# B+K PRECISION

## Power Source & Sink

## Signal Generation & Analysis

## Component Testing

# Product Catalog

**B&K Headquarters**
Yorba Linda,
California, USA

**Sefram**
St. Etienne,
France

**B&K R&D Center**
Cluj, Romania

**B+K Taiwan**
Taipei, Taiwan

**B&K Brasil**
Sao Paolo, Brazil

**Dynamics Circuit**
Singapore

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

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 test 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. With the acquisition of Motech Industries' instrument division in 2011, we strengthened our expertise in programmable linear and high power switching power supplies.

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 has guided the company from its 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.



*Americas – 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. Our B&K Brasil office supports our expanding customer base in Brazil and other South American countries.

*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 – B+K Taiwan*
Our BK Taiwan plant primarily designs and manufactures programmable power supplies and provides distribution, sales and service support for that region. The independent service center in Singapore services customers in Singapore, Malaysia, Vietnam, and Indonesia.

**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; test 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.

# SIGNAL GENERATORS
## Stimulus signals for design and test

## Arbitrary/Function Generators

| Type | Frequency range | Number of channels | Arbitrary | | | Modulation | | Output range (into 50 Ω) | Interface | Special features | Model | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Waveform length | Sample rate | Vertical resolution | AM / FM | Other | | | | | |
| Performance Arbitrary & Function Generator* | 1 uHz-30 MHz | 1 | 1 Mpts | 200 MSa/s | 14 bit | int/ext | FSK | 10 mV-10 Vpp | USB | marker | 4075B | 51 |
| | 1 uHz-30 MHz | 2 | 1 Mpts | 200 MSa/s | 14 bit | int/ext | FSK | 10 mV-10 Vpp | USB | marker | 4078B | 51 |
| | 1 uHz-50 MHz | 1 | 4 Mpts | 200 MSa/s | 14 bit | int/ext | FSK | 10 mV-10 Vpp | USB, GPIB | marker, summing input | 4076B | 51 |
| | 1 uHz-50 MHz | 2 | 4 Mpts | 200 MSa/s | 14 bit | int/ext | FSK | 10 mV-10 Vpp | USB, GPIB | | 4079B | 51 |
| | 1 uHz-80 MHz | 1 | 16 Mpts | 200 MSa/s | 14 bit | int/ext | FSK | 10 mV-10 Vpp | USB, GPIB | | 4077B | 51 |
| | 1 uHz-80 MHz | 2 | 16 Mpts | 200 MSa/s | 14 bit | int/ext | FSK | 10 mV-10 Vpp | USB, GPIB | | 4080B | 51 |
| Basic Arbitrary & Function Generator** | 1 uHz-10 MHz | 2 | 16 kpts | 150 MSa/s | 14 bit | int/ext | ASK, FSK, PM, PSK, DSB-AM, PWM | 2 mVpp-10 Vpp | USB, LAN, GPIB option | counter, color display | 4053B | 53 |
| | 0.01 Hz-20 MHz | 1 | 1 kpts | 50 MSa/s | 12 bit | int/ext | - | 10 mV-10 Vpp | USB | counter | 4045B | 53 |
| | 0.01 Hz-25 MHz | 2 | 16 kpts | 125 MSa/s | 14 bit | int/ext | FSK, PM, PWM | 10 mV-10 Vpp | USB | counter | 4047B | 53 |
| | 1 uHz-30 MHz | 2 | 16 kpts | 150 MSa/s | 14 bit | int/ext | ASK, FSK, PM, PSK, DSB-AM, PWM | 2 mVpp-10 Vpp | USB, GPIB option | counter, color display | 4054B | 53 |
| | 1 uHz-60 MHz | 2 | 16 kpts | 150 MSa/s | 14 bit | int/ext | | | | | 4055B | 53 |
| | 1 uHz-80 MHz | 2 | 16 kpts | 500 MSa/s | 14 bit | int/ext | | | USB, GPIB option | counter, color display | 4063 | 52 |
| | 1 uHz-120 MHz | 2 | 16 kpts | 500 MSa/s | 14 bit | int/ext | | | | | 4064 | 52 |
| | 1 uHz-160 MHz | 2 | 16 kpts | 500 MSa/s | 14 bit | int/ext | | | | | 4065 | 52 |

