

# Scope4pc model : SE440

## 4 channel PC Based Oscilloscope



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Scope4pc model SE440 is a 4 channel Digital Storage Oscilloscope which connects directly to a laptop or a desktop PC (USB port).

A PC based oscilloscope has many advantages when compared to a desktop Oscilloscope. Acquired data can be saved to disk and retrieved later for further analysis, or emailed to a colleague. You can assign colors and labels to each trace. The software also provides automatic measurements, and two sets of calipers can be used to measure time as well as voltage and for visual reference. An automatic disk logging function will repeatedly save captured data to disk (with a time and date-stamp) when the trigger condition becomes true. These files can later be recalled from disk and reviewed on screen or imported to other applications such as Excel.

## **Hardware features and summary:**

The hardware is built using sophisticated, reliable electronics. Most PC based Oscilloscopes use shared resources which results in reduced sample-rate when more than one channel is active. This is very undesirable.

The Scope4pc is using dedicated AD-Converters and Memory for each channel, thus avoiding performance penalties when using all channels simultaneously. The Scope4pc hardware is contained in a small enclosure and can easily be moved, shared by workers, or taken into the field for measurements.

### **1. Deep Memory, 14 bit AD-converters, 40 Msps Sample rate**

Deep memory allows you to acquire incoming signals at a high sample rate even at slower timebase settings. In doing so, you can zoom in/out to view fast signal transients. The Scope4pc can store up to 262144 samples (14 bit each) for each of the input channels. The maximum sample rate is 40 Msps and it is automatically adjusted when timebase is changed.

### **2. Trigger**

While simple trigger functions can be used to capture many common signal conditions, Complex trigger is need to capture data in more difficult situations. The Complex Trigger functions included in the Scope4pc hardware allows you to specify trigger conditions such as;

- Trigger on pulses wider than **xxx**
- Trigger on pulses narrower than **xxx**
- Trigger on the **nth** pulse
- In addition, complex trigger can use one channel as trigger source, or a combination of multiple channels simultaneously.

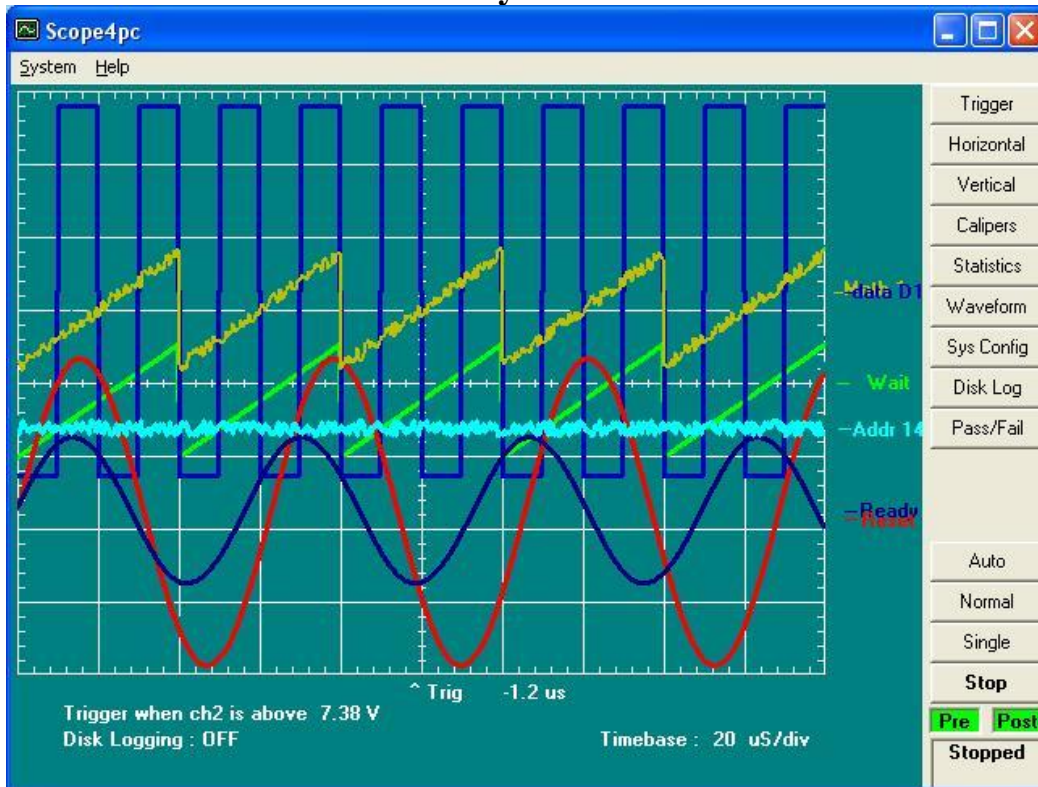
### **3. Trigger Sync Output**

On the back of the Scope4pc is a Trigger Sync Output (BNC). This Digital Output (0 to 3.3V) can be used to drive other equipment such as pulse generators, logic analyzers etc.

