B+K PRECISION

2026

DC Electronic Load Selection Guide

Unique solutions for DC power testing

DC Electronic Load Solutions from B&K Precision

For more than seven decades B&K Precision has provided reliable test and measurement instruments with global service and support. We offer a wide selection of DC electronic loads from simple 150 W to 6 kW performance models. This selection guide will help you identify a model that best meets your testing needs.

Table of contents

Finding the right DC electronic load

Start by considering the common selection criteria for electronic loads:

- Form factor
- Maximum rated voltage, current, and power
- Operating modes (CC, CV, CR, CW)
- Transient mode speed
- List mode function
- Protection features
- Available interfaces for remote control

ElectriKit

A helpful tool for electricians, technicians, engineers, students, hobbyists and anyone dealing with electrical power.

Key Features

- Calculate DC power and single or three-phase AC true power, reactive power, and apparent power
- Delta-wye transformation, voltage drop, AWG size, THD, horsepower, and battery life calculators
- Ampacity table for insulated conductors per NEC Table 310.16

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Category Overview Chart

B&K Precision offers basic, value, and performance loads with various features and capabilities. This category overview chart provides a high-level overview of available models and how they compare.

Category		Basic	Value			Performance				
Model / Series		8540	8500B Series		8550 Series	8600/B Series			HVL Series	MDL4UB Series
Power Range		150 W	150 - 600 W	1500 W	175 / 350 W	150 - 250 W	0.75 - 2.5 kW	6 kW	2 / 3 / 6 kW	200 - 600 W [1]
Products in this Category		1	4	1	2	3	6	1	7	7 modules
Channels		1	1		1	1			1	1 - 16 [1]
Form Factor		Compact	2U half-rack	2U	2U half-rack	2U half-rack	3U	6U	3U / 5U	4U
Operating Modes										
CV, CC, CR		√	√	√	√	√	√	√	√	√
CW			√	√	√	√	√	√	√	√
Protection										
OVP, OCP		√	√	√	√	√	√	√	√	√
OPP, OTP			√	√	√	√	√	√	√	√
Reverse Voltage			√	√	√	√	√	√	√	√
Features										
List Mode		√	√	√	√	√	√	√	√	√
Remote Sense			√	√	√	√	√	√	√	√
External Analog Control & Monitor						√	√	√	√	√
Adjustable Slew Rate			√	√	√	√	√	√	√	√
Trigger	Manual		√	√	√	√	√	√	√	√
	Bus		√	√	√	√	√	√	√	√
	External		√	√	√	√	√	√	√	√
	Timer		√	√		√	√	√		√
	Hold		√	√	√	√	√	√	√	√
Built-in Tests										
Short Operation		√	√	√	√	√	√	√	√	√
Battery Discharge			√	√	√	√	√	√	√	
CR LED			√	√	√	√	√	√	√	
Remote Interfaces										
USB			√ √	√		√	√	√	√	√
RS232				√	√	√	√	√	√	√
GPIB						√*	√*	√	√	√
LAN									√	√
Software										
Operating Software			√	√	√	√	√	√	√	√
NI Certified LabVIEW™ Drivers			√	√	√	√	√	√	√	√

√√ Using included adapter

√* GPIB optional

(1) Up to 4800 W max power with fully populated MDL4U001 with MDL4U002 mainframe extension. Up to 16 channels when using dual input modules.

Performance

High Voltage

HVL Series High Voltage DC Electronic Loads

The HVL Series DC electronic loads offer a wide operating voltage up to 1000 V and high power density providing 6 kW in a 5U form factor. Suitable for ATE system applications, this series supports a variety of dynamic loading conditions for evaluating DC-DC converters, batteries, battery chargers, photovoltaic arrays, and other high power DC sources.

In addition to CC/CV/CR/CW operating modes, the HVL Series features continuous, pulse, and toggle transient operations to precisely switch between two load levels. Advanced list mode programming makes it easy to set up and execute complex load sequences from the front panel. For applications requiring more power, up to 10 identical HVL Series models can be combined in parallel to increase total sink capabilities to 60 kW.