Note: All generators produce basic function generator waveforms sine, square, triangle, TTL/CMOS and ramp/pulse and complex waveforms including noise, sin(x)/x, exponential and Gaussian
* = True AWG capable of generating almost any waveform combined with full function generator functionality (two in one)
** = Primarily DDS function generators with basic Arb. capability in terms of memory space, vertical resolution, and maximum output frequency

## Function Generators

| Type | Frequency range | Waveforms | | Modulation | | Sweep lin/log | Burst | Output range (into 50 Ω) | Interface | Special features | Model | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Basic *) | Other | AM/FM | Other | | | | | | | |
| Digital (DDS) | 1 Hz-5 MHz | √ | - | - | - | - | - | 10 mV-10 Vpp | - | - | 4005DDS | 54 |
| | 0.1 Hz-7 MHz | √ | - | - | - | √ | - | 10 mV-10 Vpp | - | - | 4007B | 54 |
| | 0.1 Hz-12 MHz | √ | - | - | - | √ | - | 10 mV-10 Vpp | - | - | 4013B | 54 |
| | 0.01 Hz-12 MHz | √ | - | int/ext | - | √ | - | 10 mV-10 Vpp | USB | counter | 4014B | 54 |
| | 0.01 Hz-20 MHz | √ | - | int/ext | - | √ | √ | 10 mV-10 Vpp | USB | counter | 4040B | 54 |
| Analog | 0.2 Hz-2 MHz | √ | - | - | - | - | - | 100 mV-10 Vpp | - | - | 4010A | 56 |
| | 0.5 Hz-4 MHz | √ | - | - | - | √ | - | 100 mV-10 Vpp | - | - | 4001A | 56 |
| | 0.5 Hz-4 MHz | √ | - | - | - | √ | - | 100 mV-10 Vpp | - | counter | 4003A | 56 |
| | 0.5 Hz-5 MHz | √ | - | - | - | - | - | 100 mV-10 Vpp | - | - | 4011A | 56 |
| | 0.5 Hz-5 MHz | √ | - | - | - | √ | - | 100 mV-10 Vpp | - | - | 4012A | 56 |
| | 0.1 Hz-10 MHz | √ | - | - | - | √ | - | 100 mV-10 Vpp | - | - | 4017A | 56 |
| | 0.2 Hz-20 MHz | √ | - | int/ext | - | √ | √ | 100 mV-10 Vpp | - | counter | 4040A | 56 |

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

## Pulse Generators

| Type | Frequency range | Transition time | Width | Delay | Number of outputs | Model | Page |
|---|---|---|---|---|---|---|---|
| Analog | 0.1 Hz-10 MHz | 12 ns | 50 ns - 50 ms | 0 - 2 μs | 1 | 4030 | 56 |
| Digital | 0.1 Hz-50 MHz | 6 ns - 100 ms | 10 ns - 10 s | 0 - 10 s | 1 | 4033 | 55 |
| | 0.1 Hz-50 MHz | 6 ns - 100 ms | 10 ns - 10 s | 0 - 10 s | 2 | 4034 | 55 |

## Other Signal Sources

| Type | Frequency range | Waveforms | | Modulation | Output range | Model | Page |
|---|---|---|---|---|---|---|---|
| | | Sine | Square | AM | | | |
| Audio | 20 Hz-150 kHz | √ | √ | - | 0-1.2 Vpp | 3001 | 56 |
| Signal | 0.1 Hz-10 MHz | √ | √ | - | 0-4.5 Vpp (no load)(sine), 5 Vpp (no load)(square) | 3003 | 56 |
| | 100 kHz-150 MHz | √ | - | int/ext | 100 mVrms max. | 2005B | 56 |

# Signal Generators

## WaveXpress Software

WaveXpress is a comprehensive stand-alone application with several transformation options, allowing users to easily create complex waveforms. Modify a waveform downloaded from a scope or construct a new waveform using powerful and intuitive editing tools. Quickly download them to your AWG and begin testing your circuits and systems moments later. The WaveXpress program can also be used for general-purpose waveform editing without requiring any instruments to be connected to the computer.

