

# 400MHz Universal Frequency Counter

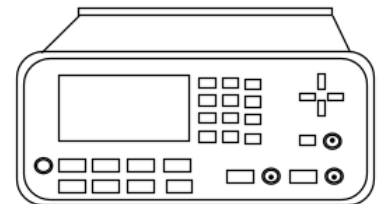


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*12 Digits Resolution - 6 GHz Frequency Measurements*



**BNC** | model | **1105**



Real-Time DSP, Easy LAN Control With Comprehensive GUI

- Up to 6GHz, Standard
- Frequency: 1MHz - 400MHz
- Time Interval Resolution: 40pS
- IEEE488.2 and USBTMC Compliance

# BNC model 1105

A new counter, Model 1105, from Berkeley Nucleonics compares favorably to existing counters. The 1105 has 12 digits of frequency resolution and 40 ps of time interval resolution. The real-time DSP front-end facilitates faster measurement throughput.

We have made the front panel controls more user-friendly. The SCPI software commands are compatible with the most commonly-used counters so you do not have to rewrite your software. Our LAN control feature lets you control one or several 1105's from your computer with displays of the control or measurement function you want.

## Impressive 12 Digits Resolution & 6 GHz Frequency Measurements

The Model 1105 includes a RF Channel 3 with a range from 375 MHz to 6GHz and standard Channels 1 & 2 from 1 mHz to 400 MHz. Up to 20 frequently-used setups may be stored in memory. Our design features full front-end isolation.



## Packed with Many New Features

The BNC Model 1105, ISO 9001 compliant, gives users of existing counters all the measurement capability they are used to, with a few exciting new features. Features include Frequency & Ratio (11 digits/sec.), Time interval, Period (2.5 ns to 1000s), Duty Cycle, Pulse Width, Rise/Fall Time, Peak Volts (100 Hz~300 MHz), Phase, Totalize, with a time base temperature stability of < 1 PPM and aging rate of < 2 PPM per year. We can also measure the peak voltage of incoming waveforms as well.

The BNC Model 1105 offers built-in statistics and math functions. Users can measure and display mean, min/max, delta & standard deviation. These apply to period, frequency, time interval, risetime and peak voltage measurements. Scale & offset can be easily used in compensating for systematic occurrences.

All functions are controlled by either the front panel or via remote control. USB control is standard; GPIB is optional. Data logging to a spreadsheet is easily accomplished with included software (PC Compatible). Of interest is the Ethernet connectivity via your LAN, using your IP address. You can control and display the parameters of several 1105's from your local computer.

## Fast Measurement & Special Applications

In addition to the real-time DSP (digital signal processing) technology, which increases the measurement speeds, a Limit Mode allows users to set margins according to their specific measurements. Go-NoGo commands can be issued via the USB. You may control what happens when a limit is exceeded eg. store current data, stop measuring and generate an output signal to trigger an external device.



## Handy Software & Familiar SCPI Commands

Users can obtain data logs in Excel via USB or via an optional GPIB interface. Our web-support mode allows the 1105 to be connected to your office LAN. Users simply call up an Ethernet address (Default: 192.168.0.247) on a local web browser to access and control the Model 1105. We also provide SCPI commands that are compatible with other manufacturers (Agilent 53132A, etc)

