# VT DSO-2810H Manual


This product is designed to be used by those who have some basic electronics and electrical knowledge. It is absolutely dangerous to connect an unknown external voltage to the VT DSO-2810H unit. Be sure that the voltage to be measured is less than the maximum allowed input voltage.

*Note: VIRTINS TECHNOLOGY reserves the right to make modifications to this manual at any time without notice. This manual may contain typographical errors.*

# TABLE OF CONTENTS



# 1 Installation and Quick Start Guide

## 1.1 Package Contents

A standard VT DSO-2810H Package contains the following items:

1) VT DSO-2810H unit with a hardware bundled Multi-Instrument Standard Software License

2) 2 × 60MHz Oscilloscope Probe PP-80 with two switchable positions: ×1, ×10

3) USB cable (1.05 m)

4) CD (contains the copy-protected Multi-Instrument Software and VT DSO-2810H driver)

## 1.2 Multi-Instrument Software Installation

Insert the installation CD into your computer's CD-ROM drive and follow the instruction on the screen to install the Multi-Instrument software.

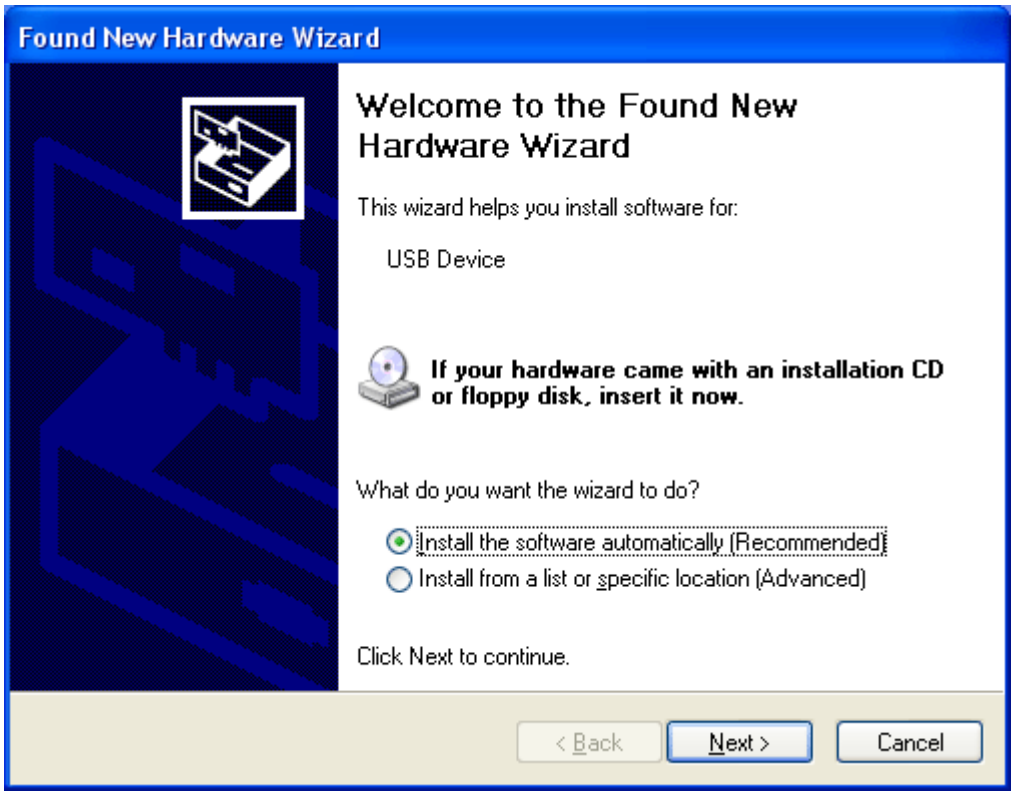
## 1.3 Hardware Driver Installation

### 1.3.1 Installation Procedure

The USB cable has two USB A-type connectors at one end (one is black and the other is red) and one USB B-Type connector at the other end. The black A-type connector should be connected to a USB port of your computer while the B-type connector should be connected to the VT DSO-2810H unit. The red A-type connector should be connected to another USB port of your computer if the USB port with which the black A-type connector connected is not able to provide sufficient power to the VT DSO-2810H unit.