CAPTURE → EDIT → GENERATE → VALIDATE
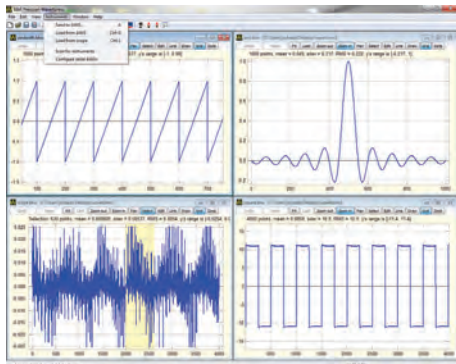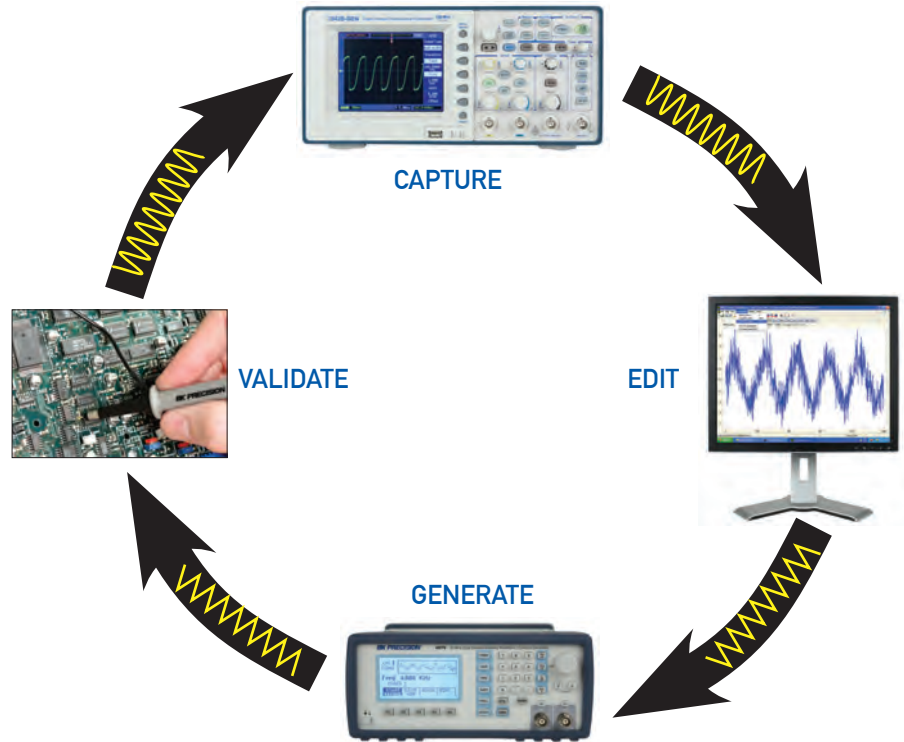
Waveform creation capabilities