Operating software provides remote instrument control and monitoring from a PC. Separate battery test software simplifies battery discharge testing with data logging. Built-in remote PC interfaces include USB (USBTMC-compliant), LAN, RS232, and GPIB supporting SCPI commands. The front panel USB host port enables data logging directly to a connected flash drive.

Special applications

The HVL Series wide operating voltage range and high power capabilities make it a comprehensive solution for electric vehicle (EV) batteries, on-board EV charger, and charging station test applications.

Power	2 kW	3 kW			6 kW		
Model	HVL150250	HVL600150	HVL80075	HVL100025	HVL600300	HVL800150	HVL100050
Rated Voltage	150 V	600 V	800 V	1000 V	600 V	800 V	1000 V
Rated Current	250 A	150 A	75 A	25 A	300 A	150 A	50 A
Form Factor	3U				5U		

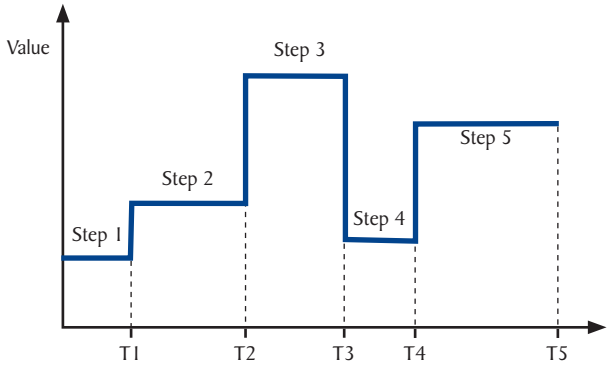
Features & Benefits

- High power density up to 6 kW in a 5U form factor
- CC/CV/CR/CW operating modes
- Continuous, pulse, and toggle transient operation
- Transient mode speed up to 10 kHz in CC mode
- Thermostatically-controlled fans for quiet operation
- Advanced list mode programming
- Adjustable loop response speed
- Overvoltage (OVP), overcurrent (OCP), overpower (OPP) protection, reverse voltage, and key lock function
- Short-circuit test
- Adjustable voltage/current slew rate
- Soft start function to prevent sudden voltage/current spikes
- Oscillation protection
- Front panel USB host port for logging measurement data
- Save/recall instrument settings to internal memory
- External analog control and monitoring
- Operating software and battery test software provided
- 4.3-inch LCD screen
- USB, LAN, RS232, and GPIB interfaces standard
- LabVIEW™ driver provided
- Remote sense
- Rack-mount brackets with handles included
- cTUVus certification mark fulfills CSA and UL safety standards

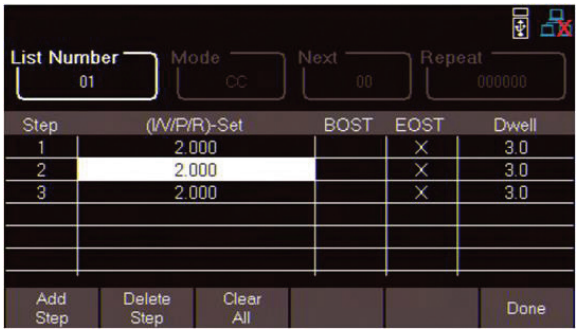
High Voltage

Advanced list mode

The HVL Series list mode is highly configurable for generating precise load sequences.

