

2.4GHz Universal Frequency Counter

Part No. 01FC1823

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Model 1823A

2.4GHz Universal Frequency Counter with Ratio Function

Data Sheet

Model 1823A

2.4GHz Universal Frequency Counter with Ratio Function

The model 1823A is a reciprocal 2.4GHz universal frequency counter that is microprocessor controlled. The LED display can provide eight digits of resolution using the internal 10S gate time. The high accuracy, sensitivity and versatility of this counter make it an extremely valuable instrument to scientists, engineers, experimenters and communications technicians.

- ± 1 PPM Time base stability
- Trigger function
- Frequency ratio measurement function
- Time interval measurement function
- External frequency standard input
- Bright LED display
- Attenuator
- Period
- Total
- Low pass filter
- Line filter
- RS232 Interface



Specifications		model
	1823A	
Range	0.1Hz to 2.4GHz	
Functions		
Frequency	Yes	
Totalize	Yes	
Period	Yes	
Time Interval	Yes	
Ratio	Yes	
Time Base Stability	± 1 PPM	
Data Hold	Yes	
Low Pass Filter	Yes	
Remote Start-Stop	Yes	
Self Test	Yes	

Specifications subject to change without notice

Specifications		model 1823A						
Technical Specifications								
Input A Characteristics								
Frequency Range	0.1Hz to 100MHz (DC Coupled) 30Hz to 100MHz (AC Coupled)							
Sensitivity	0.1Hz to 100MHz: 30mV							
Coupling	AC or DC Selectable							
Impedance	1 M Resistance, Shunted by <40pF							
Attenuator	x 1 or x 10 Switch Selectable							
Low Pass Filter	-3dB Point of 100kHz, Switch Selectable							
Trigger Level	+350mV to -350mV (Preset 0V)							
Slope	Positive or Negative Slope Switch Selectable							
* Note: Trigger error is typically $\pm 0.3\%$ of reading by the number of cycles averaged for input signals having better than 40dB S/N ratio and greater than 100mV amplitude.								
Resolution and Number of Displayed Digit								
Time Base Selector	INT	EXT	INT	EXT	INT	EXT	INT	EXT
Gate Time	0.01S		0.1S		1S		10S	
Number of Displayed Digit	5	6	6	7	7	8	8	9
Frequency (Input A, B)		Resolution						
0.1 Hz-0.99 Hz	10 μ Hz	1 μ Hz	1 μ Hz	0.1 μ Hz	0.1 μ Hz	10nHz	10nHz	1nHz
1 Hz-9.9 Hz	0.1 mHz	10 μ Hz	10 μ Hz	1 μ Hz	1 μ Hz	0.1 μ Hz	0.1 μ Hz	10nHz
10 Hz-99 Hz	1 mHz	0.1 mHz	0.1 mHz	10 μ Hz	10 μ Hz	1 μ Hz	1 μ Hz	0.1 μ Hz
100 Hz-999 Hz	10 mHz	1 mHz	1 mHz	0.1 mHz	0.1 mHz	10 μ Hz	10 μ Hz	1 μ Hz
1 kHz-9.9 kHz	0.1 Hz	10 mHz	10 mHz	1 mHz	1 mHz	0.1 mHz	0.1 mHz	10 μ Hz
10 kHz-99 kHz	1 Hz	0.1 Hz	0.1 Hz	10 mHz	10 mHz	1 mHz	1 mHz	0.1 mHz
100 kHz-999 kHz	10 Hz	1 Hz	1 Hz	0.1 Hz	0.1 Hz	10 mHz	10 mHz	1 mHz
1 MHz-9.9 MHz	100 Hz	10 Hz	10 Hz	1 Hz	1Hz	0.1 Hz	0.1 Hz	10 mHz
10 MHz-99 MHz	1 kHz	100 Hz	100 Hz	10 Hz	10 Hz	1 Hz	1 Hz	0.1 Hz
100 MHz	10 kHz	1 kHz	1 kHz	100 Hz	100 Hz	10 Hz	10 Hz	1 Hz
(Table 1)								
Accuracy	\pm Time base Error \pm Resolution (Table 1)							
Period Range	10 nS to 10 S							
Display	n. u. m., Sec with decimal point							
Total Range	DC to 30 MHz							
Capacity	0 to 999 999 999							
Over Flow	"OF"							
Input B Characteristics								
Frequency Range	0.1Hz to 100MHz (DC Coupled) 30Hz to 100MHz (AC Coupled)							
Sensitivity	0.1Hz to 100MHz: 30mV							
Coupling	AC or DC Selectable							
Impedance	1 M Resistance, Shunted by <40pF							
Attenuator	x 1 or x 10 Switch Selectable							
Low Pass Filter	-3dB Point of 100kHz, Switch Selectable							