## 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
- Generate waveforms from scratch with drawing and editing tools.
- Insert commonly used waveforms and different types of noise
- Numerous transformations for changing a waveform. User-defined transformations can be added 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 functions allow quick experimentation

| Waveforms | Filters | Noise | Transformations | Supported file formats | Supported interfaces |
|---|---|---|---|---|---|
| Sine Square Triangle Sawtooth Pulse Sinc Noise Exponential Rise/Decay | Savitzky-Golay smoothing Low-pass Band-pass High-pass Notch | Beta Chi Square Exponential F Gamma Laplace Lognormal Logistic Normal Rayleigh Uniform Weibull | Linear (ax + b) Gaussian noise Clip Resample Convert to DC (max, min, average, or RMS) Signum Absolute value Sort ordinates Reverse ordinates (mirror about vertical axis) Differentiate Integrate Make positive Normalize amplitude to unity Zero amplitude Negate (mirror about horizontal axis) CSV, ASCII, proprietary BKW file | CSV, ASCII, proprietary BKW file | RS232/USB/ GPIB |

### Supported Instruments

| | |
|---|---|
| Oscilloscopes | 2540C (-MSO) Series, 2550 Series, 2560 Series |
| AWGs | 4045B, 4047B, 4075B - 4080B Series |

### Download Information:
www.bkprecision.com/WaveXpress

### System requirements:
Windows XP or later

NI-VISA Run-Time Engine*

*Download from the NI website link below:
http://joule.ni.com/nidu/cds/view/p/id/1606/lang/en
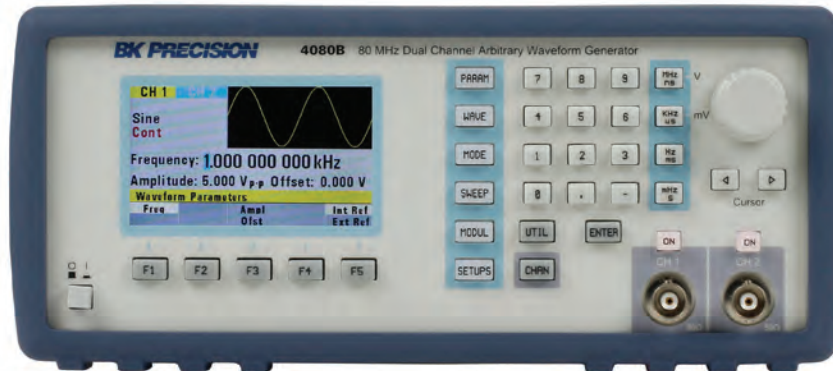
## 4075B Series Arbitrary/Function Waveform Generators

### Dual architecture design

These generators combine the benefits of DDS (direct digital synthesis) and true AWG (arbitrary waveform generator) architectures without the limitations of either. Standard waveforms such as sine, square, and triangle are generated with a DDS chip, delivering great frequency resolution at a low cost. Custom arbitrary waveform generation is implemented with a true point-by-point design, offering improved signal integrity by producing significantly less jitter and distortion compared to a DDS-only architecture.
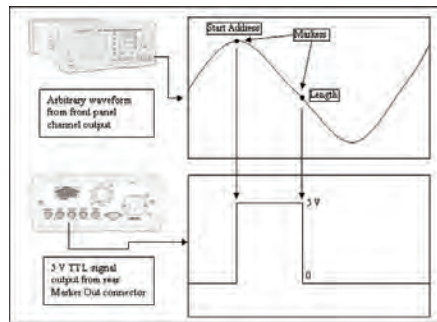
### Programmable markers

The 4075B Series provides fully programmable markers that allow you to generate a positive TTL level output signal at the points specified by address in memory and length up to 4000 points.

### Flexible memory management

The 4075B Series gives users more freedom by allowing the flash memory to be allocated via start address and length parameter set-ups. For instance, a model 4080B user could generate one large 16M-point waveform or up to 49 different waveform setups totaling 16 Mpts in one memory bank. Up to eight non-volatile memory banks are available to store arbitrary waveforms with 14-bit vertical resolution.

