected signal with built-in speaker
- Detachable antenna included
- Back-lit display
- Storable setups and displays
- RS-232 Interface

#### Frequency counter

- The 2640's built in frequency counter is independent from the field strength analyzer and measures the signal applied to the external BNC connector
- Frequency range: 35 MHz to 2,000 MHz
  - No. of digits: 7 digits
  - Resolution: 1 kHz

# MULTIMETERS



## Applications

- Electrical testing and repair
- Power grid/line maintenance
- Circuit and component testing



**B&K Precision** provides an extensive selection of digital and analog multimeters, suitable for use in various environments. Whether you are an electronic technician working in the field, or a school instructor teaching electronics, you will find a meter that fits your application. Our multimeters come in bench-top size for the engineering lab and handheld size for portable and on-the-go use.

For electricians, we also offer a series of current clamp meters to measure high current and voltage safely and reliably.

Some common measurement features in our meters include:

- AC and DC Voltage
- AC and DC Current
- Resistance
- Frequency
- Diode Test
- Continuity Test



Model 2712



Model 369B



Model 391A



**MULTIMETERS**  
Selection Guide

	Display Count	DCV Accuracy (%)	Analog Bar Graph	Auto/Manual Ranging	Manual Ranging	True RMS	Min/Max Hold	Peak Hold	Data Hold	Memory	Capacitance	Frequency	Logic Level	Transistor Gain (hfe)	Temperature	Relative Mode	dBm Measurement	Max. Current	Transistor & Overload Protection	Battery Life (Hours)	Drop Power off	Water Resistant Case	Water Resistant	Model	Page	
<b>Bench</b>	20,000	0.1		✓		✓											20	✓						2831E	45	
	50,000	0.02		✓		✓	✓				✓				✓	✓	20							5491B	45	
	120,000	0.012		✓		✓	✓				✓				✓	✓	20							5492B	**	
<b>Digital Handheld</b>	1999	2			✓												10		200					2405A	47	
	1999	0.5			✓												20	✓	250	✓	✓	✓		2860A	47	
	1999	2			✓												10		200					2408	47	
	2000	0.5			✓		✓				✓	✓		✓			0.2	✓	150	✓	✓			2706B	46	
	2000	0.8			✓		✓				✓	✓	✓	✓			10	✓	150		✓			2704C	46	
	2000	0.8			✓	✓	✓				✓	✓	✓	✓			10	✓	150		✓			2707B	46	
	2000	1.2			✓												10	✓	150		✓			2703C	46	
	3200	1.2	✓	✓														10		200					2407A	47
	3400	1		✓				✓										10	✓	150	✓	✓			2705B	46
	3400	1	✓	✓		✓			✓									10	✓	150	✓	✓			2708B	46
	3999	0.1	✓	✓			✓		✓	✓	✓	✓			✓	✓		20	✓	200	✓	✓			390A	47
	3999	0.25	✓	✓			✓		✓	✓	✓	✓			✓			20	✓	200	✓	✓	✓		389A	47
	3999	0.5			✓			✓			✓	✓	✓	✓				20	✓	200	✓	✓			388B	47
	6600	0.5		✓		✓	✓				✓	✓				✓		10	✓	150	✓	✓			2709B	46
	6600	0.5		✓		✓	✓				✓	✓				✓		10	✓	150	✓	✓			2712	46
19999	0.05			✓	✓			✓			✓	✓					20	✓	200	✓	✓	✓		391A	47	
<b>Clamp Meters</b>	2000	N/A		✓				✓									600		1000	✓				312B	48	
	2000	0.5						✓			✓						1000		500					330B	48	
	3200	0.5	✓					✓	✓		✓						1000		500	✓				350B	48	
	3200	0.5						✓	✓								2000		150					367A	48	
	3999	1	✓	✓		✓	✓	✓	✓		✓						600	✓	200	✓				325	55	
	4000	0.5	✓			✓	✓	✓	✓		✓	✓			✓		1000		500	✓				369B	48	
	10000	1		✓				✓	✓								600		50	✓				313A	48	
	10000	1		✓				✓	✓								100		45	✓				316	48	
<b>Analog</b>		3%										✓				✓	12		200					114B	48	
		5%															0.25		200					117B	48	
	3200	1.3	✓	✓				✓			✓						N/A	✓	250	✓				2700	*	

\*\* = Available Fall 2010

\* = visit [www.bkprecision.com](http://www.bkprecision.com)

MULTIMETERS  
Bench Multimeters

**4 ½ digit and 50000 count true RMS bench multimeters**

The bench multimeters 2831E (4 ½ digit) and 5491B (50000 count) provide accurate and reliable measurements for every day use. The 2831E and 5491B take typical multimeter measurements such as volts, ohms, and amps with great accuracy, stability, and provide basic VDC accuracy of 0.02% on the 5491B and 0.03% on the 2831E. Additionally, they enhance productivity with built-in math functions and USB connectivity for remote controllability.



Model 5491B

**Common Features & Benefits**

- Dual VFD display
- AC+DC True RMS measurements
- Math functions: Rel, max/Min, dBm, dB, %, Hold, Compare
- CAT I (1000 V) / CAT II (300 V) protection
- USB Interface (Virtual COM)
- SCPI compatible
- Limit mode for pass/fail testing



**Dual display**

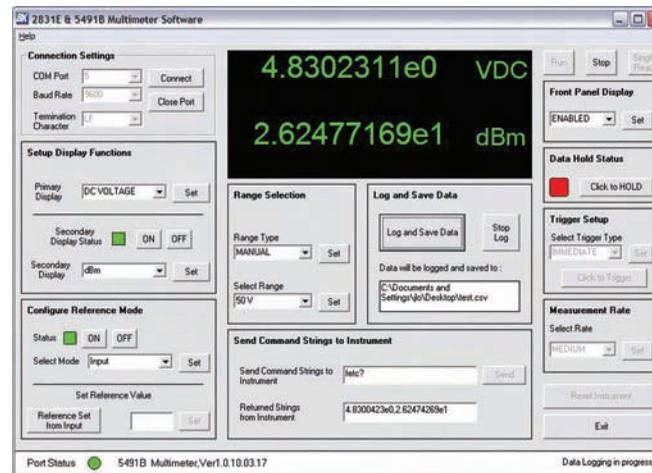
The 2831E and 5491B meters offer a dual display allowing multiple measurements to be conveniently displayed at once.

**Limit operation**

Ideal for pass/fail testing, the limit operation lets users set and control the values that determine a HI / IN / LO status of subsequent measurements.

**Increase productivity with PC connectivity**

The 2831E and 5491B are programmable via USB and RS232 (5491B only) interface using industry standard SCPI commands. Users can control and configure the instrument from a remote PC and retrieve measurement results for further analysis. The meters can also be remotely controlled using application software (downloadable from the B&K website), which supports front panel emulation and data logging of measurement results.



Application software screenshot

Model	DC Volts			AC Volts		Weight	Dimensions (W x H x D)
	Ranges	Resolution	Basic Accuracy	Ranges	Basic Accuracy		
2831E	200m V, 2 V, 20 V, 200 V, 1000 V	10 uV, 100 uV, 1 mV, 10 mV, 100 mV	0.03%(reading)+0.04%(range)	200 mV, 2 V, 20 V, 200 V, 750 V	0.4%(reading)+0.05%(range) at 50-20 kHz, 2V range	5.51 lbs (2.5 kg)	8.85" x 3.93" x 13.97" (225 x 100 x 355) mm
5491B <sup>0</sup>	500 mV, 5 V, 50 V, 500 V, 1000 V	10 uV, 100 uV, 1 mV, 10 mV, 100 mV	0.02%(reading)+0.016%(range)	500 mV, 5 V, 50 V, 500 V, 750 V	0.35%(reading)+0.02%(range) at 50-20 kHz, 5 V range		



# MULTIMETERS

## Digital Handheld

### B&K Precision's 2700 Tool Kit® series

These meters are excellent for most jobs that require flexibility, accuracy and speed. Value-packed features make these meters a must for everyone's "Tool Kit®".