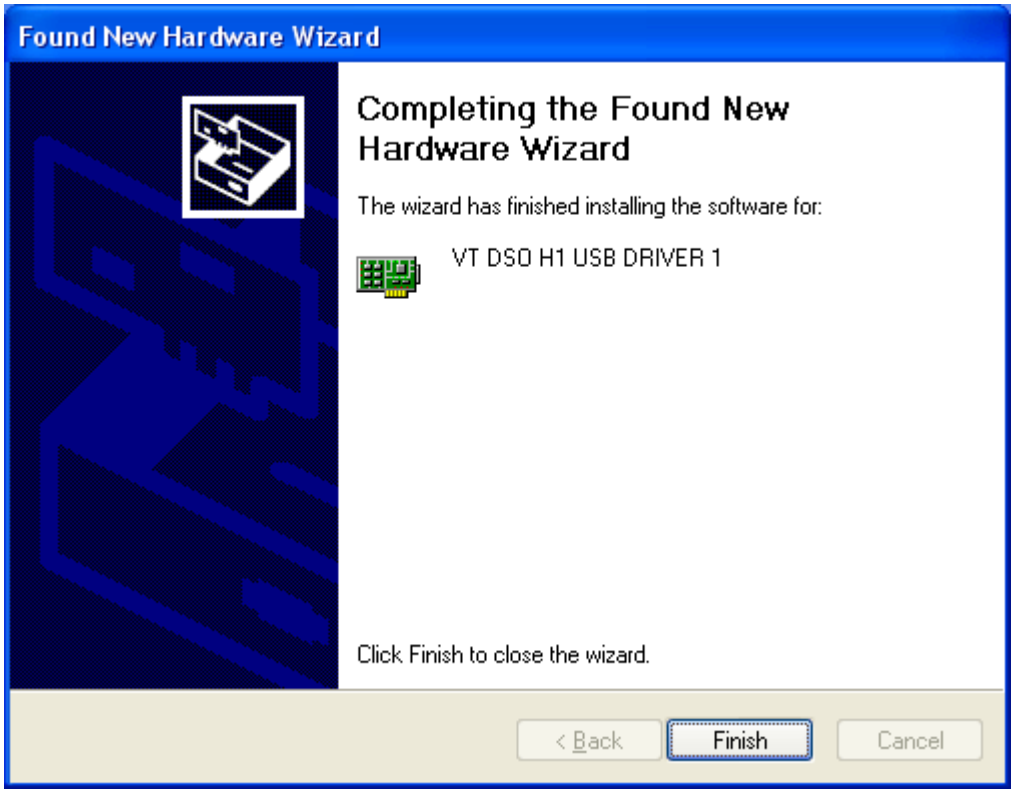
For Windows XP and Vista:

1) Wait for the "Found New Hardware Wizard" dialog pops up. And then select "Install the software automatically (Recommended)" and click "Next".



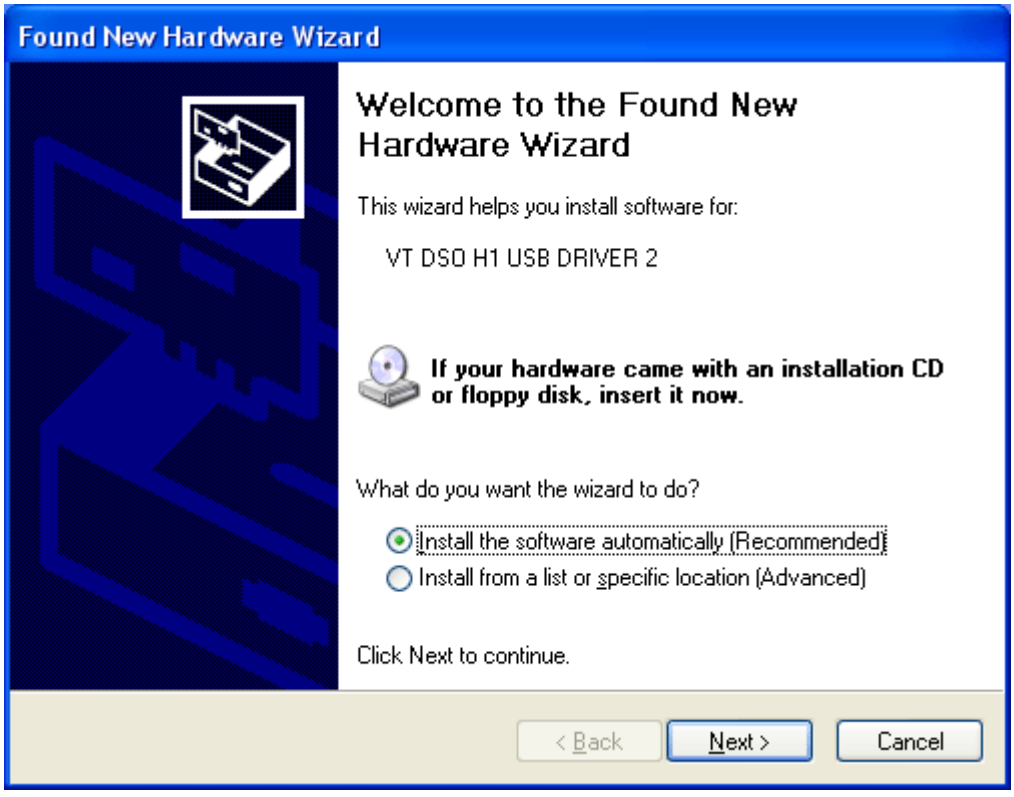

 

2) Click “Finish”.