### Features & Benefits

- 14-bit, 200 MSa/s, 16 Mpts arbitrary waveform generator
- Linear and logarithmic sweep
- AM/FM/FSK modulation
- Output ON/OFF button
- Gate and burst mode
- Fully programmable markers
- Store/recall up to 50 instrument settings
- SCPI-compliant command set
- Short circuit protection on output

| Model | 4075B | 4078B | 4076B | 4079B | 4077B | 4080B |
|---|---|---|---|---|---|---|
| Channels | 1 | 2 | 1 | 2 | 1 | 2 |
| Sine frequency range | 1 µHz – 30 MHz | | 1 µHz – 50 MHz | | 1 µHz – 80 MHz | |
| Square frequency range | 1 µHz – 30 MHz | | 1 µHz – 50 MHz | | 1 µHz – 60 MHz | |
| Arbitrary waveform length | 1 Mpts | | 4 Mpts | | 16 Mpts | |
| Remote interface | USBTMC | | USBTMC and GPIB | | | |

# Signal Generators
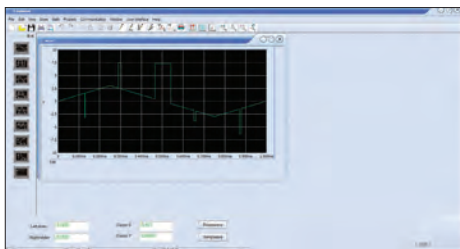Function Generators/AWG



## 4060 Series Dual Channel Function/Arbitrary Waveform Generators

The 4060 Series Dual Channel Function/Arbitrary Waveform Generators are capable of generating stable and precise sine, square, triangle, pulse, and arbitrary waveforms. With an easy-to-read color display and intuitive user interface with numeric keypad, these instruments offer plenty of features including linear/logarithmic sweep, built-in counter, extensive modulation and triggering capabilities, a continuously variable DC offset, and a high performance 14-bit, 500 MSa/s arbitrary waveform generator.

| Model | 4063 | 4064 | 4065 |
|---|---|---|---|
| Sine frequency range | 1 µHz – 80 MHz | 1 µHz – 120 MHz | 1 µHz – 160 MHz |
| Square frequency range | 1 µHz – 40 MHz | 1 µHz – 50 MHz | |
| Weight | 2.8 kg | | |
| Dimensions (W x H x D) | 261 x 105 x 344 mm | | |

### Features & Benefits
- 14-bit, 500 MSa/s, 512k point arbitrary waveform generator
- Two independent channels with one button synchronization
- Large 4.3-inch LCD color display
- Linear and logarithmic sweep
- AM/DSB-AM/ASK/FM/FSK/PM/PWM modulation functions
- Variable DC offset
- Highly adjustable pulse duty cycle from 0.0001% to 99.9999%
- Internal/external triggering
- Gate and burst mode
- 36 built-in predefined arbitrary waveforms
- Store/recall up to 10 instrument settings and 32 user-defined arbitrary waveforms
- Built-in counter
- USB device port (USBTMC-compliant) with front panel USB host port
- GPIB connectivity with optional USB-to-GPIB adapter (model AK40G)
- Short circuit output protection
- LabVIEW drivers available



### Generate waveforms with ease
The provided waveform editing software can be used to create point-by-point arbitrary waveforms via freehand or waveform math functions.



### Synchronization and external triggering
Use the external 10 MHz clock input and output to synchronize your signals to a master time base.



### Advanced pulse generator
The 4060 Series can generate pulses with minimum rise/fall times of 6 ns and maximum rise/fall times of 6 seconds.

## Dual-Channel Function/Arbitrary Waveform Generators

### 4047B



The 4047B is a versatile dual-channel 25 MHz function generator with arbitrary waveform capability. It features a true point-by-point AWG (arbitrary waveform generator) architecture to produce accurate and precise arbitrary waveforms combined with a DDS architecture offering easy-to-use conventional function generator capabilities.
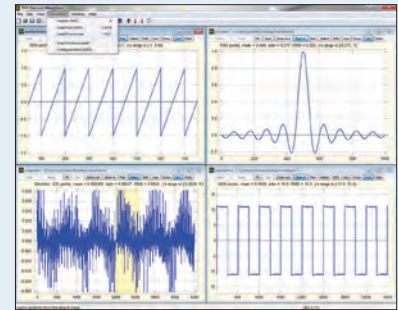
**Front panel arbitrary waveform generation**
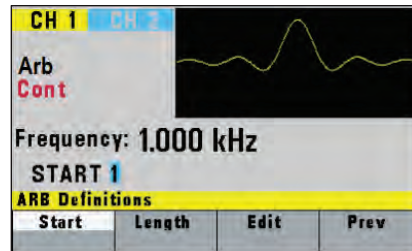