#### Common Features & Benefits

- DC Voltage to 1000 V
- AC Voltage to 750 V
- DC Current to 10 A
- Continuity test
- Diode test
- Drop resistant case
- Magnetic hanging strap



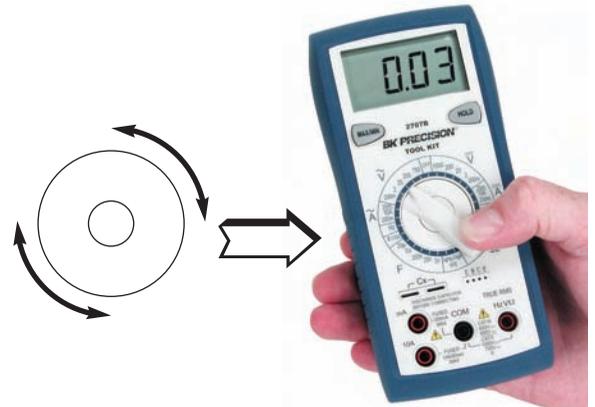
#### Magnetic Hanging Strap

This convenient feature allows you to hang your DMM on any magnetic metallic surface freeing up your hands for troubleshooting.



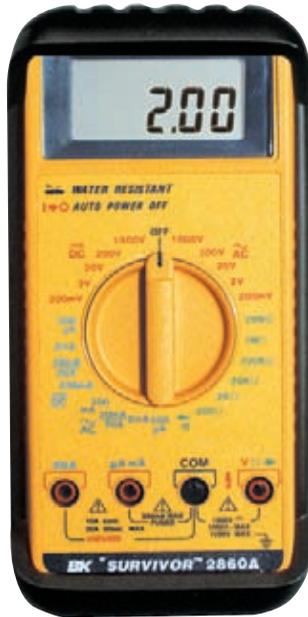
#### Single-handed operation

The ergonomic design allows both left and right handed users to rotate the knob while holding the meter in one hand. While one hand keeps the probe on the circuit, the other hand changes the meter's function. This speeds up troubleshooting because you don't have to locate the probe point in the circuit again.



Model	2712	2709B	2708B	2707B	2706B	2705B	2704C	2703C
Ranging	Auto/Manual	Auto/Manual	Auto/Manual	Manual	Manual	Auto/Manual	Manual	Manual
True RMS	AC + DC	√	√	√	-	-	-	-
Current	10 A AC/DC	10 A AC/DC	10 A AC/DC	10 A AC/DC	200 mA AC/DC	10 A AC/DC	10 A AC/DC	10 A DC
Capacitance	to 40 uF	to 66,000 uF	-	to 20 uF	to 20 mF	-	to 20 uF	-
Transistor Test	-	-	-	√	-	-	√	-
Frequency Counter	to 500 kHz	to 66 MHz	-	√	to 40 kHz	-	√	-
Temperature	-	-	-	-	√	-	-	-
Logic Probe	-	-	-	√	-	-	√	-
Backlight LCD	√	√	-	-	√	-	-	-
Analog Bar Graph	√	-	√	-	-	-	-	-
Battery Test	-	-	-	-	-	-	-	√
Auto Power off	√	√	√	-	√	√	-	-
Weight	10 oz (283 g)	10.3 oz (292 g)						
Dimensions (W x H x D)	3.07" x 6.4" x 1.67" (78 x 163 x 42) mm							

## MULTIMETERS Digital Handheld



Model 2860A



Model 390A



Model 2408

For extra durability and rugged protection, the **Survivor®** multimeters are most suitable. Its dual injection molding process allows a better grip and protection against accidental mishandling or drop. Due to a built-in high energy fuse on all current ranges, extensive overload protection plus UL listing, this meter is safe to use in various environments.

The **Test Bench®** Series are high performance, and value priced offering more features for the dollar than other multimeters. These meters measure resistance, capacitance frequency and temperature and also include a logic indicator and a component test function.



The **Mini-Pro®** Series offers the hobbyist a good choice for performing 90% of most basic electrical measurements such as DC/AC voltage, DC current, and resistance. Compact in size and low in cost, these meters are great to have in every toolbox and field service kit.

	Survivor®		Test Bench®			Mini-Pro®		
Model	2860A	391A	390A	389A	388B	2405A	2407A	2408
Display Counts	2000	20000	4000	4000	4000	2000	3200	2000
Basic DC Accuracy	0.50%	0.05%	0.10%	0.25%	0.50%	2%	1.20%	1.20%
Ranging	Manual	Manual	Auto/Manual	Auto/Manual	Manual	Manual	Auto	Manual
Current	20 A	20 A	20 A	20 A	20 A	10 A	10 A	10 A
Auto Zeroing						Yes		Yes
Bar Graph			Yes	Yes			Yes	
Auto Power Off	Yes	Yes	Yes	Yes	Yes		Yes	
Continuity	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Data Hold		Yes	Yes	Yes			Yes	Yes
Max. Hold			Yes	Yes				Yes
Weight	12 oz (353 g)		11.3 oz (320 g)			7.27 oz (206 g)		
Dimension (W x H x D)	3.5" x 6.88" x 1.5" (89 x 175 x 38) mm		3.5" x 7.8" x 1.57" (89 x 198 x 40) mm			2.25" x 5.63" x 1.37" (57 x 143 x 35) mm		

# MULTIMETERS

## Clamp-on

B&K Precision offers a variety of current clamps from small to large for safe non-invasive current, voltage, resistance, and continuity measurements. Some models even support frequency and capacitance measurements and special features such as recording capabilities of minimum and maximum values, peak values, and diode testing.

### Common Features & Benefits

- AC voltage and current measurements
- Resistance measurements
- Audible continuity
- Data hold
- Low battery indicator
- Overload protection
- CE Approval



Model 369B



Model 312B



Model 316

Specifications	369B	367A	350B	330B	313A	312B	316
Display Counts/Digits	4000	4000	3200	2000	4 digits	4 digits	4 digits
True RMS	Yes	Yes					
AC Current	1000 A	2000 A	1000 A	1000 A	600 A	600 A	100 A
DC Current	1000 A	2000 A			600 A		100 A
AC Voltage	750 V	750 V	750 V	750 V	600 V	600 V	600 V
DC Voltage	1000 V	1000 V	1000 V	1000 V	600 V		600 V
Resistance	40 MΩ	40 MΩ	30 MΩ	2000 MΩ	1000 Ω	200 Ω	10 kΩ
Frequency	Yes	Yes	Yes				
Continuity	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacitance	Yes	Yes					
Weight	18.3 oz (482 g)		17 oz (482 g)		7.76 oz (220 g)	7.4 oz (210 g)	6.34 oz (180 g)
Dimensions	3.6" x 10.8" x 1.7" (91 x 274 x 43) mm				2.76" x 7.55" x 1.33" (70 x 192 x 34) mm	1.97" x 7.36" x 1.14" (50 x 187 x 29) mm	2.76" x 7.95" x 1.33" (70 x 202 x 34) mm

### Analog Multimeters

The **114B** and **117B** analog multimeters are general purpose multifunction instruments for basic test and measurement. They have been designed with safety in mind, and ensure reliable operations for measuring AC and DC voltages and DC current.

- Multiple ranges
- Compact size
- Zero Ohm adjust knob
- 1.5V battery test



Model 114B



Model 117B

### 40 kV High Voltage Probe Meter



The **HV-44A** is a self-contained instrument that measures high DC voltages up to +40 kV. This probe is typically used to measure high voltages in TV sets, power supplies, laboratories and other general high voltage commercial applications.

FREQUENCY COUNTERS



Model 1823A



Model 1804D

These bench top counters provide versatility and reliability for a broad spectrum of laboratory and service applications. In addition to frequency measurement, models 1823A and 1856D also provide period and totalize measurement capabilities.

The 1823A and 1856D are reciprocal frequency counters that are microprocessor-controlled. Instead of counting the number of cycles for a set period (e.g. 1 second), the periods of a master clock are counted. This results in a better measurement resolution as it is not dependent on the input signal.

The 1803D and 1804D are value-priced frequency counters offering users a simple and accurate frequency measurement.