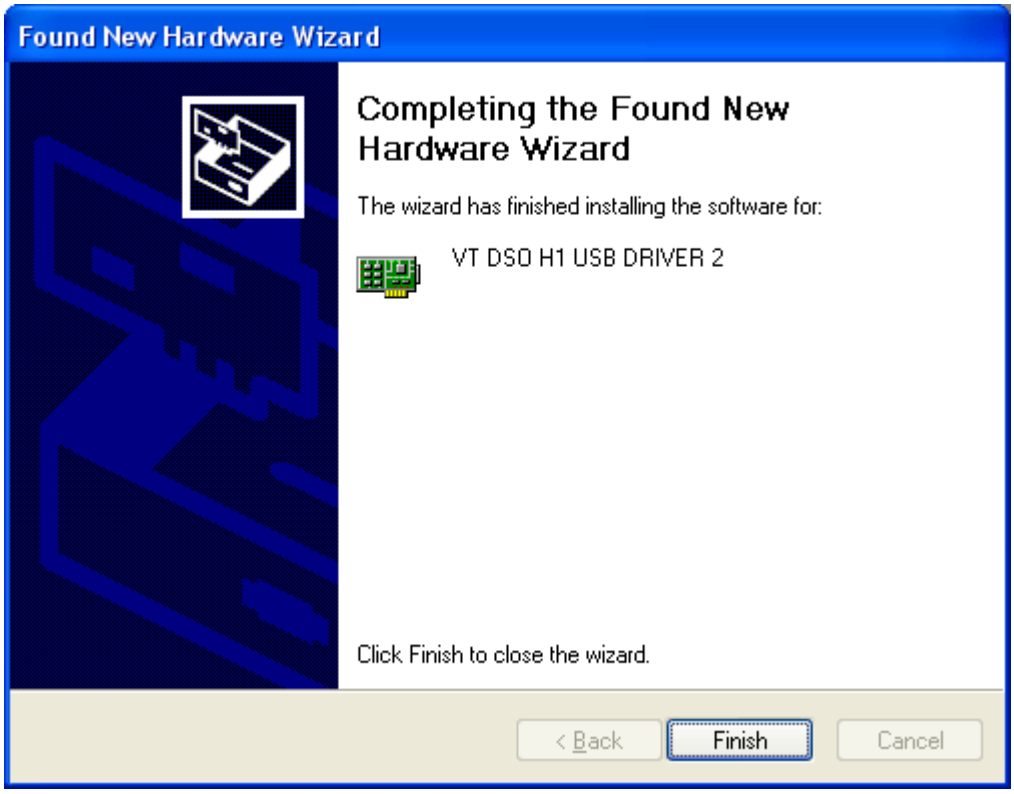

3) Select “Install the software automatically (Recommended)” and click “Next”.

.



4) Click “Finish”.




For Windows 98SE, ME, 2000

The installation procedure is very similar as the one described above.

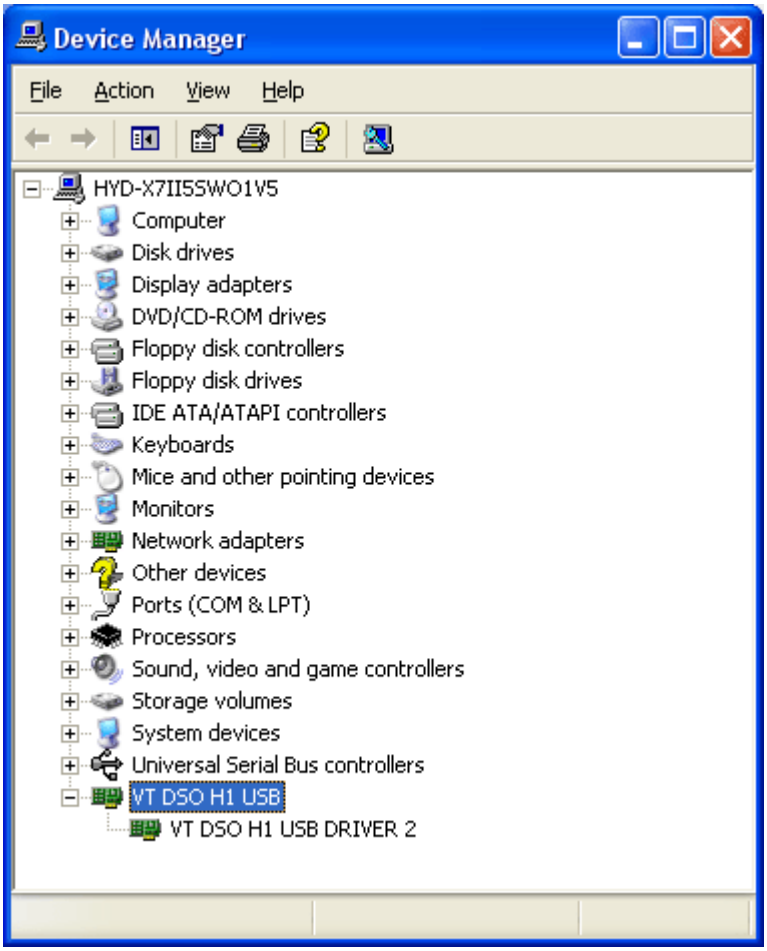
The driver is located in the Drivers\VTDSOH1 directory in the CD. When you install the Multi-Instrument software, a copy of the respective driver will also be installed in the directory ..\Drivers\VTDSOH1.