From the front panel, waveforms can be defined from scratch by entering data point-by-point or by loading and modifying predefined waveforms.

**WaveXpress**

**Waveform editing software**



Use WaveXpress to easily generate, edit, and upload custom arbitrary waveforms to the generator via the remote interface. Generate waveforms in the software by importing a text file or define via freehand, point draw, and waveform math functions.

### 4050B Series



The 4050B Series dual-channel function/ arbitrary waveform generators are capable of providing stable and precise sine, square, triangle, pulse, and arbitrary waveforms up to 60 MHz, using a DDS-based architecture.

**Wide variety of modulation schemes**
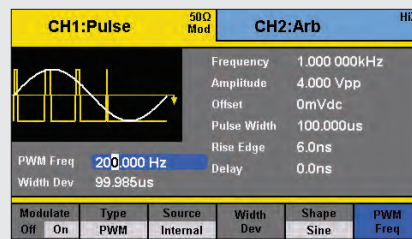


These instruments are capable of many different types of modulation for various applications.

**Harmonics generator function**
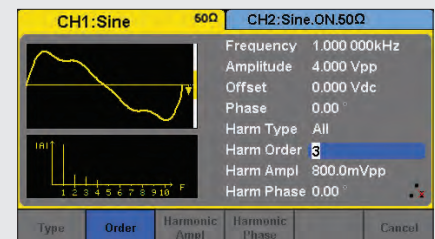


Generate up to 10 harmonics with independent amplitude and phase settings.

### Common Features

- 4.3" color LCD display
- Two fully independent channels with individual output On/Off buttons
- Synchronize the phase of both channels with the push of a button
- Low-jitter square wave generation for simulating reliable clock signals, generating triggers, or validating serial data buses
- Linear and logarithmic sweep
- Variable DC offset
- Adjustable duty cycle
- Internal/external triggering
- Gate and burst mode
- Built-in frequency counter

| Model | 4047B | 4053B | 4054B | 4055B |
|---|---|---|---|---|
| Sine & Square frequency range | 0.01 Hz - 25 MHz | 1 µHz - 10 MHz | 1 µHz - 30 MHz | 1 µHz - 60 MHz |
| Amplitude | 0 - 10 Vpp into 50 ohms for entire frequency range | 0 - 10 Vpp into 50 ohms, ≤ 10 MHz 0 - 5 Vpp into 50 ohms, >10 MHz | | |
| Modulation | AM, FM, FSK, PM, PWM | AM, DSB-AM, FM, PM, ASK, FSK, PSK, PWM | | |
| Vertical resolution | 14 bit | | | |
| AWG architecture | True point-by-point AWG | DDS-based AWG | | |
| Sample rate | 125 MSa/s | 150 MSa/s | | |
| Arbitrary waveform length | 16 kpts | | | |
| Built-in arbitrary waveforms | 9 | 196 | | |
| Dedicated waveform keys | √ | - | | |
| Channel tracking | - | √ | | |
| Harmonics generator | - | √ | | |
| Ext 10 MHz reference I/O | - | √ | | |
| Remote interface | USB (Virtual COM) | LAN, USB device (USBTMC), USB host interface | | |

# Signal Generators

## Digital (DDS) Function Generators

Model 4005DDS

Model 4013B

Model 4045B

The 4005DDS is a versatile 5 MHz function generator using a DDS (direct digital synthesis) design. This model is great for education and other applications that need basic waveform generation.