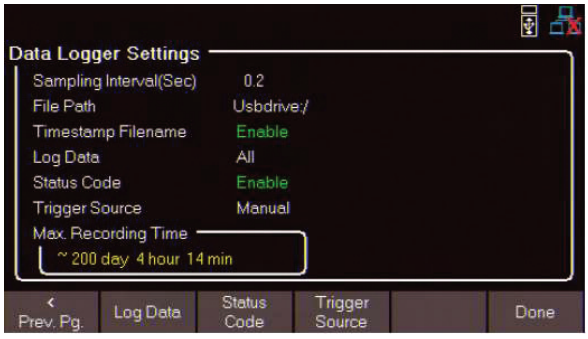


Each list mode program contains up to 100 user programmable steps. Save up to 10 list mode programs directly to internal memory for quick recall. Step parameters include level value, step duration, and step triggers. List mode programs can be set to repeat a maximum of 100,000 times. BOST / EOST (Beginning / End of step Trigger) can be enabled for any step in the list to generate output triggers for synchronizing events with other externally connected instruments. List mode programs can be configured and run from the front panel or remotely using the provided application software.



List mode configuration menu

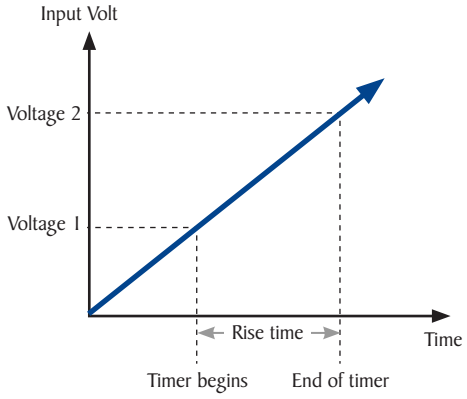
Direct data logging



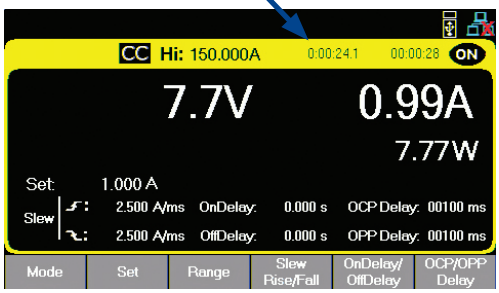
Log voltage, current, or both at a user-defined sampling interval adjustable from 0.2 seconds to 5 minutes directly to an external USB flash drive. Data points are saved as a CSV file with date and time stamp.

Rise and fall time measurement

The HVL Series can measure the rise or fall time from a specified start and stop voltage level of the measured input without the need for an external oscilloscope. The figure below illustrates how rise time is measured based on the two user-configured voltages.

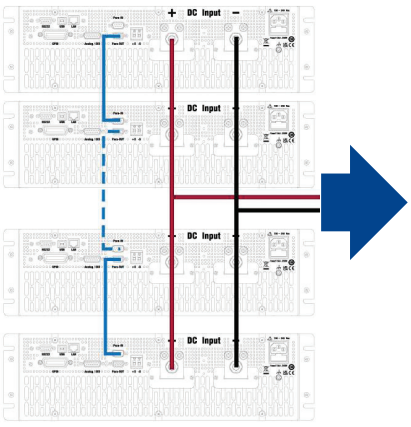


The resulting rise/fall time measurement is displayed on screen with 0.1 s resolution.



Parallel operation

For applications requiring more power, up to 10 identical HVL Series dc load models can be connected in parallel to increase the maximum sink power to 60 kW. Once configured, the connected units will display voltage and current of the complete system.



Sink up to 60 kW with 10 instruments connected in parallel.

Performance

Performance DC loads range in power from 150 W to 6000 W and offer high measurement accuracy, fast transient mode speeds, and a wide selection of remote PC interfaces. Models in this category are available in modular (multi-channel) or stand-alone (single-channel) configurations.

Modular

MDL4UB Series Modular Programmable DC Electronic Loads

The MDL4UB Series is a multi-channel modular programmable electronic load system. Seven different modules of programmable DC loads ranging in power from 200 W to 600 W provide the flexibility to test a wide range of power sources from multi-output DC power supplies to batteries, fuel cells, and photovoltaic arrays.

The mainframe has four slots that can be configured with any combination of modules up to 2400 W (up to 4800 W with mainframe extension).