**Note: you may need to re-install the driver if you change to use another USB port of your computer for the VT DSO-2810H unit. However, the installation CD is not required during driver re-installation. To avoid driver re-installation, stick to a fixed USB port of your computer for the VT DSO-2810H unit.**

### 1.3.2 Installation Verification

After hardware driver installation, you can follow the steps in the next section to start the Multi-Instrument software. If the software starts in licensed mode (do not plug out the VT DSO-2810H unit), that means that the driver has been installed successfully. Otherwise, please open the Windows Device Manager via [Start]>[Control Panel]>[System]>[Hardware]>[Device Manager], you should see “VT DSO H1 USB DRIVER 2” under “VT DSO H1 USB” category. If not, then re-installation of the hardware driver is required.

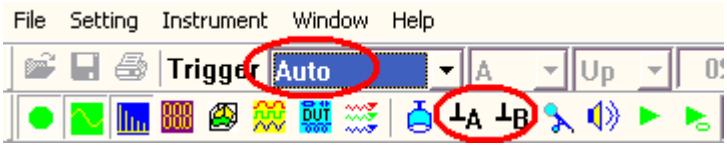
 




## 1.4 Start Multi-Instrument Software

To start Multi-Instrument software, on the Windows desktop, select [Start]>[All Programs]>[Multi-Instrument]>[VIRTINS Multi-Instrument].

## 1.5 Zeroing

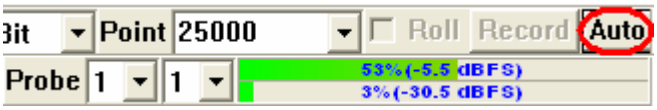



Connect the oscilloscope probe tip to its ground lead for both channels, and switch the Trigger Mode to “Auto” (see the figure above). With the oscilloscope running, you should see a horizontal line at 0V in the Oscilloscope. If not, you should click “ ”和“ ”in the toolbar and choose “Yes” to compensate the ground levels of both channels to zero. You may need to do this every time after you change your sampling parameters.

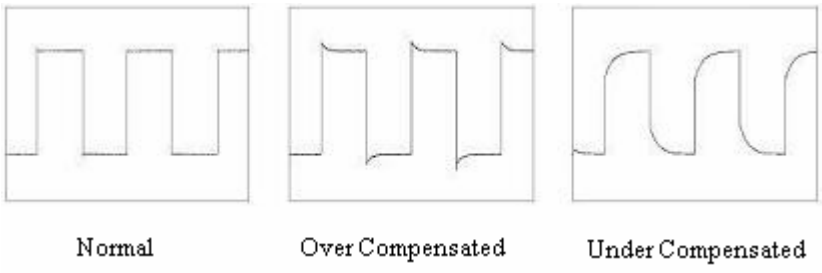
 

## 1.6 Probe Calibration

Connect the probe to the 2Vpp 1kHz square wave signal of the VT DSO-2810H unit, and then adjust the sampling parameters such that the waveform displayed on the screen can be clearly seen. You can also do this by simply clicking the "Auto" button at the upper right corner of the screen.




Adjust the probe compensate capacitor at the end of the probe cable such that the square wave looks normal, as shown below.




## 1.7 Hard Reset

A hard reset can be done via disconnecting the VT DSO-2810 unit from your computer and then re-connect it to the computer again. You can only do this with the Multi-Instrument software closed.

# 2 Specifications

## 2.1 VT DSO-2810H Hardware Specifications

| | |
|---|---|
| Sampling Frequency | Single Channel, Maximum 60000 Samples*<br>100MHz, 50MHz, 20MHz, 10MHz, 5MHz, 2MHz, 1MHz, 500kHz, 200kHz, 100kHz, 50kHz, 20kHz, 10kHz<br><br>Single or Dual Channels, Maximum 30000 Samples per Channel<br>50MHz, 25MHz, 10MHz, 5MHz, 2.5MHz, 1MHz, 500kHz, 250kHz, 100kHz, 50kHz, 25kHz, 10kHz, 5kHz<br><br>Single or Dual Channels, Maximum 10000 Samples per Channel<br>2.5kHz<br><br>Single or Dual Channels, Maximum 500 Samples per Channel, work in Roll Mode**<br>50Hz, 25Hz, 5Hz |
| Analog Bandwidth | 40MHz |
| Number of Input Channels | 2 |
| ADC Bit Resolution | 8 Bit |
| Input Voltage Range | ±40mV, ±80mV, ±200mV, ±400mV, ±800mV, ±2V, ±4V, ±8V, ±20V |
| Maximum Allowed Input Voltage | ±35V |
| DC Accuracy | ±3% |
| Coupling Type | AC/DC |
| Input Isolation | No |
| Terminal Type | Referenced Single-Ended |
| Buffer Size | 30000 bytes per Channel |
| Scan Time | 600μs~100s (with buffer fully filled) |
| Trigger Source | CH1, CH2, EXT, ALT |
| Trigger Level | Adjustable |
| EXT Trigger Level | Adjustable in the range of －4V ~ 4V |
| Trigger Edge | Rising, Falling |
| Trigger Mode | Auto, Normal, Single |
| Pre-Trigger | 0 ~ -100% |
| Input Impedance | 1 MΩ, 25 pF |
| Output Signal for Probe Calibration | 2Vpp, 1kHz, Square Wave |
| Streaming Supported | No |
| Interface | USB |
| Device Category in Multi-Instrument | VT DSO H1 |
| Power | Bus powered by USB port, no external power |

