Data Sheet

Portable Bench Universal Frequency Counters

1820B Series

USB

The 1820B Series Universal Frequency Counters are compact instruments designed for versatile frequency measurements. Featuring a clear 0.5" LCD, these counters measure a wide frequency range, from 0.001 Hz to 6 GHz (1826B), and support frequency, period, ratio, pulse width, and event counting measurements.

Equipped with a high-quality temperature-compensated internal frequency reference, these counters provide exceptional stability and accuracy, with a low aging rate of ±1 ppm across the entire temperature range.

Multiple input channels allow for precise measurements across a broad spectrum of frequencies. Input A offers flexible signal conditioning, with configurable coupling (AC or DC), input impedance (1 MΩ or 50 Ω), attenuation (1:1 or 5:1), threshold (fully variable) and active edge.

With the 1826B, an additional input C offers an N-type connector with 50 Ω input impedance and frequency range of 2 GHz to 6 GHz.

For frequency, period, and ratio functions the instrument uses a reciprocal counting technique to provide high resolution at all frequencies. 8 significant digits are produced in a 1 s measurement time, 9 digits in 10 s and 10 digits in 100 s.

The 1820B Series also includes a USB interface, enabling remote control and device power via a computer. Additional powering options include continuous AC operation with supplied AC charger or for 24 hours on battery power.

Applications

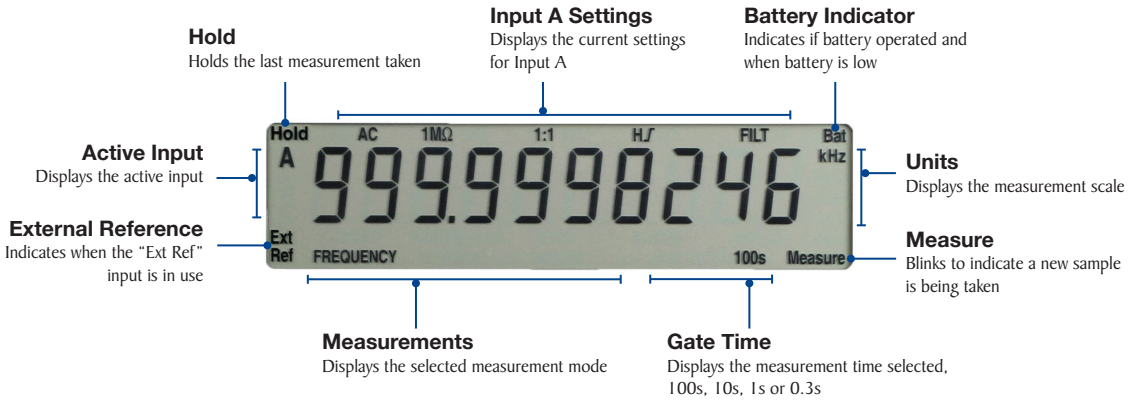
- Electronic component manufacturing
- Verification and validation of oscillators

Features and benefits

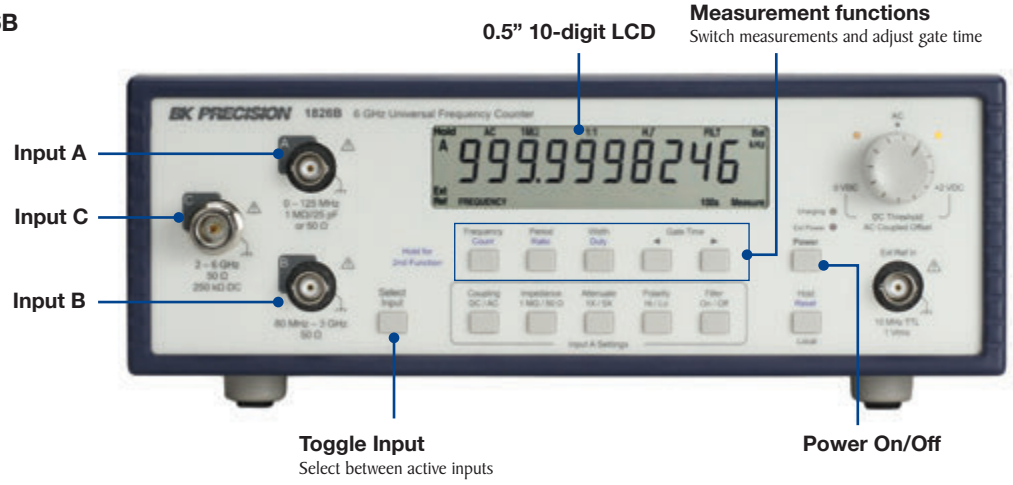
- 3 GHz (1823B) and 6 GHz (1826B) models
- Dedicated microwave channel with N-type connector (1826B only)
- 10-digit display resolution with 0.5" LCD
- ±1 ppm time base stability
- Internal rechargeable batteries allow for up 24 hours of operating life
- Frequency ratio measurement function
- Time interval measurement
- Remote control with USB (VCOM) interface
- Selectable measurement time, 100 s, 10 s, 1 s, and 0.3 s

Model	Range	Resolution	Time Base Stability	Frequency	Period	Totalize	Noise Filter	Battery Power	Remote Interface
1823B	0.001 Hz to 3 GHz	10 digits	±1 ppm	√	√	√	√	24 Hours	USB (VCOM)
1826B	0.001 Hz to 6 GHz								