The high-performance electronic load modules of the MDL4UB Series are capable of operating in constant current (CC), constant voltage (CV), constant resistance (CR), and constant power (CW) mode, which uses DSP technology to simulate non-linear loads and realistic loading behavior.

USB | LAN | RS232 | GPIB

Features & Benefits

- Power range up to 2400 W
- Voltage range up to 600 V
- Current range up to 120 A
- CC/CV/CR/CW operating modes
- Adjustable slew rate in CC mode
- Removable modules for easy system configurability
- Transient mode up to 25 kHz
- Support for up to 16 channels using dual channel modules with mainframe extension
- Operate identical modules in parallel mode for high current applications
- Standard LAN, GPIB, USB, and RS232 interfaces with USBTMC/SCPI protocol support
- 101 memory locations to save/recall setting parameters
- Remote sense
- OVP/OCP/OPP/OTP and reverse voltage protection
- Rack-mount brackets with handles included

Power	Input voltage	Input current		No. of channels	CC mode accuracy		CV mode accuracy		Model
		Low range	High range		Low range	High range	Low range	High range	
*150 W / 50 W	80 V	0-3 A	0-20 A	2	±(0.05% + 0.05 % F.S.)	±(0.05% + 0.05 % F.S.)	±(0.025% + 0.025 % F.S.)	±(0.025% + 0.025 % F.S.)	MDL4U102B
200 W	80 V	0-4	0-40	1			±(0.05% + 0.02 % F.S.)	±(0.05% + 0.025 % F.S.)	MDL4U200B
*250 W / 50 W	Ch1 80 V/ Ch2 80 V	0-3 A	0-20 A	2					MDL4U252B
*300 W / 300 W		0-4.5	0-45 A					±(0.05% + 0.02 % F.S.)	MDL4U302B
300 W	500 V	0-3 A	0-20 A	1				±(0.05% + 0.025 % F.S.)	MDL4U305B
400 W	80 V	0-6 A	0-60 A						MDL4U400B
*250 W / 50 W	600 V	0-3 A	0-15 A	2			±(0.025% + 0.025 % F.S.)	±(0.025% + 0.025 % F.S.)	MDL4U502B
500 W	500 V	0-3 A	0-30 A	1			±(0.05% + 0.02 % F.S.)	±(0.05% + 0.025 % F.S.)	MDL4U505B
600 W	80 V	0-12 A	0-120 A		±(0.05%+ 0.1 % F.S.)	±(0.05%+ 0.1 % F.S.)			MDL4U600B

* The MDL4U102B, MDL4U252B, MDL4U302B, and MDL4U502B are dual channel modules where total power is allocated between channels. For example, the MDL4U102B can allocate a maximum of 150 W to either channel up to 200 W total (e.g. 150 W/50 W, 100 W/100 W, 50 W/150 W).

Stand-Alone Programmable

2U half-rack | 3U | 6U

8600/B Series Programmable DC Electronic Loads

The 8600/B Series programmable DC electronic loads provide the performance of modular system DC electronic loads in a compact benchtop form factor. With fast transient operation speeds up to 25 kHz, and high 16-bit measurement resolution and accuracy, these DC loads can be used for testing and evaluating a variety of DC sources such as DC power supplies, DC-DC converters, batteries, battery chargers, and photovoltaic arrays.

The DC electronic loads can operate in constant current (CC), constant voltage (CV), constant resistance (CR), and constant power (CW) mode. This series provides flexible triggering capabilities, analog current control and monitoring, and standard USB (USBTMC-compliant) or RS232 serial interfaces for remote communication. GPIB is available as an option on select models.

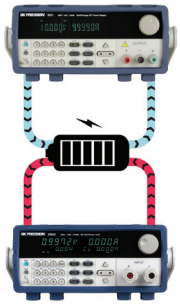
Special Applications

The 8600/B Series provides a built-in battery test mode to measure the ampere-hour (Ah) characteristic of a battery and a unique CR-LED model to simulate the loading behavior of a typical LED.

Battery Test Software

The 8600/B Series is compatible with B&K Precision's free battery test software.