### **4. Calibration**

The Scope4pc is calibrated at the factory as part of final test. We use a certified Precision voltage Reference (Geller Voltage Reference) and a HP 3457A (6.5 digit) for precision voltage measurements. The Scope4pc hardware has no adjustments for time related measurements, and all timing related operations are derived from a 40 MHz source. There is no need to send the Scope4pc back to factory for re-calibration.

## Software features and summary:



The software installed in less than a minute and is easy to use. All controls can be hidden for larger screen area (as shown above). The following are some of the software features.

### **1. Chart recorder vs Oscilloscope mode**

The scope4pc software and hardware changes from an Oscilloscope to a chart—recorder (scrolling data) when timebase is set slower than 200 ms/div. Chart-Recorder data is acquired at 200 Sps or slower depending on selected timebase. Slower timebase can be used to collect data for minutes, hours, or days per screen.

### **2. Disk-Logging**

Disk-Logging is used to automatically save acquired data to the computer hard-drive (or network drive). This data can be recalled by the Scope4pc software for further visual inspection or processing. The data is saved in CSV format and can be opened in Excel, Notepad, Word, Matlab, MatCad etc.

### **3. Save/Recall System configurations**

You can save various system setups so that you can quickly recall them later from your PC hard-drive. You can give the configuration files descriptive names, and you can organize them in directories. The configuration file named Default.cfg is loaded every time the Scope4pc software is run.

### **4. Pass/Fail testing**

The Scope4pc software includes 8 configurable Pass/Fail tests. When Pass/Fail testing is turned on, the acquired data will be processed against these tests, and statistics collected. Data can be saved to disk as a result of a test passing, failing or both.

## SE440 Specifications:

Channels	4		
Sampling Rate	40 MSPS per channel		
Buffer Length	256K * 14bits samples per channel		
Digitizers	Dedicated 14 bit ADC per channel, 40 Msps each channel		
Analog Bandwidth	20 MHz (-3 dB)		
VOLT/DIV Ranges	<b>1X probe</b> : 50,100,200,500 mV/div, 1, 2, and 4 V/div <b>10X probe</b> : 500 mV/div, 1,2,5,10,20,40 V/div <b>100X probe</b> : 5,10,20,50, 100,200,400 V/div		
DC gain Accuracy	2% (X1 probe) of full screen		
Input Coupling	AC, DC or GND		
Input Impedance	1 Mohm		
Maximum Input Voltage **	<b>X1 Probe</b> : +/- 20 Volt	<b>X10 Probe</b> : +/- 200 Volt	<b>X100 Probe</b> : +/- 2000 Volt
Time Base	<b>Scope mode:</b> 50, 100, 200, 500 ns/div, 1, 2, 5, 10, 20, 50us/div, 100, 200, 500 us/div, 1, 2, 5, 10, 20, 50, 100, 200 ms/div  <b>Chart recorder mode:</b> 500 ms, 1, 2, 5, 10, 20, 50s/div, 1, 2, 5, 10, 20, 50 s/div 1 ,2 ,5 ,10, 20, 50 min/div 1, 2, 5, 10 hours/div 1 day/div		
Trigger	The Scope4pc can trigger on Channel 1-4 and also from an external trigger input (back of unit). <b>Simple Trigger:</b> <ul style="list-style-type: none"> <li>• Rising/Falling Edge</li> <li>• High/Low level</li> </ul> <b>Complex Trigger:</b> Selectable Trigger conditions: <ul style="list-style-type: none"> <li>• Signal wider than XXX</li> <li>• Signal shorter than XXX</li> <li>• nTh Pulse</li> <li>• Source can be channel 1-4, Etrig or any combination of them.</li> </ul>		
Pre and Post Trigger Buffer	Independently adjustable pre- and post trigger buffers can be up to a combined 256K samples per channel.		
PC Software	Windows Vista, XP, 2000, NT, Me, 98 and 95		
Dimensions	(5.3 wide) x (3.3 height) x (5.9 deep)		
Weight	1 lbs (scope4pc + PSU = 1.5 lbs)		
Supply Voltage	8-15Vdc, (12V dc, 1000 mA power supply included)		
Regulatory	CE Mark - EC Council Directive 2004/108/EC		
Warranty	1year (parts and labor)		

### Note :

1.)

The Scope4pc is mounted in a plastic enclosure and is not water-proof. Thus it is intended for use in an office or laboratory environment where it is not exposed to weather, chemical spills, extreme temperature or harsh environments.

2.)

\*\* The scope4pc is not a differential input device. All measurements should be relative to ground (ground clip of probe).