



## 5041 Oscilloscope / Timer Calibrator

- PC controlled
- Amplitude 1mV to 200V
- Frequency 0.1Hz to 100MHz
- Time Marker/Period 15s to 10ns
- Bandwidth check up to 600MHz
- Optional 2.2GHz levelled Sweep



### High specification oscilloscope/timer calibrator at an affordable price

The 5041 is a versatile, high accuracy calibrator capable of calibrating a wide range of oscilloscopes and timer/counters to 2.2GHz. It provides a wide range of outputs for amplitude, frequency, period and bandwidth.

Amplitude calibration is achieved by a DC signal or 1kHz square-wave, ranging from 1mV to 200V (2V max for 50 ohm loads). Deviation up to  $\pm 9.99\%$  allows fine adjustment of amplitude and direct read-out of error.

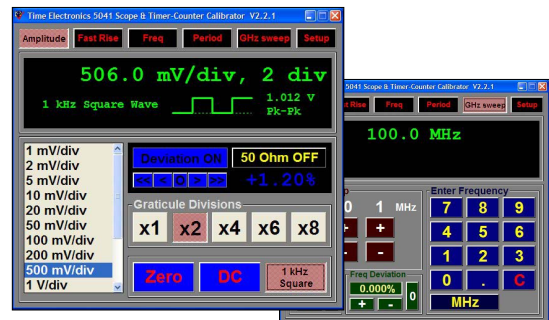
Accurate frequencies are generated from a temperature controlled quartz crystal oscillator. Timing accuracy of 0.1ppm is suitable for most oscilloscopes and timer counters. A precise square-wave output provides a fast rise time of less than 300ps, which allows bandwidth testing up to 600MHz.

### Virtual front panel

The 5041 follows the modern trend of instrumentation that is PC controlled. The Windows based 'Virtual Front Panel' is quick and easy to use.

Communication with the unit is via RS232 (serial) or GPIB, which allows simple integration with Time Electronics EasyCal Software. This also provides the perfect solution for ATE systems.

The 16-character front panel display shows functions and settings for user convenience.



### 2.2GHz Levelled sine-wave option

For precise bandwidth determination and frequency response analysis the 2.2GHz option is available. The ability to sweep the frequency output from 10MHz to 2.2GHz and adjust the amplitude from 400mV to 1.1V pk-pk ensures accurate analysis of oscilloscope input amplifiers.

### Current probe calibration

For calibration of oscilloscope current probes an external adaptor is available. This converts the 5041's amplitude output to current and covers the range 0.1mA to 100mA pk-pk, 0.2% accuracy, DC or 1kHz.

### Rubidium frequency reference

Enhanced timing performance is also available by specifying the rubidium frequency reference option (9762). This option achieves timing accuracies required to calibrate high performance Timer/Counters to 1 part in  $10^{10}$ .

### Calibration made easy

To automate the oscilloscope calibration process the 5041 can be controlled using Time Electronics' EasyCal calibration software. This reduces calibration times, ensures consistent results and produces certificates to international quality standards.

<b>Technical Specifications</b> (Apply for 1 year)	
<b>AMPLITUDE CALIBRATION</b>	
Output per div	1mV to 50V in 1, 2, 5 sequence, 1kHz square-wave or DC.
Graticule divisions	x1, x2, x4, x6, x8. Max output: 200V pk-pk into >500kohm/100pF, or 2V into 50Ω.
Accuracy	1mV-200mV: 0.2%+/-4uV. >300mV: 0.05%. Into 50Ω: 0.25%+/-4uV.
<b>FREQUENCY (TIME BASE) CALIBRATION</b>	
Low Range	0.1Hz to 170kHz (settable in steps equivalent to 1μs intervals). Output: 2Vpk-pk (1Vpp into 50Ω).
High Range	200, 500kHz, 1, 2, 5, 10, 20, 50, 100MHz. Output: 0.8Vpk-pk (0.4Vpk-pk into 50Ω).
Accuracy	10MHz & below: 0.1ppm. 20/50/100MHz: 20ppm.
<b>PERIOD CALIBRATION</b>	
Low Frequency Mode	6μs to 15s (settable in 1μs steps). Output: 2Vpk-pk (1Vpp into 50Ω).
High Frequency Mode	10, 20, 50, 100, 200, 500ns, 1, 2, 5us. Output: 0.8V (0.4V into 50Ω).
Accuracy	100ns - 15s: 0.02ppm +/- 30ps, <0.1ppm. 10/20/50 ns: +/- 50ps jitter, <0.1ppm.
<b>Duty Cycle</b>	
Range	0.01% to 99.99% for periods >20ms. For periods <20ms the % duty cycle resolution is determined by a minimum 2us step. Output level: As Frequency Calibration.
<b>FAST RISE</b>	
Fast Rise Time	Less than 300ps. Allows bandwidth checking up to 600MHz. O/p: 0.4Vpk-pk into 50Ω.
<b>Options</b>	
2.2 GHz sweep	10MHz - 2.2GHz levelled sine wave output. 400mV to 1Vpk-pk, 50Ω output, driving 50Ω load. Frequency Accuracy: 0.1ppm. Amplitude Accuracy: 10 to 200MHz 1%, 200 to 500MHz 4% 500MHz to 1GHz 10%, 1 to 2.2GHz 20%.
Rubidium reference	Rubidium atomic clock frequency reference. Increases accuracy to 1 part in 10 <sup>9</sup> .
Current probe adapter	Battery powered external adapter for checking current probes. 0.1 - 100mA, 0.2% accuracy.
<b>General Specification</b>	
<b>SOFTWARE</b>	
PC Program	An easy-to-use program allows full control of the calibrator from an external PC.
PC Requirement	PC running Windows 98, ME, 2000, or XP. RS232 serial or GPIB interface.
EasyCal	The 5041 is fully compatible with Time Electronics' EasyCal software which includes an in-built driver to allow speedy automatic calibration runs.
<b>PROGRAMMABLE OPERATION</b>	
Interfaces	SERIAL (RS232) and GPIB (IEEE-488).
Commands	A full command set allows complete control of all functions by an external computer.
<b>GENERAL</b>	
Power	100 - 230V AC 50 or 60Hz less than 100W.
Dimensions	43cm wide x 25cm deep x 15cm high (17 x 10 x 6 ins) 7Kg (15 lbs).
Display	16-character, high brightness led, shows function/setting/errors.
Warm up time	30 minutes to full specification

<b>Ordering Information</b>	
<i>Code</i>	<i>Description</i>
5041	Scope and Timer/Counter Calibrator for use with external PC
9769	2.2 GHz sweep
9762	Rubidium frequency reference
9764	Current probe calibration adapter
9728	Rack mount kit (standard 19")
9747	EasyCal Software

Due to continuous development Time Electronics reserves the right to change specifications without prior notice.