Specifications	1803D	1804D	1823A	1856D
Range	10 Hz - 200 MHz	10 Hz - 1 GHz	0.1 Hz - 2.4 GHz	0.1 Hz - 3.5 GHz
Frequency	√	√	√	√
Totalize			√	√
Period			√	√
Time Base Stability	± 10ppm	± 10ppm	± 1ppm	± 1ppm
Best Resolution	1 Hz	1 Hz	1 nHz	1 nHz
No. of Digits	7	8	8	9
Display Hold			√	√
Low Pass Filter			√	√
Sensitivity	50 mV rms	50 mV rms	250 mV (0.1 Hz - 1 Hz), 30 mV (1 Hz - 100 MHz), 25 mV (80 MHz - 150 MHz), 20 mV (150 MHz - 2.0 GHz), 60 mV (2.0 GHz - 2.4 GHz)	30 mV (0.1 Hz - 100 MHz), 15 mV (80 MHz - 2000 MHz), 20 mV (2000 MHz - 3.0 GHz), 30 mV (3.0 GHz - 3.2 GHz), 50 mV (3.2 GHz - 3.5 GHz), 30 mV rms
Remote Start-Stop			√	√
Self-Test			√	√
Weight	1.8 lbs (680 g)		5.5 lbs (2.5 kg)	
Dimensions (W x H x D)	9.06" x 2.1" x 1.8" (230 x 53 x 46) mm		9.4" x 3.5" x 10.6" (239 x 89 x 269) mm	

## COMPONENT TESTERS

### Selection Guide

B&K Precision offers a wide range of component testers that can measure and identify values of capacitors, resistors, inductors, diodes, ICs, and transistors. The measured values of these components can be used for component sorting or circuit trouble shooting.

LCR Meters are versatile instruments as they can measure most common components used in electronic circuitry. Capacitance meters on the other hand are dedicated to testing capacitors only, and have typically a wider capacitance measurement range. Our transistor testers and meters that measure ESR can be invaluable tools when testing and troubleshooting components "in-circuit", while logic probes are always used in-circuit. IC Testers are used to identify and test some analog and digital ICs.

Category	Description	Max Range	Basic Accuracy	Model	Page
LCR	LCR Meter	20 mF / 200 H / 20 M $\Omega$	1%	875B	51
	Universal LCR Meter	20 mF / 1 kH / 10 M $\Omega$	0.5%	878B	51
	Deluxe Universal LCR Meter with ESR	20 mF / 1 kH / 10 M $\Omega$	0.5%	879B	51
	Synthesized LCR / ESR Meter with SMD Probe	15.91 mF / 31.83 kH / 20 M $\Omega$	0.2%	885	51
	Synthesized LCR / ESR meter with SMD Probe 100kHz test freq.	15.91 mF / 31.83 kH / 20 M $\Omega$	0.2%	886	51
	Bench LCR/ESR Meter with Component Tester	15.91 mF /	0.1%	889B	51
Capacitance	Compact Capacitance Meter	20 mF	0.5%	810	52
	Dual Display Capacitance Meter	199.99 nF	0.5%	830B	52
	Dual Display Capacitance Meter	50 mF	0.5%	890B	52
Component Tester	Component Tester	20 mF / 20 M $\Omega$	0.5%	815	53
Transistor	Portable Transistor Tester	---	---	510A	52
	Industrial Semiconductor Tester with Leakage Test	---	---	520C	52
IC	Linear IC Tester	---	---	570A	53
	Digital IC Tester	---	---	575A	53
ESR	In-Circuit ESR Tester	2200 $\mu$ F	---	881	53
Logic Probes	Digital Logic Probe	20 MHz	---	DP 21	53
	Logic Pulser Probe	400 Hz	---	DP 31A	53
	Digital Logic Probe	50 MHz	---	DP 52	53

## COMPONENT TESTERS LCR Meters

**LCR meters** measure inductance, capacitance, and resistance and are primarily used for component testing in manufacturing quality control or circuit design. They also find use in many other applications such as characterization of cable assemblies, materials and chemicals.



Model 879B

**Models 878B & 879B** are 40,000 count hand-held meters designed for accurate and fast measurements.

### Features & Benefits

- 40,000 count primary and 10,000 count secondary display (backlight with 879B)
- L/C/R/Z primary measurements (Z with 879B)
- D/Q/θ/ESR secondary measurements (θ/ESR with 879B)
- 0.5% basic accuracy
- USB (Virtual COM) interface
- SCPI compliant commands for remote communication



Model 885

**Models 885 & 886** are 10,000 count hand-held meters equipped with four wire terminal connections to facilitate more accurate measurements.

### Features & Benefits

- Measurement parameters: Z, L, C, DCR, ESR, D, Q, and  $\emptyset$
- Test conditions: 100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz (model 886), 1 Vrms, 0.25 Vrms, 0.05 Vrms
- 0.2% basic accuracy
- Dual LCD display
- SMD surface mount tweezer probe included

**Model 875B** is a manual range, hand-held 20,000 count LCR meter that is reliable and easy to use.

- Measures D (dissipation factor)
- Zeroing adjust knob



Model 889B

**Model 889B** is a 10,000 count bench meter that uses a four wire interface connection designed for accurate measurements.

### Features & Benefits

- Measurement parameters: ACV, DCV, Z, L, C, DCR, ESR, D, Q, and  $\emptyset$
- LCR test conditions: 100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz, 200 kHz, 1 Vrms, 0.25 Vrms, 0.05 Vrms, 1 VDC (DCR mode only)
- Measures DCV to 600 V and ACV to 600 Vrms @ 40 ~ 1 kHz
- Measures DCA to 2 A and ACA to 2 Arms @ 40 ~ 1 kHz
- 0.1% basic accuracy
- Diode and continuity measurements
- Dual LCD display
- BNC to Kelvin Clip probe included
- USB (Virtual COM) interface

Specifications	Test Signal		Inductance Measurable Range	Capacitance Measurable Range	Resistance Measurable Range	Weight	Dimensions (W x H x D)
	Frequency	Level					
875B <sup>o</sup>	120 Hz, 1 kHz	Approximately 0.5 Vrms	20 uH - 200 H	40 pF - 20 mF	0.2 $\Omega$ - 20 M $\Omega$	14.12 oz (400 g)	3.47" x 6.97" x 1.58" (88 x 177 x 40) mm
878B	120 Hz, 1 kHz	Approximately 0.6 Vrms	20 uH - 1000 H	40 pF - 20 mF	0.4 $\Omega$ - 10 M $\Omega$	11.64 oz (330 g)	3.54" x 7.48" x 1.61" (90 x 190 x 41) mm
879B	100 Hz, 120 Hz, 1 kHz, 10 kHz	Approximately 0.6 Vrms	2 uH - 1000 H	4 pF - 20 mF			
885	100 Hz, 120 Hz, 1 kHz, 10 kHz	1 Vrms, 0.25 Vrms, 50 mVrms, 1 VDC (DCR only)	31.83 kH - 1.591 uH	0.159 pF - 15.91 mF	0.1 $\Omega$ - 20 M $\Omega$	1.1 lbs (470 g)	3.4" x 6.9" x 1.9" (86 x 175 x 48) mm
886	100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz	1 Vrms, 0.25 Vrms, 50 mVrms, 1 VDC (DCR only)	31.83 kH - 0.159 uH	0.159 pF - 15.91 mF			
889B	100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz, 200 kHz	1 Vrms, 0.25 Vrms, 50 mVrms, 1 VDC (DCR only)	0.079 uH - 31.83 kH	0.079 pF - 15.91 mF	0.1 $\Omega$ - 20 M $\Omega$	10 lbs (4.5 kg)	8.7" x 11.8" x 5.9" (220 x 300 x 150) mm



# COMPONENT TESTERS

## Capacitance Meters & Transistor Testers

### Capacitance Meters

The 830B and 890B capacitance meters feature a large 4 1/2 digit LCD with dual display, 11,000 counts resolution, and 9 automatically selected ranges with full scale value from 1.0 pF to 199.99 mF (50 mF model 890B). The meter's dedicated chip and microprocessor support programmable high/low limits or pre-programmed standard capacitor tolerances, making it ideal for inspection, sorting capacitors and testing capacitors against standard tolerances. The 830B comes with software and interface cable for PC based data logging and monitoring. Additionally, these meters meet the latest international safety standards.



#### Features & Benefits

- Auto ranging
- Dual display simultaneously displays value and deviation from selected tolerance
- Sort on preset tolerance of 1, 5, 10%
- Program unique values to sort for specific circuit applications



Model 890B



Model 810C

The 810C is a compact manual ranging capacitance meter, designed for accurate cost effective measurement of capacitive components. It features fused direct-plug-in test sockets and test lead jacks. Also provided a zero adjustment knob to "zero" test lead capacitance.