- Discharge a battery
- Set stop conditions
- Log both charge and discharge data
- Calculate capacity in Ah



Features & Benefits

- Power range up to 6000 W
- Voltage range up to 500 V
- Current range up to 720 A
- CC/CV/CR/CW operating modes
- Adjustable slew rate in CC mode
- Transient mode up to 25 kHz
- List mode function, battery test function, automatic test mode, CR-LED mode
- Standard USB (USBTMC-compliant) and RS232 interfaces supporting SCPI commands
- GPIB optional on select models
- OVP/OCP/OPP/OTP including local and remote reverse voltage (LRV/RRV) protection

Input ratings				CC mode accuracy		CC mode resolution		Minimum operating voltage	Dimensions (W x H x D)	Model
Voltage (High)	Current (Low)	Current (High)	Power	Low	High	Low	High	At full scale current (typical)		
120 V	3 A	30 A	150 W	±(0.05 + 0.05%FS)		0.1 mA	1 mA	1.1 V	218 x 90 x 387 mm (2U half-rack)	8600/B*
120 V	6 A	60 A	250 W	±(0.05 + 0.05%FS)		0.1 mA	1 mA	1.1 V		8601/B*
500 V	3 A	15 A	200 W	±(0.05 + 0.05%FS)		0.1 mA	1 mA	4.5 V		8602/B*
120 V	12 A	120 A	750 W	±(0.05 + 0.1%FS)		1 mA	10 mA	1.2 V	439 x 133.3 x 580 mm (3U)	8610/B*
500 V	3 A	30 A	750 W	±(0.05 + 0.05%FS)		0.1 mA	1 mA	3.6 V		8612/B*
120 V	24 A	240 A	1500 W	±(0.05 + 0.1%FS)		1 mA	10 mA	1.5 V		8614
500 V	6 A	60 A	1200 W	±(0.05 + 0.05%FS)		0.1 mA	1 mA	3.6 V		8616
120 V	48 A	480 A	3000 W	±(0.025 + 0.05%FS)		1 mA	10 mA	2 V		8620
500 V	10 A	100 A	2500 W	±(0.025 + 0.05%FS)		1 mA	10 mA	3 V		8622
120 V	72 A	720 A	6000 W	±(0.025 + 0.05%FS)		1 mA	10 mA	1.8 V	439 x 266 x 590 mm (6U)	8625

* Model numbers with suffix B (86xxB) do not include a GPIB interface. See 8600/B Series datasheet ordering information section for details.

Value

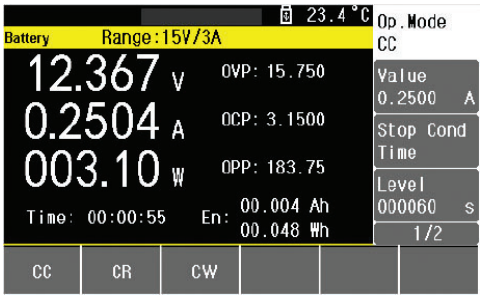
DC Electronic loads in this category provide a cost-effective alternative to performance DC loads with similar features and capabilities.

8550 Series Programmable DC Electronic Loads

The 8550 Series DC electronic loads provide many features and capabilities typically found in performance instruments, at a value price. Capable of sinking 350 W in a compact benchtop form factor, this series is well equipped for testing and evaluating power supplies, DC-DC converters, batteries, battery chargers, and photovoltaic arrays.

Battery discharge test

Safely discharge batteries with configurable stop conditions including voltage and time.



Advanced power supply characterization

The 8550 Series offers several built-in functions for evaluating DC power supplies including:

- Sweep test
- Load regulation
- Protection limit test

Features & Benefits

- Compact 2U half-rack form factor
- Transient mode up to 20 kHz in CC mode
- CC/CV/CR/CW operating modes
- Front-panel remote sense
- OVP, OCP, and OPP protections
- Adjustable voltage/current slew rate
- Operating software and battery test software provided

List mode programming

The 8550 Series list mode is highly configurable for generating precise load sequences.