| | |
|---|---|
| | source required. |
| Power Consumption | Max. 2.5W |
| Dimensions | 203 mm (L) × 99 mm (W) × 33 mm (H) |
| System Requirement | Windows 98, ME, 2000, XP, Vista, 7 or above, 32 bit or 64 bit |

**Some of these frequencies are not listed in the sampling frequency selection combo box of the Multi-Instrument software. You need to stop the oscilloscope, enter the sampling frequency value directly into that combo box and then set the number of sampling channels to single, if you need to use these sampling frequencies.*

***Under these sampling frequencies, adjusting the trigger mode, trigger source, trigger edge, trigger level, trigger delay will have no impact on the sampling. The computer's work load should be kept low (e.g. reduce the FFT size, close other running program, etc.) in order to ensure the timing accuracy.*

## 2.2 PP-80 Oscilloscope Probe Hardware Specifications

| | |
|---|---|
| Attenuation Ratio | ×1, ×10 |
| Bandwidth | DC ~ 60 MHz (×10), DC ~ 6 MHz (×1) |
| Input Impedance | 1 MΩ (×1, with VT DSO-2810H connected)<br>10 MΩ (×10, with VT DSO-2810H connected) |
| Input Capacitance | 18.5 pF~22.5 pF (×10), 85 pF~ 115 pF (×1) |
| Input Capacitance Compensation Range | 15~40 pF |
| Length | 1.2 m |

Accessories include: a 6" snap-on rotating ground lead, a sprung hook, two marker rings, a probe compensation adjustment tool, two probe tip caps.

## 2.3 Multi-Instrument Software Specifications

Please refer to Multi-Instrument software manual for detail. The following table shows the function allocation matrix for Multi-Instrument series. The Spectrum 3D Plot, Data Logger, LCR Meter, Device Test Plan, Vibrometer are add-on modules/functions and should be purchased separately, and they are only available for Multi-Instrument Lite, Standard, and Pro versions, except that the Vibrometer is only available for Multi-Instrument Standard and Pro versions.

*Legend: √ - Function available*

| | | Sound Card Oscilloscope 3.2 | Sound Card Spectrum Analyzer 3.2 | Sound Card Signal Generator 3.2 | Multi-Instrument Lite 3.2 | Multi-Instrument Standard 3.2 | Multi-Instrument Pro 3.2 |
|---|---|---|---|---|---|---|---|
| General Functions | | | | | | | |
| ADC / DAC Hardware | Sound Card MME | √ | √ | √ | √ | √ | √ |
| | Sound Card ASIO | | | | | | √ |
| | Other Hardware | | | | | √ | √ |
| | vtDAQ, vtDAO software development kit | License automatically activated with the presence of the corresponding hardware, e.g. a USB hardkey or a VT DSO. | | | | | |
| File Operation | Load WAV File | √ | √ | √ | √ | √ | √ |
| | Load TXT File | | | | | √ | √ |
| | Load WAV File Frame by Frame (fore Long WAV File) | | | | | √ | √ |
| | Combine WAV Files | √ | √ | √ | √ | √ | √ |
| | Extract Data and save them into a new WAV File | √ | √ | √ | √ | √ | √ |
| | Save/Load Panel Setting | √ | √ | √ | √ | √ | √ |
| Data Export | Copy Text to Clipboard | √ | √ | √ | √ | √ | √ |
| | Copy BMP to Clipboard | √ | √ | √ | √ | √ | √ |
| | Print Preview | √ | √ | √ | √ | √ | √ |
| | Print | √ | √ | √ | √ | √ | √ |
| | Export as TXT File | √ | √ | √ | √ | √ | √ |
| | Export as BMP File | √ | √ | √ | √ | √ | √ |
| Trigger Settings | Trigger Mode | √ | √ | | √ | √ | √ |
| | Trigger Source | √ | √ | | √ | √ | √ |
| | Trigger Edge | √ | √ | | √ | √ | √ |
| | Trigger Level | √ | √ | | √ | √ | √ |
| | Trigger Delay | √ | √ | | √ | √ | √ |
| Sampling Settings | Sampling Rate | √ | √ | √ | √ | √ | √ |
| | Sampling Channels | √ | √ | √ | √ | √ | √ |
| | Sampling Bit Resolution | √ | √ | √ | √ | √ | √ |
| | Record Length | √ | √ | | √ | √ | √ |
| Calibration | Input | √ | √ | | √ | √ | √ |
| | Output | | | √ | √ | √ | √ |
| | Probe | √ | √ | | √ | √ | √ |
| | 0dB Reference Vr (Sound Pressure Level) | √ | √ | | √ | √ | √ |
| | F/V Conversion | | | | | √ | √ |
| | Latency for Sync. Output/Input | | | | | | √ |
| | Sensor Sensitivity | √ | √ | | √ | √ | √ |
| | Load Factor for Power Calculation | √ | √ | | √ | √ | √ |
| Graph Operation | Zoom | √ | √ | √ | √ | √ | √ |
| | Scroll | √ | √ | √ | √ | √ | √ |
| | Cursor Reader | √ | √ | √ | √ | √ | √ |
| | Marker | √ | √ | √ | √ | √ | √ |
| | Chart Type | √ | √ | √ | √ | √ | √ |
| | Line Width | √ | √ | √ | √ | √ | √ |