Specifications	Test Frequencies	Test Level	Measurable Range	Weight	Dimensions (W x H x D)
810C	820 Hz, 82 Hz, 8.2 Hz	<3.5 V	20 pF - 20 mF	11.3 oz (20 g)	3" x 6.75" x 2.2" (76 x 171 x 57) mm
830B	200 Hz, 1.1 kHz, 7.7 kHz, 38 kHz, 166 kHz	<3 V	10 pF - 50 mF	11.3 oz (20 g)	3.42" x 7.24" x 1.61" (87 x 184 x 41) mm
890B		<3 V	10 pF - 199.99 mF		

### Transistor Testers

Transistor testers model 520C and 510A are designed for in circuit and out of circuit transistor testing. They were designed for a minimum amount of control manipulation and setup, allowing for rapid testing of

most devices. The model 520C also has a logarithmically scaled meter that identifies leakage in both Silicon and Germanium devices.

Specifications	Leakage Test	Identifies	Weight	Dimensions
520C	0.1 mA - 5 mA of I <sub>CE</sub> leakage	NPN or PNP, FET as N-channel or P-channel Silicone or germanium transistors in LO drive, base lead in HI drive all leads of SCR	1 lbs (450 g)	4" x 7.5" x 2" (102 x 191 x 51) mm
510A	N/A	NPN or PNP, FET as N-channel or P-channel FET-gate lead, all leads of		



Model 510A

COMPONENT TESTERS  
IC, ESR & Logic Probe Testers



Model 570A



Model 881



Model 815

**IC Testers**

The 570A interfaces with analog ICs and the 575A with digital ICs. Both versions emulate passive circuitry around the IC under test to ensure that a comprehensive test takes place. High integrity verification offers guaranteed levels of reliability in the results. Conditional and unconditional loop testing modes ensure that intermittent and/or temperature related faults are detected. The units automatically sense the functionality of the device to be tested and display a list of possible equivalents for replacement. Unmarked and house-coded ICs can be identified and tested.

**Features & Benefits**

- Auto identification mode
- Conditional/unconditional loop testing mode
- Functional test unit emulates passive circuitry to implement a comprehensive test in a variety of configurations and gain settings
- Displays diagnostic information down to individual component pins

**In-Circuit ESR & DCR Capacitor Tester**

The 881 is a portable In-Circuit ESR Meter that measures the equivalent series resistance of electrolytic capacitors in or out of circuit and can also be used to measure low value non-inductive resistors. In-circuit measurements are dependent on the circuit design of the capacitor being measured.

**Features & Benefits**

- Measures ESR with a range of 0.1 to 30 Ω
- Three color front panel chart shows ESR readings of Good, Fair, and Bad
- Measures DCR with a range of 0.1 to 30 Ω
- 15 mVp-p output test voltage (will not turn on any solid-state devices)
- Includes a one-handed tweezers test probe

**Component Tester**

The 815 is a handy meter measuring capacitance (0.1 pF to 20 mF) and resistance (0.1 ohm to 20M ohm) and can also test transistors, diodes, SCRs, LEDs and batteries.

**Features & Benefits**

- Transistor leakage test
- Diode and SCR test
- LED test
- Battery test



Model DP 21

**Logic Probes**

For use with TTL and CMOS circuits and ICs

Model	Description
DP 21	20 MHz Digital Logic Probe
DP 31A	400 Hz Digital Pulser Probe
DP 52	50 MHz Digital Logic Probe

# ELECTRICAL TESTERS



Model 301



Model 302



Model 307A

### AC line separator

The 301 provides temporary separation of conductors to facilitate measurement of current with an AC current clamp meter.

#### Features & Benefits

- X10 Mode allows for more accurate measurements of low amperage devices
- 2 mm voltmeter measurement points
- Integrated ground conductor (three pronged US standard plug)
- 15 A maximum capacity

### Phase and motor rotation meter

The 302 is a 3-phase presence and rotation meter combined with a 3-phase motor rotation tester. It provides the quickest and easiest means for servicing, repairing and electrical maintenance of 3-phase systems and 3-phase rotating machinery.

#### Features & Benefits

- Indicates phase presence
- Indicates motor rotation / wiring
- Phase rotation and motor rotation indicator works from as low as 1 Vac
- IEC 1010 CAT III 600 V / CE

### Insulation tester

The battery-powered insulation testers models 300, 305, 307A and 308A are intended primarily for periodic testing of industrial motors, transformers, electrical wiring, and cable insulation. Low readings may point to insulation deterioration that can indicate impending failure. Early detection permits replacement during routine maintenance rather than risking production downtime. Insulation testers are also useful for safety testing of TV sets and appliances to assure that no hazardous leakage current is present.

#### Models 300 & 305

- Test insulation resistance
- Measure AC voltage to 600 V
- Battery powered
- 1000 V, 2000 MΩ (Model 300)
- 500 V, 1000 MΩ (Model 305)

#### Models 307A & 308A

- Selectable 250 V, 500 V, or 1000 V insulation test
- Low resistance test
- Extra rugged integral carrying case
- Live circuit indicator warns of safety hazard
- IEC 1010 CAT III 600V / CE

Model	300	305	307A	308A
Type	Analog	Analog	Analog	Digital
Output Voltage	1000 VDC	500 VDC	1000 VDC	1000 VDC
Maximum current	250 $\mu$ A	500 $\mu$ A	2 mA	1.2 mA
Resistance Range	1 M $\Omega$ -2000 M $\Omega$	0.2 M $\Omega$ - 1000 M $\Omega$	0-400 M $\Omega$ 0-200 M $\Omega$ 0-100 M $\Omega$	1000 V, 0-2000 M $\Omega$ 500 V, 0-200 M $\Omega$ 250 V, 0-200 M $\Omega$
Center Scale	50 M $\Omega$	20 M $\Omega$	1 M $\Omega$ , 2 M $\Omega$ , 4 M $\Omega$	Does not apply
Weight	15 oz. (430 g) with batteries		2.6 lbs (925 g) with batteries	
Dimensions (W x H x D)	6.66 x 4.18 x 1.42" (169 x 106 x 36) mm		7 x 8.5 x 3.5" (180 x 220 x 90) mm	

ELECTRICAL TESTERS



Model 309

**Digital earth resistance meter**

The 309 digital earth resistance meter (also known as an earth ground meter) is a small, compact, battery-powered, professional meter that is easy-to-use and invaluable to electricians and contractors who need to ensure the "ground" quality and effectiveness of buildings, structures, equipment or electrical systems. A good earth ground is required for new buildings or structures needing to pass required electrical codes. Older buildings can lose a good effective earth ground connection over time or after being struck by lightning.

**Features & Benefits**

- Measure earth resistance (20/200/2000 Ω ranges)
- Measures earth AC voltage to 200 VAC (40 to 500 Hz)
- Timed function test turns output off after a 3 to 5 min continuous test
- 2 mA measuring current measures resistance without tripping circuit breakers
- Data hold
- Auto power off
- IEC 1010 CAT III 200 V / CE



Model 310

**Digital milli-ohm meter**

The 310 digital milli-ohm meter is used to ensure continuity and integrity of a wire, cable, conduit, or any electrical connection. The 310 has a display resolution of 100 micro-ohms and has a professional four-wire Kelvin test lead set included to ensure accurate readings. The heavy duty case comes with a convenient shoulder strap and has a rubber seal to make the unit water resistant.

**Features & Benefits**

- Four-wire Kelvin lead measurements
- Overvoltage and overtemperature protection
- 5 ranges with 100 μΩ max resolution
- Water resistant case with shoulder strap
- Auto power off
- IEC/EN 61010-1 / CE



Model 325

**True RMS AC/DC power clamp meter**

The 325 AC/DC true RMS power clamp meter provides safe, non-invasive measurements of up to 400 kW, 400 amps AC, and measures up to 600 volts AC/DC utilizing the pair of standard test leads. The lightweight, portable, battery-powered clamp meter measures parameters such as ACV, DCV, ACA, DCA, Ωs, WATT, frequency and continuity needed to troubleshoot residential and small commercial electrical systems.