Direct data logging

Log voltage, current, and power measurement data directly to a USB flash drive.

Input rating				CC mode accuracy	CC mode resolution		Minimum operating voltage	Model
Voltage (High)	Current (Low)	Current (High)	Power		Low	High	At full scale current (typical)	
150 V	3 A	30 A	175 W	± (0.05% + 0.05% FS)	0.1 mA	1 mA	1.5 V	8550
150 V	6 A	60 A	350 W					8551

USB RS232

8514B only

8500B Series Programmable DC Electronic Loads

The 8500B Series programmable DC electronic loads improve upon all aspects of its predecessor while maintaining dependability at a value price. A set of comprehensive functions make these loads a versatile tool for testing and evaluating DC power supplies, DC-DC converters, batteries, battery chargers, and photovoltaic arrays.

Features & Benefits

- Power range up to 1500 W
- Voltage range up to 500 V
- Current range up to 240 A
- CC/CV/CR/CW operating modes
- Adjustable slew rate in CC mode
- Transient mode up to 10 kHz
- List mode function, battery test function, automatic test mode, CR-LED mode
- OVP/OCP/OPP/OTP including local and remote reverse voltage (LRV/RRV) protection

Special applications

- Performance verification of photovoltaic solar panels
- CR-LED mode to simulate loading behavior and test LED drivers
- Fuel and solar cell tests
- Battery test and power supply evaluations

Input ratings				CC mode accuracy		CC mode resolution		Minimum operating voltage	Interfaces	Model
Voltage (High)	Current (Low)	Current (High)	Power	Low	High	Low	High	At full scale current (typical)		
150 V	3 A	30 A	150 W	±(0.05 + 0.05% FS)		0.1 mA	1 mA	2.5 V	DB9 (TTL) interface with USB adapter	8542B
150 V	3 A	30 A	300 W	±(0.05 + 0.05% FS)		0.1 mA	1 mA	1.4 V		8500B
500 V	3 A	15 A	300 W	±(0.05 + 0.05% FS)		0.1 mA	1 mA	3 V		8502B
120 V	12 A	120 A	600 W	±(0.05 + 0.05% FS)		1 mA	10 mA	2 V		8510B
120 V	24 A	240 A	1500 W	±(0.05 + 0.05% FS)		1 mA	10 mA	2.5 V	USB (VCOM) and RS232	8514B

Basic

Instruments in this category are designed for users requiring a compact form factor at a rock bottom price, and offer the same dependable results without extras such as remote interfaces and triggering capabilities.

150 W DC Electronic Load Model 8540

The 8540 is a very compact, economically priced instrument well suited for simple benchtop, educational, and production floor applications. Despite its small package, the 8540 can reliably test a 5 V power supply to 30 A and do it continuously.

This model is comparable to most stand-alone bench DC loads, yet it does the job at half the price and takes up half the space on your bench.

Features & Benefits

- Easy operation
- Bright, easy-to-read display
- Very compact and light weight
- Constant current (CC), constant resistance (CR) and constant voltage (CV) operation
- Overcurrent (OCP) and overvoltage (OVP) protection
- Short mode to simulate shorts
- Save up to 400 instrument settings

Input ratings				CC mode accuracy		CC mode resolution		Dimensions (W x H x D)
Voltage (High)	Current (Low)	Current (High)	Power	Low	High	Low	High	
60 V	3 A	30 A	150 W	±(0.1% + 0.1% FS)	±(0.1% + 0.15% FS)	1 mA	10 mA	88 x 175 x 282 mm

For many of B&K Precision's programmable DC electronic loads, the following remote communication tools are available:

- PC applications for front panel emulation, test sequencing, or logging measurement data
- Built-in web server to configure, control, or monitor DC electronic loads via a web browser
- NI-certified LabVIEW™ drivers