| | | Sound Card Oscilloscope 3.2 | Sound Card Spectrum Analyzer 3.2 | Sound Card Signal Generator 3.2 | Multi-Instrument Lite 3.2 | Multi-Instrument Standard 3.2 | Multi-Instrument Pro 3.2 |
|---|---|---|---|---|---|---|---|
| | Color | √ | √ | √ | √ | √ | √ |
| | Fast/Slow Display Mode | √ | √ | √ | √ | √ | √ |
| | Refresh Delay | √ | √ | √ | √ | √ | √ |
| | Font Size | √ | √ | √ | √ | √ | √ |
| | Roll Mode | | | | | √ | √ |
| | Reference Curves | | | | | √ | √ |
| Others | Gain Adjustment | √ | √ | √ | √ | √ | √ |
| | Input Peak Indicator | √ | √ | √ | √ | √ | √ |
| | Sound Card Selection | √ | √ | √ | √ | √ | √ |
| | Sampling Parameter Auto Setting | √ | √ | √ | √ | √ | √ |
| | Multilingual GUIs | √ | √ | √ | √ | √ | √ |
| | Show/Hide Toolbar | √ | √ | √ | √ | √ | √ |
| | Lock/Unlock Panel Setting | √ | √ | √ | √ | √ | √ |
| | Hot Panel Setting Toolbar | √ | √ | √ | √ | √ | √ |
| | ActiveX Automation Server | √ | √ | √ | √ | √ | √ |
| Oscilloscope | | | | | | | |
| Type | Individual Waveform | √ | √ | √ (offline) | √ | √ | √ |
| | Waveform Addition | √ | √ | √ (offline) | √ | √ | √ |
| | Waveform Subtraction | √ | √ | √ (offline) | √ | √ | √ |
| | Waveform Multiplication | √ | √ | √ (offline) | √ | √ | √ |
| | Lissajous Pattern | √ | √ | √ (offline) | √ | √ | √ |
| Digital Filtering | FFT Low Pass | | | | | √ | √ |
| | FFT High Pass | | | | | √ | √ |
| | FFT Band Pass | | | | | √ | √ |
| | FFT Band Stop | | | | | √ | √ |
| | FFT Frequency Response | | | | | √ | √ |
| | FIR Low Pass | | | | | √ | √ |
| | FIR High Pass | | | | | √ | √ |
| | FIR Band Pass | | | | | √ | √ |
| | FIR Band Stop | | | | | √ | √ |
| | FIR Frequency Response | | | | | √ | √ |
| | IIR Coefficients | | | | | √ | √ |
| Others | Max, Min, Mean, RMS | √ | √ | √ (offline) | √ | √ | √ |
| | Record Mode | | | | | √ | √ |
| Spectrum Analyzer | | | | | | | |
| Type | Amplitude Spectrum | | √ | | √ | √ | √ |
| | Phase Spectrum | | √ | | √ | √ | √ |
| | Auto-correlation | | √ | | √ | √ | √ |
| | Cross-correlation | | √ | | √ | √ | √ |
| | Coherence | | | | | | √ |
| | Transfer Function | | | | | | √ |
| | Impulse Response | | | | | | √ |