**Features & Benefits**

- 3 ¾ digit backlit LCD display
- Auto range
- Auto power off
- Data hold
- High speed digital bargraph
- Jaw opening 1.37" (35 mm)
- IEC 1010 CAT III 600 V / CE

Specifications	325
<b>DC Current</b>	
Range	400 A, 600 A
Resolution	0.1 A, 1 A
Accuracy	1.5% + 5 digits
	2% + 5 digits
<b>AC Current (True RMS : From 10% to 100% of Range)</b>	
Range	400 A, 600 A
Resolution	0.1 A, 1 A
<b>Accuracy</b>	
40 Hz- 65 Hz	2.0% + 5 digits
65 Hz - 1 kHz	3.0% + 8 digits

# DEVICE PROGRAMMERS

## EPROM Programmiers



Model 866B



Model 844USB

### Deluxe EPROM Eraser



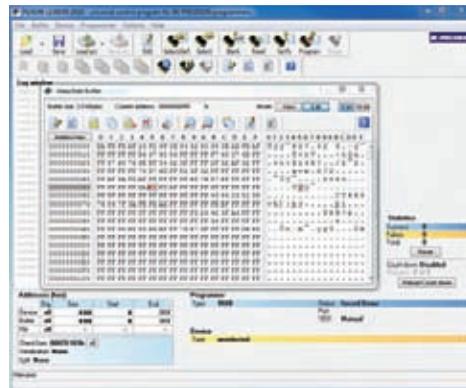
**Universal device programmers** are powerful, versatile, and simple to use. Our programmers are the ideal solution for programming new chips as well as copying chips for back up or repair purposes.

We offer on-going program software updates that extend device libraries and provide continuous improvements for both models 844USB and 866 programmers. Whether you are working with PLCC, SOIC, TSOP, DIP, TQFP, SSOP, PSOP or QFP packaging, we provide an extensive line of socket adapters that will work in conjunction with our programmers.

#### Common Features & Benefits

- Extensive device libraries
- Fast and high performance
- Powerful program software
- Supports Windows® 98/Me/NT/2000/XP/2003/XPx64 /Vista/7

**The model 851** is a heavy duty EPROM eraser that can simultaneously erase up to 40 twenty-four pin EPROM chips. It is constructed of an all-metal case, and is designed with a chip drawer that prevents UV radiation exposure from causing hazard to the user. The drawer is lined with conductive foam to prevent electrostatic damage to the chips. A 30-minute timer is provided to control timing of UV exposure.



Specifications	844USB	866B
Devices Supported	EPROM, EEPROM/Flash, Serial EPROM, Microcontroller(844USB & 866B), PLD(844USB & 866B) and BPROM (BPROMs 866B)	
Device libraries	Over 24,000	Over 50,000
Interface	USB 2.0 / USB 1.1 Compatible	
Programming Socket	DIL40 pin ZIF Socket	DIL48 pin ZIF Socket
Buffer Features	"Erase, Random Data Fill, Fill Block, Copy Block, Move Block, Swap Block, Buffer Print, Find Text, Replace Text, GoTo Address, Checksum Calculator, 8 bit & 16 bit View Modes"	
Weight	17.65 oz (500 g)	2.5 lbs (1.1 kg)
Dimensions (W x H x D)	3.8" x 1.4" x 6.3" (95 x 35 x 160) mm	5.5" x 2.2" x 7.7" (140 x 56 x 195) mm

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**BATTERY TESTERS**  
Battery Capacity Analyzers



Model 600

Model 601

**Battery capacity analyzers** models 600 and 601 can be used to identify defective or deteriorated batteries. The analyzers display the stored charge capacity of Lead acid batteries as a percentage as well as the loaded and un-loaded battery voltage.

**Common Features & Benefits**

- Measures both no load voltage and battery capacity
- Displays storage capacity of lead acid batteries as a percentage
- Great tool for testing back up batteries for UPS, security, and emergency flood light systems
- Analyzers are powered by the battery under test (no external power supply or battery needed)



Batteries



Communications



Alarms



UPS Systems



Sprinkler Systems

**Additional benefits and features of Model 601**

- Amp hours are selectable in 1Ah steps, which extends the range of batteries that can be tested (compared to model 600 with a few amp hour presets)
- Perform a complete battery analysis in as little as 6 seconds
- Display the internal resistance of the battery under test
- Easy to use interface: by simply selecting the proper AH range and pressing the TEST switch, the user can obtain the BUT's (battery under test) percentage balance capacity
- Tests 6 VDC & 12 VDC batteries

**Applications**

The need for battery maintenance tools is growing in automotive, field service and maintenance, telecommunications, and UPS manufacturing/maintenance fields. These instruments are ideal tools for anyone working with UPS systems, emergency back-up flood lights, home and business security alarm systems, or any other application using a lead acid battery.

Specifications	600	601
Testable Battery Voltages	12 V	6 & 12 V
Max. Input Voltage	20 V	20 V
Selectable Amp Hours	7, 12, 24, 42, 65, 100	1 - 100 AH in 1 AH steps*
Dimensions (W x H x D)	3.14" x 6.3" x 1.6" (80 x 160 x 41) mm	3.14" x 9.5" x 1.6" (80 x 241 x 41) mm
Weight	2.2 lbs. (1 kg)	2.31 lbs (1.04 kg)

\*= Optimized to work on batteries with amp hours between 5 and 99

VIDEO & CABLE



Model 1253



Model 206



Model 230A



Model 262

**HDTV pattern generator**

The 1253 is an affordable handheld HDTV test pattern generator that delivers from its YPbPr outputs accurate test patterns for the testing of the most common HDTV displays including Plasma, LCD, TFT, CRT, DLP, GLV, and OLED digital display products.

**Features & Benefits**

- Made in the U.S.A.
- Lightweight and portable
- Ideal for on-the-bench and in-the-field testing
- High-quality BNC to RCA interface cable included

**NTSC generators & video monitor testers**

Both handheld and benchtop models provide standard test patterns used to test picture quality. These patterns include NTSC color bars, crosshatch, dot, staircase, circle, center cross, windows, and a full range of color raster patterns.

**PC cable tester**

The model 206 cable tester is a standalone device designed to test popular PC data cables. It identifies the cable connection status such as: open, short, cross, mis-wire, and continuity of wires and pin configuration. It works with most PC data cables and network cables, such as printer, monitor, modem, mouse extension, BNC coax, RJ45, 1394, and USB cables.

**Network cable tester**

The 231A and 230A can easily read the correct pin configuration of 10BaseT cable (category 5), 100BaseTx, 10Base2 cable (coax) and RJ45/RJ11 modular cables, 356A, TIA 568A, TIA 568B, and Token Ring cables by comparing one transmitting end to the corresponding receiving end. With the remote kit, they can test cables installed either on wall plate or patch panel up to 1000ft away. In addition, the 231A tests point to point rather than pair to pair for more detailed wiring analysis.

**Tone generator & cable tracer kit**

The 262 kit comprises two handheld, battery powered instruments designed to perform a variety of tests on unenergized telephone lines or LAN cables.

The tone generator has alligator clips and a standard RJ11 plug allowing the tone generator to be connected to stripped wires, terminal panels, wall plates, or modular single line jacks.

The cable tracer can trace the signal from the tone generator signals through dry wall, wood, and many other non metal surfaces to help identify wires and their location without piercing the insulation.



**Telephone testers**

The 1045B provides basic operational tests for corded and cordless telephones, answering machines, fax machines and automatic dialers. It checks line and handset cords for continuity, shorts, and intermittent faults. It also verifies numbers dialed or redialed (pulse or Touch Tone®), checks that voice and DTMF levels are above minimum required level, supports low and normal ring tests, and automatically performs a line polarity test.

Category	Model	Description
PC Cable Testers	206	Network/PC Cable Tester with Reverse Mode
HDTV Pattern Generator	1253	Handheld HDTV Pattern Generator
Network Cable Testers	230A	Multi-Network Cable Tester
	231A	Deluxe Multi-Network Cable Tester
NTSC Generators	1211E	Handheld NTSC Generator
	1249B	NTSC Color Generator
	1257	Portable NTSC Generator
Telephone Tester	1045B	2 Line Telephone Tester
Tone Generator & Cable Tracer	262	Tone Generator & Cable Tracer Kit
Video Monitor Testers	1275	Portable Video Pattern Generator
	1280B	Benchtop Computer Monitor, PC and MAC, Video Generator

ENVIRONMENTAL TESTERS



Model 732A



Model 715



Model 760



Model 615



Model 636

These handheld environmental testers sample and measure environmental properties such as temperature, humidity, sound, pH & air flow. Each meter is designed for fast, reliable measurements.