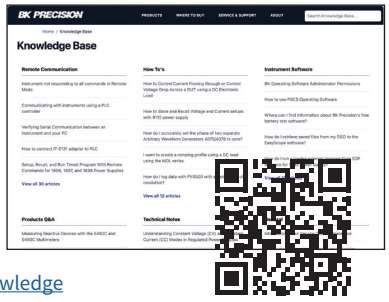
Additional Resources

Browse DC Loads

Browse by category to find the best DC load for your application.
https://www.bkprecision.com/dc-loads

Knowledge Base

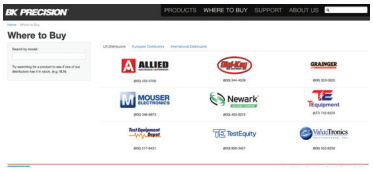
Search and find answers to frequently asked questions, plus a wealth of resources: how-to guides, technical notes and other articles.



https://www.bkprecision.com/knowledge

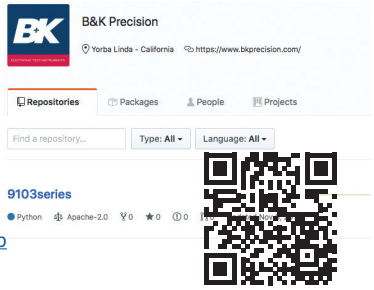
Where to Buy

Search for a product to see if one of our distributors has it in stock.



GitHub

Find and share programming examples and join our online community on GitHub.

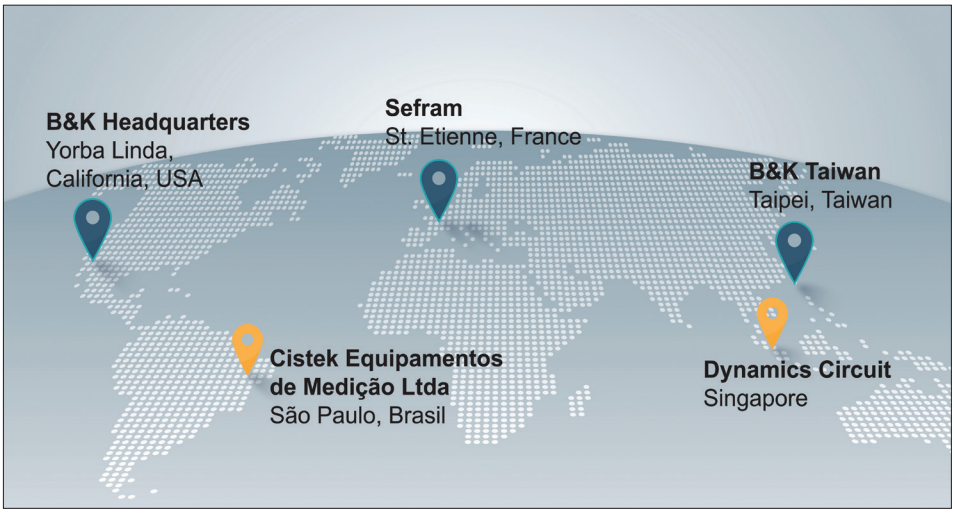


https://github.com/bkprecisioncorp

About B&K Precision

For more than 70 years, B&K Precision has provided reliable and value-priced test and measurement instruments worldwide.

Our headquarters in Yorba Linda, California houses our administrative and executive functions as well as sales and marketing, design, service, and repair. Our European customers are most familiar with B&K through our French subsidiary, Sefram. Engineers in Asia know us through our B+K Precision Taiwan operation. The independent service centers in Singapore and Brasil service customers in Singapore, Malaysia, Vietnam, Indonesia and South America, respectively.



● B&K Precision group member ● Independent service center ● Service center location

Video Library

View product overviews, demonstrations, and application videos in English, Spanish and Portuguese.

http://www.youtube.com/user/BKPrecisionVideos

Product Applications

Browse all of our supported product and mobile applications.

http://bkprecision.com/product-applications

Product specifications and descriptions in this document subject to change without notice.
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