### Features & Benefits

- Sine, square, and triangle waveforms up to 5 MHz
- Numeric keypad for quick input of frequency
- Adjustable DC offset
- Adjustable duty cycle
- Front panel push button and pull knob can attenuate output by up to 40 dB

The 4007B, 4013B, 4014B, 4040B, and 4045B DDS function generators are capable of generating stable and precise waveforms. All models provide variable output amplitudes from 0 to 10 Vpp into 50 Ω and a continuously variable DC offset to inject signals into circuits at the correct bias level. Standard features include an intuitive menu-driven front panel keypad, rotary control knob, adjustable duty cycle, and comprehensive short circuit and overvoltage output protection.

### Common Features

- Sine, square, and triangle waveforms
- Bright LCD display with waveform preview
- Linear and logarithmic sweep
- Store and recall instrument settings
- Output On/Off button

### Additional Features (4014B/4040B/4045B)

- AM/FM modulation
- Low-jitter square wave generation for simulating reliable clock signals, generating triggers, or validating serial data buses
- Internal/external triggering
- Gate and burst mode (4040B)
- Built-in counter
- USB interface and SCPI-compliant command set
- Remote control application software provided
- Arbitrary waveform generation (4045B)

| Specifications | 4005DDS | 4007B | 4013B | 4014B | 4040B | 4045B |
|---|---|---|---|---|---|---|
| Frequency (sine & square) | 1 Hz - 5 MHz | 0.1 Hz - 7 MHz | 0.1 Hz - 12 MHz | 0.01 Hz - 12 MHz | 0.01 Hz - 20 MHz | 0.01 Hz – 20 MHz |
| Output range (into 50 Ω) | 10 mV - 10 Vpp | | | | | |
| Flatness | ±0.3 dB to 1 MHz, ±1 dB to 5 MHz | ±1 dB to 7 MHz | ±1 dB to 12 MHz | ±0.5 dB to 1 MHz, ±1 dB to 12 MHz | ±0.5 dB to 1 MHz, ±1 dB to 20 MHz | |
| Arbitrary waveform generator | -- | -- | -- | -- | -- | 0.01 Hz – 20 MHz |
| Variable duty cycle | 20% - 80% to 3 MHz for square | 20% - 80% to 1 MHz for square | | 20% - 80% to 2 MHz for square, 1% - 99% in 1% steps for triangle | | |
| Weight | 2.3 kg | 2 kg | | 2.5 kg | | |
| Dimensions (W x H x D) | 279.4 x 101.6 x 297.2 mm | 213 x 88 x 210 mm | | | | |

## 4033 & 4034 50 MHz Programmable Pulse Generators

The 4033 and 4034 are high performance programmable pulse generators ideal for testing digital systems and circuits based on TTL, CMOS, or ECL technologies. Both instruments generate clean and accurate pulses at up to 6 digits resolution with a repetition rate up to 50 MHz, variable pulse widths from 10 ns to 10 s, and pulse delays from 0 ns to 10 s. Output levels are adjustable from -10 V to +10 V, with pulse amplitudes settable from 0.1 Vpp to 10 Vpp into a 50 Ω load.

All parameters, modes, and functions are programmable via the front panel or remote control commands. Additionally, the pulse generators provide selectable complementary pulse and double pulse generation in continuous, triggered, gated, and counted burst modes.

### Features & Benefits

- Repetition rate of 0.1 Hz to 50 MHz
- Flexible trigger modes: Continuous, Triggered (internal, external, manual), Gated Burst and External Width
- Pulse width programmable from 10 ns to 10 s
- Transition times (rise and fall times) variable from 6 ns to 100 ms
- Programmable delay and double pulse
- Predefined amplitude levels for ECL, TTL, and CMOS signals
- Store up to 99 different test setups with auto retention of last power down setup
- Pulse amplitudes up to 10 Vpp into 50 Ω output
- Programmable via GPIB and RS232
- SCPI compatible

### Dual-Channel Model 4034

Users can save cost and bench space with two independent channel outputs. Both channels offer full functionality and all parameters such as pulse width and transition time can be set individually. The channels can also be synchronized with the push of a button.