Category	Model	Description
Air Velocity Meter	731	Anemometer with Wand Probe
Digital Carbon Monoxide Meter	627	Carbon Monoxide (CO) Meter
Digital Infrared Thermometer	635	Infra-Red Thermometer with Laser Pointer
	636	Non-Contact Infrared Thermometer with Laser Pointer
Digital Light Meter	615	Light Meter
Digital Thermo-Hygrometer	625	Thermo Hygrometer
	720	Humidity/Temp Meter w/Dual Input
	725	Datalogging Humidity/Temp Meter w/Dual Input
Digital Thermometer	630	Dual K-type Thermometer
	710	Temperature Meter, Dual Input
	715	Datalogging Temperature Meter, Dual Input
PH Meter	760DX	Deluxe Intelligent PH Meter with Accessories
	760KIT	Intelligent PH Meter with PH Probe
Sound Level Calibrator	CAL73	Standard Acoustic Calibrator (94 dB, 1 kHz Sine Wave)
Sound Level Meter	732A	Digital Sound Level Meter with RS 232 Capability
	735	Datalogging Digital Sound Level Meter w/RS232 Software & Cable

**Air velocity meter**

Handheld mechanical vane on retractable cord anemometer designed to measure airflow and air temperature. Displays values in knots, mph, km/h, m/s, ft/min, °F, and °C.

**Digital carbon monoxide meter**

Handheld meter that measures the amount of carbon monoxide in parts per million.

**Digital infrared thermometers**

Compact, handheld infrared digital thermometers with laser pointer and adjustable emissivity designed for simple one-hand operation. These meters make non-contact temperature measurements and display the values in both °F and °C.

**Digital light meter**

Handheld meter that measures the amount of light intensity in both lux and foot candles (fc).

**Digital thermo-hygrometers**

Three handheld meters that measure the level of relative humidity as a percent and temperatures in °F and °C.

**Digital thermometers**

All three handheld meters measure temperature via two K-type thermocouples. Temperature is displayed in both °F and °C.

**pH meter**

Handheld meter that measures the pH level and temperature of fluids.

**Sound level calibrator**

The calibrator is used to calibrate sound level meters to a 94 dB and 114 dB standard.

**Sound level meters**

Two handheld meters that measure sound level from 30 to 130 dB with both A and C frequency weighting. Both meters meet IEC 651 type II standards.

# GENERAL ACCESSORIES

## Multimeters

In addition to the general accessories shown, B&K also offers a broad range of product-specific accessories. Visit individual product overview pages on our website to see available accessories.



### 40 kV High Voltage DMM Probe

Model PR 28A

For voltage measurements above the specifications of general purpose probes.

Specifications	PR 28A
Attenuation	x1000
Voltage (AC)	20 kV
Voltage (DC)	40 kV
Bandwidth	60 Hz
Input Impedance	1000 MΩ
Accuracy (AC & DC)	±3%
Cable Length	48" (1.2 m)



### Maxi-Pro DMM Kit

TL-50 Kit

Complete accessory kit for all your testing needs. Includes soft, flexible silicone lead wire for easy movement.

- IEC61010-2-031 compliant
- Silicone lead wire length 60" (1.5 m)
- Tri-fold velcro pouch

Description	TL-50		
4mm Straight to Right-Angle Silicone Leads, 1.5 m	1000V	CATIII	12 A
Probe Bodies w/Ø2 mm Tip	1000V	CATIII	36 A
Pincer Style Clips	1000V	CATIII	6 A
Alligator Clips	300V	CATI	3 A
Spade Lug Adapters	42 V (1000 V)		36 A
Banana Plug Adapters	42 V (1000 V)		36 A
Fully Insulated Alligator Clips	1000 V	CATIII	20 A



### Deluxe Test Lead Sets

TL 2A Kit

- IEC61010 1000V CATIII rating
- Silicone lead wire length 60" (1.5 m)
- Black alligator clip included
- Threaded tips fits TL 3 accessory kit items



### Probe Accessory Kit

TL 3 Kit

- Threaded accessories to fit TL 2 A probes – black and red pairs (except for alligator clip)
- Alligator clip, red only
- Spring hook clips
- 4" sharp extension tips to reach tight test points
- No. 10 spade lugs



### Special BNC Cable Assemblies

CC-21

Standard BNC to Alligator clips or Sheathed Stacking Plugs. The CC-21, black, molded strain release boots provides for long-life. RG58C/U cable with 50 Ω impedance.

Specifications	CC-21
Impedance	50Ω
Cable	RG58 C/U
Connectors	BNC m to Alligator Clips
Voltage	500 Vrms
VSWR	≤1.2
Cable Length	40" (1.0 m)



### General Purpose DMM Kit

TL 130A Kit

If you need only one basic accessory kit for your meter, this is the one. Attach probes or clips to the sheath plug to complete your test. Soft, flexible silicone leads make movement easy. Kit is voltage and current rated for electronic or electrical applications.

- IEC61010-2-031 compliant
- Silicone lead wire length 60" (1.5 m)
- Tri-fold velcro pouch

Description	TL-130A		
4mm Straight to Right-Angle Silicone Leads, 1.5 m	1000V	CATIII	12 A
Probe Bodies w/Ø2mm Tip	1000V	CATIII	36 A
Alligator Style Clips	1000V	CATIII	20 A
Alligator Clips	300V	CATI	3 A



### DC/AC Current Clamp

Model CP 3

- Converts any DMM to a current clamp
- Measures current without disconnecting circuit under test
- Measures to 400 A DC or AC
- Outputs 1 mV per Amp, operates on 2 V range of any DMM

Specifications	CP 3
(Accuracy specified at 18° to 28°C)	
Current Range	2 A to 400 A, DC or AC
Frequency Response (AC)	50 Hz - 400 Hz
Accuracy	±(2% reading + 2A)
Input Resistance	10 kΩ min.
Maximum Conductor Size	1.1"(30 mm)
Power Requirement	9 V battery, NEDA 1604
Battery Life	100 hr typical
Operating Temperature	0° to 40°C, <70% RH
Storage Temperature	-20° to + 70°C, <80% RH

**GENERAL ACCESSORIES**  
Oscilloscope Probes & Carrying Cases



**Active Differential Probe**

Model PR-60

Allows safe and accurate floating measurements with your standard analog or digital oscilloscope. Switchable between x10 and x100 attenuation. Unit includes black and red probes and protective rubber jacket.

Specifications	PR-60
Bandwidth	25 MHz (-3 dB)
Attenuation Ratio	x10/x100
Accuracy	±2%
Rise Time	14 ns
Input Impedance	4 MΩ/10 pF each side to ground
Input Voltage	
Max. Differential	±700 V (DC+Peak AC)
Max. Common Mode	±700 V (DC+Peak AC)
Output Voltage	
Max. Amplitude	±7 V (into 2 kΩ load)
Offset (Typical)	±5 mV, -10° to 40° C
Noise (Typical)	1.5 to 2 mV
Source Impedance	1 Ω @ 1 kHz 8 Ω @ 1 MHz
CMRR	
50Hz	86 dB
20kHz	66 dB
200kHz	56 dB
Probes	Sprung Hooks (B/R)
Length of Input Lines	18" (45 cm)
Operating Temperature	14° to 104°F (-10° to 40° C)
Power Requirements	4 x AA Cells
Certification	IEC61010-1 CATIII

**Demodulator Probe**

Model PR 32A

All purpose demodulator probe, usable with most oscilloscopes. Features light weight design and 48" (1.2 m) coaxial cable.

Specifications	PR 32 A
Bandwidth	100 kHz - 650 MHz
Accuracy	±3 dB
Voltage	200 V
HF Voltage	50 V <sub>eff</sub>
Actuating Voltage	250 mV
Input Capacitance	5 pF
Cable Length	48" (1.2 m)
Body Color	Black



Model PR 32A

**General Purpose Probes**

This full line of probes increases the versatility of your oscilloscope with both fixed attenuation and switchable from 100 to 250 MHz. Each probe includes a full accessory kit with a sprung hook, replacement tip and BNC adapter. All models compliant to IEC61010-031



Model PR-55



Model PR 37AR

Specifications	PR 33A	PR 37 AG	PR 37AR	PR 150	PR 100A	PR 2000	PR-55
Bandwidth (MHz)	15/90	6/150	6/150	25/150	250	150	50
Attenuation	x1/x10	x1/x10/REF	x1/x10/REF	x1/x10	x100	x100	x1000
Input Impedance R(MΩ)	1/10	1/10	1/10	1/10	100	50	100
C(pF)	46/16	100/15	100/15	45/12	6.5	5	1
Voltage (VDC+ACmax)	600	600	600	300	1,200	2,000	10,000
Compensation (pF)	10..35	10..35	10..35	10..30	10..35	10..30	10..30
Cable Length	48" (1.2m)	80" (2.0m)					