| | | Sound Card Oscilloscope 3.2 | Sound Card Spectrum Analyzer 3.2 | Sound Card Signal Generator 3.2 | Multi-Instrument Lite 3.2 | Multi-Instrument Standard 3.2 | Multi-Instrument Pro 3.2 |
|---|---|---|---|---|---|---|---|
| Intra-Frame Processing | Frequency Compensation | | √ | | √ | √ | √ |
| | Frequency Weighting | | √ | | √ | √ | √ |
| | Remove DC | | √ | | √ | √ | √ |
| | Smoothing via Moving Average | | √ | | √ | √ | √ |
| Inter-Frame Processing | Peak Hold | | √ | | √ | √ | √ |
| | Linear Average | | √ | | √ | √ | √ |
| | Exponential Average | | √ | | √ | √ | √ |
| Parameter Measurement | THD,THD+N,SNR, SINAD,Noise Level | | √ | | √ | √ | √ |
| | IMD | | √ | | √ | √ | √ |
| | Bandwidth | | √ | | √ | √ | √ |
| | Crosstalk | | √ | | √ | √ | √ |
| | Harmonics | | √ | | √ | √ | √ |
| | Energy in User Defined Frequency Band | | √ | | √ | √ | √ |
| | Peaks | | √ | | √ | √ | √ |
| FFT | FFT Size 128~32768 | | √ | | √ | √ | √ |
| | FFT Size 65536~4194304 | | | | | | √ |
| | Intra-Frame Average | | √ | | √ | √ | √ |
| | Window function | | √ | | √ | √ | √ |
| | Window Overlap | | √ | | √ | √ | √ |
| Others | Peak Frequency detection | | √ | | √ | √ | √ |
| | Cross Correlation Peak detection | | √ | | √ | √ | √ |
| | Octave Analysis (1/1, 1/3, 1/6, 1/12, 1/24, 1/48, 1/96) | | √ | | √ | √ | √ |
| | Linear/Log Scale for X and Y | | √ | | √ | √ | √ |
| Signal Generator | | | | | | | |
| Waveform | Sine | | | √ | √ | √ | √ |
| | Rectangle | | | √ | √ | √ | √ |
| | Triangle | | | √ | √ | √ | √ |
| | Saw Tooth | | | √ | √ | √ | √ |
| | White Noise | | | √ | √ | √ | √ |
| | Pink Noise | | | √ | √ | √ | √ |
| | MultiTones | | | √ | √ | √ | √ |
| | Arbitrary Waveform | | | √ | √ | √ | √ |
| | MLS | | | √ | √ | √ | √ |
| | DTMF | | | √ | √ | √ | √ |
| | Musical Scale | | | √ | √ | √ | √ |
| | Play Waveform in Oscilloscope | √ | √ | √ | √ | √ | √ |
| | Cyclic Play Waveform in Oscilloscope | √ | √ | √ | √ | √ | √ |

| | | Sound Card Oscilloscope 3.2 | Sound Card Spectrum Analyzer 3.2 | Sound Card Signal Generator 3.2 | Multi-Instrument Lite 3.2 | Multi-Instrument Standard 3.2 | Multi-Instrument Pro 3.2 |
|---|---|---|---|---|---|---|---|
| Burst (Mask) | Normal | | | √ | √ | √ | √ |
| | Phase Locked | | | √ | √ | √ | √ |
| Fade | Fade In | | | √ | √ | √ | √ |
| | Fade Out | | | √ | √ | √ | √ |
| Sweep | Frequency Sweep (Linear/Log) | | | √ | √ | √ | √ |
| | Amplitude Sweep (Linear/Log) | | | √ | √ | √ | √ |
| Others | Software Loopback (all channels) | | | √ | √ | √ | √ |
| | Software Loopback (1 channel) | | | | √ | √ | √ |
| | Sync. with Oscilloscope | | | | | | √ |
| | Save as WAV file | | | √ | √ | √ | √ |
| | Save as TXT file | | | √ | √ | √ | √ |
| Multimeter | | | | | | | |
| Type | RMS | | | | | √ | √ |
| | dBV | | | | | √ | √ |
| | dBu | | | | | √ | √ |
| | dB | | | | | √ | √ |
| | dB(A) | | | | | √ | √ |
| | dB(B) | | | | | √ | √ |
| | dB(C) | | | | | √ | √ |
| | Frequency Counter | | | | √ | √ | √ |
| | RPM | | | | | √ | √ |
| | Counter | | | | | √ | √ |
| | Duty Cycle | | | | | √ | √ |
| | Frequency/Voltage | | | | | √ | √ |
| | Cycle RMS | | | | | √ | √ |
| | Cycle Mean | | | | | √ | √ |
| Settings | Counter Trigger Hysteresis | | | | √ | √ | √ |
| | Counter Trigger Level | | | | √ | √ | √ |
| | Frequency Divider | | | | √ | √ | √ |
| DDP Viewer | | | | | | | |
| Function | DDP display | | | | | | √ |
| | HH, H, L, LL Alarm | | | | | | √ |

*Legend: Blank - Function available if purchased Shaded Blank - Function NOT available*