BNC

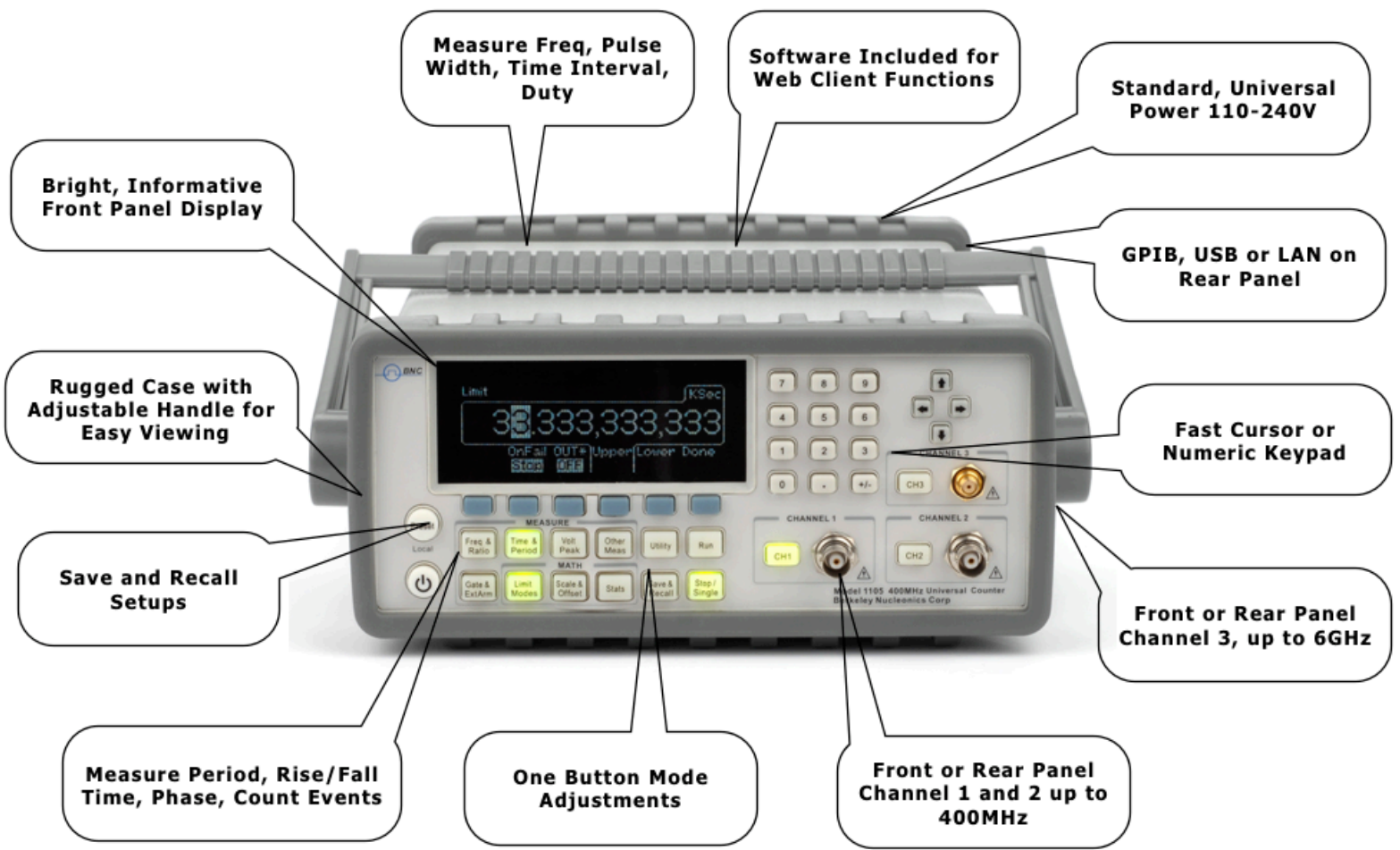
model

1105

<b>Signal Input Range</b>	LVTTTL and TTL compatible	
<b>Timing Restrictions</b>		
<b>Pulse Width</b>	> 50 ns	
<b>Transition Time</b>	< 250 ns	
<b>Start-to-Stop Time</b>	> 50 ns	
<b>Damage Level</b>	12 Vrms	
<b>External Arm Input Characteristics</b>		
<b>Impedance</b>	1 k $\Omega$	
<b>Input Capacitance</b>	17 pF	
<b>Start Slope</b>	Positive or Negative	
<b>Stop Slope</b>	Positive or Negative	
<b>Notes</b>	1. External Arm is available for all measurements except Peak Volts. 2. External Arm is referred to as External Gate for some measurements.	
<b>Internal Time Base Stability</b>		
		Standard (0° to 50°C)
		High Stability Oven (1105-opt01)
<b>Temperature Stability (referenced to 25°C)</b>		$\pm 1 \times 10E-6$
<b>Aging Rate</b>	<b>Per Day</b>	$\pm 5 \times 10E-9$
	<b>Per Month</b>	$\pm 8 \times 10E-10$
	<b>Per Year</b>	$\pm 8 \times 10E-8$
<b>Turn-on stability vs. time (30 min.)</b>		$\pm 2.0 \times 10E-8$ (referenced to 24 hours)
<b>Calibration</b>		Electronic
<b>External Time Base Input Specifications</b>		
<b>Voltage Range</b>	200 mVrms to 10 Vrms	
<b>Damage Level</b>	12 Vrms	
<b>External Time Base Input Characteristics</b>		
<b>Threshold</b>	0 V	
<b>Impedance</b>	1 k $\Omega$	
<b>Input Capacitance</b>	25 pF	
<b>Input Frequency</b>	10 MHz	
<b>Internal vs. External Time Base Selection</b>	<b>Manual</b>	Select Internal or External
	<b>Automatic</b>	Internal used when External not present (default)
<b>Time Base Output Specifications</b>		
<b>Output Frequency</b>	10 MHz	
<b>Voltage</b>	570 mVpp (0 dBm), typical	
<b>Impedance</b>	50 $\Omega$ (typical), AC coupled	
<b>Measurement Specifications</b>		
<b>Frequency, Period Channel 1 and 2</b>	1 mHz to 400 MHz (2.5 ns to 1000 s)	
<b>Trigger</b>	Default setting is Auto Trigger at 50 %	
<b>"Auto" Gate Time</b>	0.1 sec	
<b>STD CH 3</b>	375 MHz to 6 GHz (0.166 ns to 2.6 ns)	



# BNC model 1105



Time	Frequency	Rate	Stop	Considered #	Dist. Time	Count
1.023204	1.000000000000E+01	1.000000000000E+01	2	2	0.2916	1000000.0
1.023210	1.000000000000E+01	1.000000000000E+01	2	2	0.2916	1000000.0
1.023216	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023222	1.000000000000E+01	1.000000000000E+01	2	2	0.2916	1000000.0
1.023228	1.000000000000E+01	1.000000000000E+01	12	12	0.2916	1000000.0
1.023234	1.000000000000E+01	1.000000000000E+01	7	7	0.2916	1000000.0
1.023240	1.000000000000E+01	1.000000000000E+01	1	1	0.2916	1000000.0
1.023246	1.000000000000E+01	1.000000000000E+01	8	8	0.2916	1000000.0
1.023252	1.000000000000E+01	1.000000000000E+01	9	9	0.2916	1000000.0
1.023258	1.000000000000E+01	1.000000000000E+01	5	5	0.2916	1000000.0
1.023264	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023270	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023276	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023282	1.000000000000E+01	1.000000000000E+01	2	2	0.2916	1000000.0
1.023288	1.000000000000E+01	1.000000000000E+01	1	1	0.2916	1000000.0
1.023294	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023300	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023306	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023312	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023318	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023324	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023330	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023336	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023342	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023348	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023354	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023360	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023366	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023372	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023378	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023384	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023390	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023396	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023402	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023408	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023414	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023420	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023426	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023432	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023438	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023444	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023450	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023456	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023462	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023468	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023474	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023480	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023486	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023492	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023498	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023504	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023510	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023516	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023522	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023528	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023534	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023540	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023546	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023552	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023558	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023564	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023570	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023576	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023582	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023588	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023594	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023600	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023606	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023612	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023618	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023624	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023630	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023636	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023642	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023648	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023654	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023660	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023666	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023672	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023678	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023684	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023690	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023696	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023702	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023708	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023714	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023720	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023726	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023732	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023738	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023744	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023750	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023756	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023762	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023768	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023774	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023780	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023786	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023792	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023798	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023804	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023810	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023816	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023822	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023828	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023834	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023840	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023846	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023852	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023858	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023864	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023870	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023876	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023882	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023888	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023894	1.000000000000E+01	1.000000000000E+01	3	3	0.2916	1000000.0
1.023900	1.000000					