**Carrying Cases**



LC 210A

Description	LC 33	LC 40	LC 210A	LC24	LC 29B
For Models	Clamp-on DMM 312B, 313A, 316, 325, 330B, 350B, 367A, 369B	Function Generators 4010A, 4011A, 4012A 4017A, 4040A Bench Top DMM 2831E	Oscilloscopes 2120B, 2121, 2125A, 2126A, 2190B, 2522B Spectrum Analyzers 2630	Mini-Pro® DMM 2405A, 2407A, 2408	Component Testers 810C, 815, 875B, 878B, 885, 890B, 879B & 830B
Dimensions	5 x 1.75 x 10.5" (127 x 44 x 267) mm	11 x 5.5 x 12" (279 x 140 x 305) mm	15 x 7.5 x 17.5" (381 x 191 x 445) mm	3.75 x 1.5 x 6.75" (95 x 38 x 171) mm	4 x 2.5 x 8" (102 x 64 x 203) mm
Weight	3.18 oz. (90g)	1.02 lbs. (470 g)	2.36 lbs. ( 1070 g)	1.27oz. (36 g)	2.47oz. (70 g)
Material	1000D Navy Cordura Laminate to a 3/16" foam padding, trico backing		1000D Navy Cordura 400D nylon packcloth inside to help it encompass the 1/4" foam padding	1000D Navy Cordura Laminate Laminate to a 3/16" foam padding, trico backing	

## GENERAL ACCESSORIES

### Function Generators & Spectrum Analyzers



#### Function Generator Accessory Kit

TLFG

The TLFG kit, function generator kit provides convenience and functionality to get a user up and working. The kit eliminates the time consuming start-up task of collecting cables and adapters.

Description	Qty.	Frequency Range	VSWR Max.
BNC Cable Assembly, 120 cm (48")	2	DC - 1 GHz	1.20:1 @ 1 GHz
BNC (f) Breakout w/Miniature Alligators Clips	1	DC - 1 GHz	N/A
BNC (f) Breakout w/Ø.031 Sockets	1	DC - 1 GHz	N/A
MiniFlex IC Clips, *Black & Red Pair	*2	N/A	N/A
MicroFlex IC Clips, *Black & Red Pair	*2	N/A	N/A
BNC Tee, female-male-female	1	DC - 4 GHz	N/A
BNC female to N type male	1	DC - 4 GHz	1.30:1 @ 4 GHz



#### General Purpose BNC & N Type Adapter Kit

CC500

The CC500 general purpose BNC & N type adapter kit provides a comprehensive range of in-series and between-series BNC and N type coaxial adapters for basic RF testing and troubleshooting needs.

- 12 piece kit
- BNC & N type 50Ω Connectors
- Gold plated center contacts
- Storage case

Description	Qty.	Frequency Range	VSWR Max.
BNC Tee female-male-female	1	DC - 4 GHz	N/A
N type female-female	1	DC - 8 GHz	1.30:1 @ 8 GHz
N type male-male	1	DC - 8 GHz	1.30:1 @ 8 GHz
N type Tee female-male-female	1	DC - 8 GHz	N/A
BNC female to N type male	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC male to N type female	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC female-female	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC male-male	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC female to N type female	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC Tee female-female-female	1	DC - 4 GHz	N/A
N type Tee female-female-female	1	DC - 8 GHz	N/A
N type Right-Angle male-female	1	DC - 8 GHz	1.35:1 @ 8 GHz



#### General Purpose Function Generator Kit

CC 510

The CC 510 kit provides a range of BNC and N type coaxial interconnectors for basic function / arbitrary waveform generators use. All components feature standard BNC or N type interfaces with 50Ω impedance and gold plated center contacts to ensure accurate repeatable measurements. The kit is provided in a convenient foam lined storage case for easy selection and use.

Description	Qty.	Frequency Range	VSWR Max.
BNC Cable Assembly, 100cm (40")	2	DC - 1 GHz	1.20:1 @ 1 GHz
BNC Feed-Thru Terminator, 2W	1	DC - 1 GHz	1.20:1 @ 1 GHz
BNC Tee, female-male-female	1	DC - 4 GHz	N/A
BNC female to Double Banana Plugs	2	N/A	N/A
BNC female to N type male	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC female to N type female	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC Attenuator, 20 dB (10x) 2W	1	DC - 4 GHz	1.25:1 @ 4 GHz



#### Spectrum Analyzer Coaxial Cable & Adapter Kit

CC265

This convenient kit provides the most popular and useful coaxial accessories to inter-connect B&K Precision's spectrum analyzers.

The kit is a replacement for B&K Precision model numbers: CC 301, CC 302, CC 303, CC 304, CC 305, CC 306 & CC 307

- High frequency SMA cable assembly
- BNC & N type 50Ω Adapters
- Gold plated center conductors
- Storage case

Description	Qty.	Frequency	VSWR Max.
SMA male Cable, 60cm (24")	1	DC - 18 GHz	1.3:1 @ 18 GHz
BNC male to SMA female	1	DC - 4 GHz	1.30:1 @ 4 GHz
BNC female to SMA female	1	DC - 4 GHz	1.30:1 @ 4 GHz
N type male to SMA female	1	DC - 11 GHz	1.30:1 @ 11 GHz
N type female to SMA female	1	DC - 11 GHz	1.30:1 @ 11 GHz

**GENERAL ACCESSORIES**  
Power Supplies & Spectrum Analyzers

**Power Supply Accessory Kit**

TLPS

The TLPS accessory kit combines safety and functionality. A must have for anyone who uses a power supply, this kit is ideal for use with power supplies in educational, service and maintenance, and manufacturing applications.

- High capacity silicone jacketed leads
- Connection adapters
- Medium and large insulated alligator clips
- Black and red components
- Sense lead included



Description	Qty.	(IEC Rating)	Voltage Current Max.
Retractable Leads, 120cm (48") (colors)	*2	600 V CAT II	25 A
6/4mm Spade Lug Adapters, (colors)	*2	33 Vdc/ 70 Vac	36 A
Standard Alligator Clips, (colors)	*2	300 V CAT I	3 A
4mm Banana Plug Adapters (colors)	*2	33 Vdc/ 70 Vac	36 A
Insulated Alligator Clips, (colors)	*3	600 V CAT IV	36 A
Sense Lead Pair, 1 m (Black & Red)	1	33 Vdc/ 70 Vac	3 A

\* Colors: Black & Red

**General Purpose Universal Coaxial Adapter Kit**

CT2701A

The CT2701A provides a convenient solution for most interconnection needs. This adapter kit, with its 6 universal adapter, allows assembly of hundreds of different coaxial adapters: male to male, female to female, male to female, in-series and between-series for BNC, TNC, N-Type, F, RCA, SMA, UHF and Mini-UHF.

Description	Qty.
Universal Adapters	6
BNC male Adapters	2
BNC female Adapters	2
F male Adapter	1
F female Adapter	1
N Type male Adapters	2
N Type female Adapters	2
RCA male Adapter	1
RCA female Adapter	1
SMA male Adapter	1
SMA female Adapter	1
TNC male Adapters	2
TNC female Adapters	2
UHF male Adapters	2
UHF female Adapters	2
Mini-UHF male Adapter	1
Mini-UHF female Adapter	1



- Convenient interconnection kit
- BNC, TNC, N, SMA, RCA, F, SMA & Mini-UHF connectors
- Tarnish resistant nickel finish
- Gold plated center contacts
- Zippered storage case



**General Purpose Power Supply Accessory Kit**

CC 545

The CC 545 kit provides most everything needed to put a bench power supply to work.

- High capacity retractable sheath silicone jacketed leads
- Connection adapters
- Extra-large insulated alligator clips
- Black, red and green components
- Coaxial accessories for RF testing
- Storage case

Description	Qty.	(IEC Rating)	Voltage Current Max.
Retractable Lead, 100cm (40"), Black	*3	600 V CAT II	36 A
6/4mm Spade Lug Adapter, Black	*3	33 Vdc/ 70 Vac	36 A
BNC Cable Assembly, 100cm (40")	1	500 Vrms	3 A
BNC female to Double Banana Plugs	1	500 Vrms	3 A
Banana Plug Adapter, Black	*3	33 Vdc/ 70 Vac	36 A
BNC male to Double Binding Posts	1	500 Vrms	3 A
Insulated Alligator Clip, Black	*3	600 V CAT IV	36 A

\* Colors: Black, Red & Green

**5A Banana Plug Power Supply Cables**

TL 5A



Description	Qty.	IEC Rating	Voltage Current Max.
Leads, 4mm Banana Plug Leads, 100cm (40")	*2	33 Vdc/ 70 Vac	5 A

**30A Power Supply Cable**

TL 30

- #10 Spade lug to large battery clip



Description	Qty.	IEC Rating	Voltage Current Max.
Cables, #10 Lug to Battery Clip, 75cm (30")	*2	33 Vdc/ 70 Vac	30 A

## SUPPORT & SERVICE

**At B&K Precision, we're committed to providing excellent product support and customer service to both current and future users of our products, and strive to continuously improve our operations. We're regularly upgrading our existing capabilities and services, and adding new methods of support to meet the changing needs of our valued customers.**

### Technical support

To help our customers determine quickly and efficiently which instruments best fit their application and budget, we provide comprehensive and growing resources on our website such as: datasheets, user manuals, high resolution product images, selection guides and tools, software, videos, application notes, product guides, and "where to buy" information. If you can't find the information you are looking for using our website, you can call us and talk to an experienced engineer with in-depth knowledge of our products who will be able to discuss your application and requirements.