Front panel



Model 1826B



Model 1823B

Specifications

Model		1823B	1826B
Input specifications			
Input A[1]	Input coupling	AC or DC	
	Input impedance	1 MΩ or 50 Ω	
	Attenuation	1x or 5x	
	Active edge	Rising or falling, or width high or low	
	Low pass filter	Filter in (~50 kHz cut-off) or Out	
	Trigger threshold	DC coupled: 0 to 2 V (1:1 attenuation) or 0 to 10 V (5:1 attenuation) AC coupled: Average ± 50 mV (1:1 attenuation) or ±250 mV (5:1 attenuation)	
	Frequency range	< 0.001Hz to >125MHz (1MΩ, DC coupled) < 30Hz to > 125MHz (1MΩ, AC coupled) < 500kHz to > 125MHz (50Ω, AC coupled)	
	Sensitivity (sinewave)	15 mVrms 30 Hz to 100 MHz, 25 mV to 125 MHz at optimum threshold adjustment	
	Signal Range	1MΩ: DC - 0 to 3.3V (1:1) or 1 to 12V (5:1); AC - up to 1Vrms (3Vpp) (1:1) or up to 4Vrms (12Vpp) (5:1) 50Ω: AC - up to 1V rms above 300kHz	
Input B[1]	Input impedance	50 Ω nominal (AC coupled)	
	Frequency range	< 80 MHz to > 3 GHz	
	Sensitivity (sinewave)	12 mVrms 80 MHz to 2 GHz, 25 mVrms to 2.5 GHz, 50 mVrms to 3 GHz	
	Input signal range	< 0 dBm recommended, + 13 dBm (1 Vrms) maximum	
Input C	Input impedance	-	50 Ω nominal (Ac coupled) in-band. 250 k Ω at DC
	Frequency range	-	2 GHz to 6 GHz (typically 1.8 GHz to 7.5 GHz)
	Sensitivity	-	25 mVrms (-19 dBm) 2 GHz to 6 GHz
	Maximum input signal	-	< + 16 dBm (1.5 Vrms); damage level + 25 dBm
External Reference Input	Input impedance	> 100 kΩ, AC coupled	
	Frequency	10 MHz	
	Signal level	TTL, 3 Vpp to 5 Vpp CMOS or 1 to 2 Vrms sinewave	
Timebase	Measurement clock	50 MHz	
	Internal reference	10 MHz TCXO with electronic calibration adjustment (> ± 8 ppm)	
	Temperature stability	Better than ± 1 ppm over rated temperature range	
	Initial error	< ± 0.2 ppm at 21 °C	
	Aging rate	< ± 1 ppm first year	

(1) Input A and B maximum input voltage: 30 VDC; 30 Vrms 50/60 Hz with respect to earth ground

Specifications (cont.)

Model		1823B	1826B
Measurement functions			
Measurement accuracy		Measurement accuracy is timebase accuracy + measurement resolution + 2 counts.	
Frequency range and period	Input A range	Frequency: 0.001 Hz (DC coupled) to 125 MHz; Period: 8 ns to 100 s (DC coupled)	
	Input B range	Frequency: 80 MHz to 3000 MHz; Period: 333 ps to 12.5 ns	
	Resolution	The displayed resolution (up to 10 digits) depends on the measurement time and input frequency. The resolution of period is 8 digits per 2 seconds. Frequency resolution is the reciprocal of period resolution.	
Pulse width range (Input A only)	Functions	Width high, width low, ratio H:L (high time to low time) and duty cycle 40ns to 1000s	
	Pulse width range	40ns to 1000s	
	Averaging	Automatic within measurement time selected, up to 50 pulses	
	Resolution	20ns for one pulse; up to 1ns or 10 digits with multiple pulse averaging	
Total count (Input A only)	Count range	1 to 9 999 999 999	
	Minimum Width	8ns	
Frequency ratio B:A	Resolution	If the ratio exceeds 10 digits, 6 digits and the exponent are displayed	
General			
Interface		USB (VCOM)	
Display		No. of Digits: 10 digits, Size: 0.5 in (12.5 mm)	
Battery		2500 mAh NiMH cells (x3), Last 24 hours per full charge (typical), Recharge > 4 hours	
AC Adapter		85 to 240 V, 50 or 60 Hz	
Power Consumption		5W max at DC input to unit; 15VA max at AC adapter input (charging)	
Operating Range		+5°C to +40°C, 20% to 80% RH	
Electrical safety		Complies with EN61010-1	
EMC		Complies with EN61326	
Weight		2.1 lbs (950 g) plus 0.4 lbs (170 g) AC adapter	
Dimensions (W x H x D)		10.2 in x 3.5 in x 9.3 in (260 x 88 x 235 mm)	
Warranty		3 years	
Standard Accessories		Universal AC adapter, certificate of calibration, and battery compliance notice	

Ordering Information

Model	Description
1823B	3 GHz
1826B	6 GHz

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 Brazil service customers in Singapore, Malaysia, Vietnam, Indonesia and South America, respectively.

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

Quality Management System

B&K Precision Corporation is an ISO9001 registered company employing traceable quality management practices for all processes including product development, service, and calibration.

ISO9001:2015

Certification body NSF-ISR
Certificate number 6Z241-IS8

NSF-ISR
Registered to ISO 9001

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