Slope	Positive or Negative Switch Selectable							
* Resolution and Number of displayed digit (Table 1): Same as Input A								
* Max. Input Voltage Level (Fig. 1): Same as Input A								
Time Interval (A -> B)								
Range	0.1 μ Sec-10Sec (0.1Hz-10MHz)							
LSD	100nSec							
Resolution	\pm LSD \pm Trigger Error*							
Accuracy	\pm LSD \pm Trigger Error \pm Time base error x T.I.							
Multiplier	1, 10, 100, 1000 (Gate Time: 10S, 1S, 0.1S, 0.01S)							
Ratio (A/B)								
Range	0.1Hz to 10MHz (input A) 0.1Hz to 10MHz (input B)							
Resolution	\pm LSD \pm (B Trig. Error x Freq. A)/N							
Accuracy	\pm 1 Count of A \pm B Trig. Error x Freq. A.							
Input C Characteristics								
Frequency Range	80 MHz to 2.4 GHz							
Sensitivity	25mV from 80 MHz to 150 MHz 20mV from 150 MHz to 2.0 GHz 60mV from 2.0 GHz to 2.4 GHz							
Coupling	AC only							
Impedance	50 Ω \pm 5%							
Max. Input Level	3 Vrms sine wave							
Resolution and Number of Displayed Digit								
Time Base Selector	INT	EXT	INT	EXT	INT	EXT	INT	EXT
Gate Time	0.01S		0.1S		1S		10S	
Number of Displayed Digit	5	6	6	7	7	8	8	9
Frequency (Input C)	Resolution							
80 MHz-99 MHz	1 kHz	100 Hz	100 Hz	10 Hz	10 Hz	1 Hz	1 Hz	0.1 Hz
100 MHz-999 MHz	10 kHz	1 kHz	1 kHz	100 Hz	100 Hz	10 Hz	10 Hz	1 Hz
1 GHz-2.4 GHz	100 kHz	10 kHz	10 kHz	1 kHz	1 kHz	100 Hz	100 Hz	10 Hz
(Table 2)								
Time Base Characteristics								
Type	TCO (Temperature controlled oscillator)							
Frequency	10.000000 MHz							
Stability	\pm 1 PPM (\pm 1 count)							
Line Voltage Stability	Less than \pm 1 PPM with \pm 10% line voltage variation.							
Temperature Stability	\pm 5 PPM from 0°C to 50°C							
Max. Aging Rate	\pm 5 PPM/year							
Int. Std. Out	10 MHz (internal standard frequency output)							
Level	1 Vpp or more.							
Impedance	Approx. 600							
Ext. Std. In	10 MHz (external standard frequency input)							
Level	1.5 Vrms to 5 Vrms							
Impedance	Approx. 600							
Display Characteristics								
Display	Nine Digit 0.56" LED with M/n, k/ μ , Hz, m, Sec, G.T., Hold, and "OF" indicators. Function and Gate time: User Selected. "OF" Display shown when Count exceeds 999 999 999.							
Hold	In Frequency and Period, TOTAL. Mode measurement in progress is stopped, and the last complete measurement is displayed. When Hold is released, a new measurement begins.							

Gate Time	Depending on input frequency <10mS-----Somewhere between 0.9 and 9mS <0.1S-----Somewhere between 9 and 90mS <1S-----Somewhere between 90 and 900mS <10S-----Somewhere between 0.9 and 9S						
Note: Last Measurement Display will remain for 10 Seconds after SIGNAL OFF.							
Dimensions and Weight							
Dimensions (W x H x D)	3.4 x 3.5 x 10.6" (240 x 90 x 270mm)						
Weight	Approx. 5.5 lb (2.5 kg.)						
Equipment Ratings							
Plug and Socket			3 wire AC power plug and 3 wire outlet				
Power & Fuse Ratings							
Input Voltage			Fuse		Power Max.		
103 ~ 126V AC (50/60Hz)			F 0.5A / 250V		15 W		
206 ~ 252V AC (50/60Hz)			F 0.2A / 250V				
Operating Environment							
Temperature	0°C to +40°C (Accuracy Specified at 23°C ± 5°C)						
Humidity	up to 85% RH (Relative Humidity) to 40°C without temperature extremes causing condensation within the instrument.						
Storage Environment							
Temperature	-20°C to +70°C						
Humidity	below 85% RH						
Insulation Category II	Portable equipment of local level.						
Pollution Degree	2						
Protection to IEC 529	Ordinary						
Note: Specifications are subject to change without notice.							