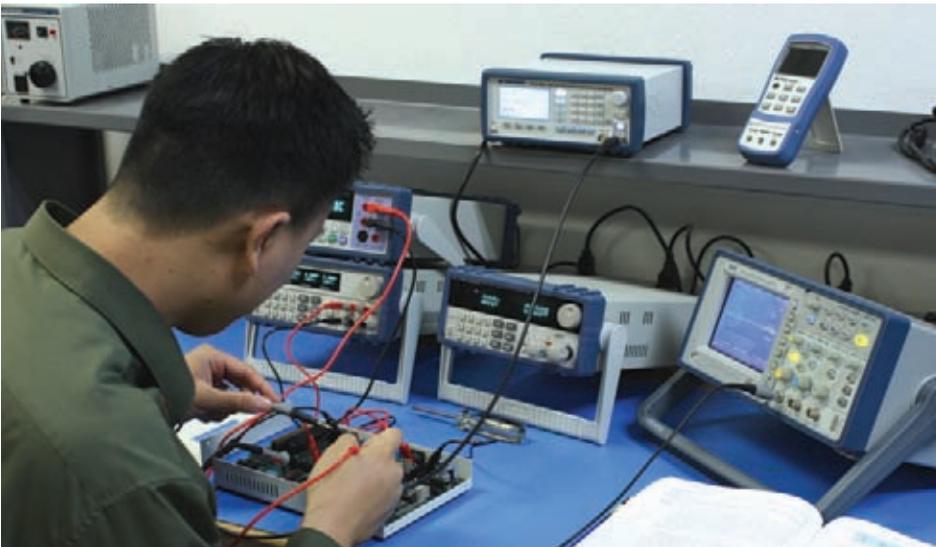
If you need help with an instrument you've already purchased, we are here to assist you with product setup, usage or troubleshooting. You can find additional support by browsing our knowledge base or you can contact us directly via email or phone, which are answered in a timely manner by a qualified engineer.

### Calibration and repair

Every new B&K Precision instrument comes standard with a 1, 2, or 3-year warranty against defects from the original date of purchase. Our warranties are valid worldwide, and we provide service and support through our global network of partner companies and dedicated service centers to guarantee your satisfaction.

The following calibration and repair options are currently available: NIST traceable calibration with or without data, warranty repair with a guaranteed turnaround time of 10 business days (excluding shipping time to/from B&K Precision, Yorba Linda, CA, USA), reasonably priced out-of-warranty instrument repair with fixed prices, and pre-paid calibration packages.

We make every attempt to support our customers even long after a product has been discontinued. Our goal is to service and repair B&K products up to 7 years after their obsolescence date, provided spare parts are still available. In many cases, we provide user manuals, calibration procedures, spare parts and schematics for selected discontinued products well beyond the 7-year period.



Connect with us via Twitter, YouTube, RSS feed and our B&K News outlets



Visit our website for full support, service and calibration options.

## ABOUT B&K PRECISION

### Introduction

For more than 50 years B&K Precision has provided test and measurement solutions to customers from wide-ranging fields including research and development, product design, industrial maintenance, electronic field service, production line testing, and the educational community, among others. Universities and technical schools worldwide have made our instruments standard equipment in their training programs.

Since 1951 the B&K Precision name has represented quality, consistency, and value. We take pride in supplying outstanding products and excellent service at fair prices. Full certification by the International Organization for Standardization (ISO 9001:2008) reflects our commitment to excellence. Our mission is to maintain the standards that have built our reputation, develop new products to meet advancing needs, and continue providing the products and service our customers have come to trust.

We stand behind every product we ship. Our warranties are valid worldwide, and we provide global service and support to guarantee your satisfaction. Our offices in North America, Europe, and Asia work with an international network of authorized distributors to ensure prompt delivery and excellent customer support.

B&K Precision engineers design and use the equipment we make, so we have a personal commitment to crafting well-designed products that deliver the results you need quickly and accurately. Our engineering and design teams constantly work to improve our current product families and develop new products to meet the industry's ever-changing demands.

B&K offers a complete range of general testing and measurement instruments. Our core products include power supplies and DC electronic loads, signal generators (especially function and arbitrary generators), component testers, oscilloscopes, spectrum analyzers, and multimeters. We provide a full complement of device programmers, video and cable testers, electrical and battery testers, and environmental testers. We also produce a comprehensive array of probes, leads, adapters, and additional accessories that make testing easier.

Our products are backed by warranties covering parts and labor, effective worldwide. Our in-house technicians work directly with you to provide any necessary calibrations or repairs, ensuring optimum performance.

### History

B&K Precision helped pioneer the electronic testing industry, and like so many early electronics firms, B&K started in a garage. By 1948, when Americans had begun buying televisions in large numbers, Chicago entrepreneur Carl Korn and his partner Philip Ban responded to the need for maintenance of often-unreliable sets. Frustrated by a lack of equipment to easily test television components, Ban and Korn began making their own devices and opened Central Television Service Company. They soon had a thriving business selling CRT rejuvenators and vacuum tube testers to other television service shops. By 1951, Korn had developed what would become B&K Precision into a company that had branched out into other areas of electronic testing and measurement. B&K engineers broke new ground, earning several patents in the field of television test equipment, and rapidly pushing the company to become a worldwide leader in electronic measurement.

In 1961, Carl Korn placed B&K Precision under an umbrella corporation, Dynascan, comprising a variety of electronics firms. One of those companies, Cobra Electronics, came to dominate the Citizen's Band (CB) radio phenomenon. Choosing to focus on radios, Korn sold B&K Precision. Through an ensuing series of ownership transitions B&K continued to produce high-quality testing and measurement products.

In 1996, engineer Victor Tolan, headed up a new ownership team for B&K Precision that launched a greatly expanded product line. The company also expanded upon its American base to better serve international customers. Company headquarters moved to southern California to provide improved service to Asia. In 2004 B&K expanded its presence in Europe through the acquisition of Sefram Instruments to better meet customer needs in the region.

B&K Precision has come a long way from its days in Carl Korn's garage, but holds fast to the business ideals of innovation, flexibility, and solid customer service that have guided us from our humble beginnings in America, while reaching out to embrace the rapidly expanding global marketplace. We now provide service and support on four continents, and our design team draws upon resources in places as wide-ranging as Romania, Israel, and Taiwan.

### B&K family of companies

#### *North America – B&K Precision*

Our headquarters in Yorba Linda, California house most of our administrative and executive functions including research and design, customer service and repair, and sales and marketing. The California warehouse ships to North, Central, and South America, and our service center provides our customers with live, one-on-one support.

#### *Europe – Sefram*

Our European customers have become most familiar with B&K through our Sefram subsidiary. Sefram's offices in St. Etienne, France currently support customers in Europe, the Middle East, and Africa.

#### *Asia – ITECH and Lodestar*

Engineers in Asia know us through our ITECH and Lodestar brands. Offices in Nanjing and Taipei provide distribution and service throughout Asia, as well as the Middle East and Africa.

### Our distribution partners

An extensive network of independent distributors offers B&K Precision products around the globe. Visit our website to find your local authorized distributor, and even view available inventory from participating distributors. You can buy in confidence, knowing that all our products carry B&K's warranty, and worldwide service and support.



As B&K Precision keeps growing, we continue to uphold the standards we set more than a half-century ago even as we find new answers to our customers' needs. Whether you require measuring devices for a new venture; testing equipment to ensure standards adherence; technology for teaching budding young scientists—or instruments for test and measurement challenges that depend on quality and accuracy, B&K Precision Corporation has solutions.