### Applications

- Automatic Test Equipment (ATE)
- Avionics and radar testing
- Switching power supply testing
- Characterization of active components

| Specifications | 4033 | 4034 |
|---|---|---|
| Channels | 1 | 2 |
| Frequency | 0.1 Hz to 50 MHz | |
| Period | 40 ns to 10 s (25 MHz to 0.1 Hz repetition rate) | |
| Width | 10 ns to (Period – 10 ns) | |
| Delay | 0 ns to (Period – Width – 10 ns) | |
| Duty Cycle | 1% - 99% | |
| Amplitude | 0.1 V to 10 Vpp into 50 Ω load (20 Vpp max into open circuit) | |
| Transition Times | <6 ns to 100 ms variable. Leading and trailing edges settable separately and limited to 20:1 ratio between settings into one of the following ranges: 5 ns-100 ns; 50 ns-1.0 us; 500 ns-10 us; 5.0 us-100 us; 50 us-1.0 ms; 500 us-10 ms, 5 ms – 100 ms | |

# Signal Generators
## Analog & Handheld

### Analog 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.

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

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.

Model 4040A

| Specifications | 4001A | 4003A | 4010A | 4011A | 4012A | 4017A | 4040A |
|---|---|---|---|---|---|---|---|
| Frequency range (sine) | 0.5 Hz - 3 MHz | | 0.2 Hz - 2 MHz | 0.5 Hz - 5 MHz | | 0.1 Hz - 10 MHz | 0.2 Hz - 20 MHz |
| Frequency resolution | -- | 5 digits | -- | 4 digits | | | 5 digits |
| Distortion | <2%, 1 Hz - 100 kHz | | 4% typical at 1 kHz | ≤3% typical at 1 kHz | | | |
| VCG | -- | √ | √ | √ | √ | √ | √ |
| AM/FM modulation | -- | -- | -- | -- | -- | -- | √ |
| Linera/Log Sweep | -- | -- | -- | -- | √ | -- | √ |
| Burst | -- | -- | -- | -- | -- | -- | √ |
| Counter | -- | up to 20 MHz | -- | -- | -- | -- | up to 30 MHz |
| Weight | 2.5 kg | | 1.8 kg | | | | 2 kg |
| Dimensions (W x H x D) | 275 x 90 x 300 mm | | 298 x 114 x 264 mm | | | | 298 x 140 x 264 mm |

### 20 Hz-150 kHz Sine/Square Wave Audio Generator
The 3001 generates low-distortion sine waves at 46 discrete frequencies. Frequency accuracy is 3% from 20 Hz to 100 kHz. The unit is powered by a 9 V battery.

### 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.

### 10 MHz Pulse Generator with 4-digit LED Display
The 4030 pulse generator supplies positive and negative 0.5-5 V pulses into 50 Ω 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.

### 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). An external crystal can be plugged in for precise frequency control. The output is provided via a BNC female connector.

Model 3003

| Specifications | 3001 | 3003 | 4030 | 2005B |
|---|---|---|---|---|
| Frequency Range | 20 Hz - 150 kHz | 0.1 Hz - 10 MHz | 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 (no load) (sine) 5 Vpp (no load) (square) | 1 - 10 V | up to 100 mVrms |
| Output Impedance | 600 Ω | 50 Ω | 50 Ω | 50 Ω - 200 Ω |
| Weight | 200 g | 0.9 kg | 2.5 kg | 2.5 kg |
| Dimensions (W x H x D) | 82 x 150 x 21 mm | 97 x 145 x 38 mm | 26.2 x 11.2 x 31.5 mm | 250 x 150 x 130 mm |

# BK PRECISION

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