| | | Sound Card Oscilloscope 3.2 | Sound Card Spectrum Analyzer 3.2 | Sound Card Signal Generator 3.2 | Multi-Instrument Lite 3.2 | Multi-Instrument 3.2 | Multi-Instrument Pro 3.2 |
|---|---|---|---|---|---|---|---|
| Spectrum 3D Plot | | | | | | | |
| Type | Waterfall Plot | | | | | | |
| | Spectrogram | | | | | | |
| Settings | Spectrogram Color Palette | | | | | | |
| | Waterfall Color Palette | | | | | | |
| | Waterfall tilt Angle | | | | | | |
| | Waterfall / Spectrogram Height | | | | | | |
| | Linear / Log Scale for X and Y | | | | | | |
| | Number of Spectral Profiles (10~200) | | | | | | |
| Others | 3D Cursor Reader | | | | | | |
| Data Logger | | | | | | | |
| Real Time Logging | | | | | | | |
| Load Historical Log File | | | | | | | |
| Three logging methods | | | | | | | |
| 145 derived data points available for logging | | | | | | | |
| Up to 8 × 8 = 64 variables can be logged simultaneously | | | | | | | |
| LCR Meter | | | | | | | |
| High Impedance Measurement | | | | | | | |
| Low Impedance Measurement | | | | | | | |
| Up to 8 X-Y Plots (Linear/Log) | | | | | | | |
| Device Test Plan | | | | | | | |
| 14 Instructions | | | | | | | |
| Create/Edit/Lock/Execute/Load/Save a Device Test Plan | | | | | | | |
| Up to 8 X-Y Plots (Linear/Log) | | | | | | | |
| Device Test Plan Log | | | | | | | |
| Vibrometer | | | | | | | |
| RMS, Peak/PP, Crest Factor for acceleration, velocity, displacement (in Multimeter) | | | | | | | |
| Waveform conversion among acceleration, velocity and displacement (in Oscilloscope) | | | | | | | |

## 2.4 Software Development Interface Specifications

Multi-Instrument provides the following secondary development features:

1. Multi-Instrument can work as an ActiveX automation server so that an external program can access the data and functions that Multi-Instrument exposes. You can integrate Multi-Instrument into your own software seamlessly via the ActiveX automation server interfaces exposed by Mutil-Instrument.

   Please refer to: *Multi-Instrument Automation Server Interfaces*

   Download link:
   http://www.virtins.com/Multi-Instrument_Automation_Server_Interfaces.pdf

   The above document and the sample automation client programs in Visual C++ and Visual Basic can be found in the AutomationAPIs directory of the software.

2. You can use the vtDAQ and vtDAO interface DLLs supplied in this software to allow your own back-end software to interface to sound cards, NI DAQmx cards, VT DSOs, etc.. You can also develop your own vtDAQ and vtDAO compatible DLLs to allow Multi-Instrument to interface to your own hardware.

   Please refer to: *vtDAQ and vtDAO_Interfaces*

   Download link:
   http://www.virtins.com/vtDAQ_and_vtDAO_Interfaces.pdf

   The above document and the sample DAQ and DAO back-end programs in Visual C++ can be found in the DAQDAOAPIs directory of the software.

# 3 Multi-Instrument Software License Information

## 3.1 License Types

The License of Multi-Instrument software has six levels and five add-on modules/functions. The six levels are: Sound Card Oscilloscope, Sound Card Spectrum Analyzer, Sound Card Signal Generator, Multi-Instrument Lite, Multi-Instrument Standard, Multi-Instrument Pro. The five add-on modules/functions are: Spectrum 3D Plot, Data Logger, LCR Meter, Device Test Plan, Vibrometer.

The license contained in the standard VT DSO-2810H package is a hardware bundled Multi-Instrument Standard license, without any add-on modules/functions. No softkey (activation code) and USB hardkey (USB dongle) are provided in this type of license. The software will run under the licensed mode as long as the VT DSO-2810H unit is connected to your computer before you start the Multi-Instrument software.

Note: If the software is started without the VT DSO-2810H unit connected to the computer, it will enter into 21-day fully functional trial mode, unless the software is activated by a softkey (activation code) or a hardkey (USB dongle), which are NOT included in the standard VT DSO-2810H package and should be purchased separately as a brand-new license if needed. In other words, the VT DSO-2810H hardware should always be connected to the computer in order for the Multi-Instrument software to work under the licensed mode, even though you might just want to use your computer sound card for ADC and DAC.

### 3.2 License Upgrade from one level to another

You can purchase an upgrade of the license, e.g. from Multi-instrument Standard to Multi-Instrument Pro + Data Logger, at any time if necessary. After you purchase the upgrade, a small upgrade package file will be sent to you via email. You can then use it to upgrade the license bundled within the VT DSO-2810H unit by selecting [Start]>[All Programs]>[Multi-Instrument]>[VIRTINS Hardware Upgrading Tool] on your Windows desktop.

### 3.3 Software Upgrade in the same level

Software upgrade in the same level (if the hardware is still supported by the new version), e.g. from Multi-Instrument 3.0 Standard to Multi-Instrument 3.1 Standard, is always FREE. You just need to download the new version from our website and install it to any computer.

Thus, please do check frequently with our website to see if a new version or build is available.

## 4 Extended Use of Multi-Instrument Software

Multi-Instrument is a powerful multi-function virtual instrument software. It supports a variety of hardware ranging from sound cards which are available in almost all computers to proprietary ADC and DAC hardware such as NI DAQmx cards, VT DSO units, and so on. Furthermore, the ADC and DAC device can be chosen independently in Multi-Instrument. For example, you can use VT DSO-2810H for data acquisition and use your computer's sound card for signal generation simultaneously.

You can change the ADC device via [Setting]>[ADC Device]>[Device Model] (Note: this menu item is disabled when the oscilloscope or the signal generator is running). For example you can also use your computer's sound card as the ADC device.

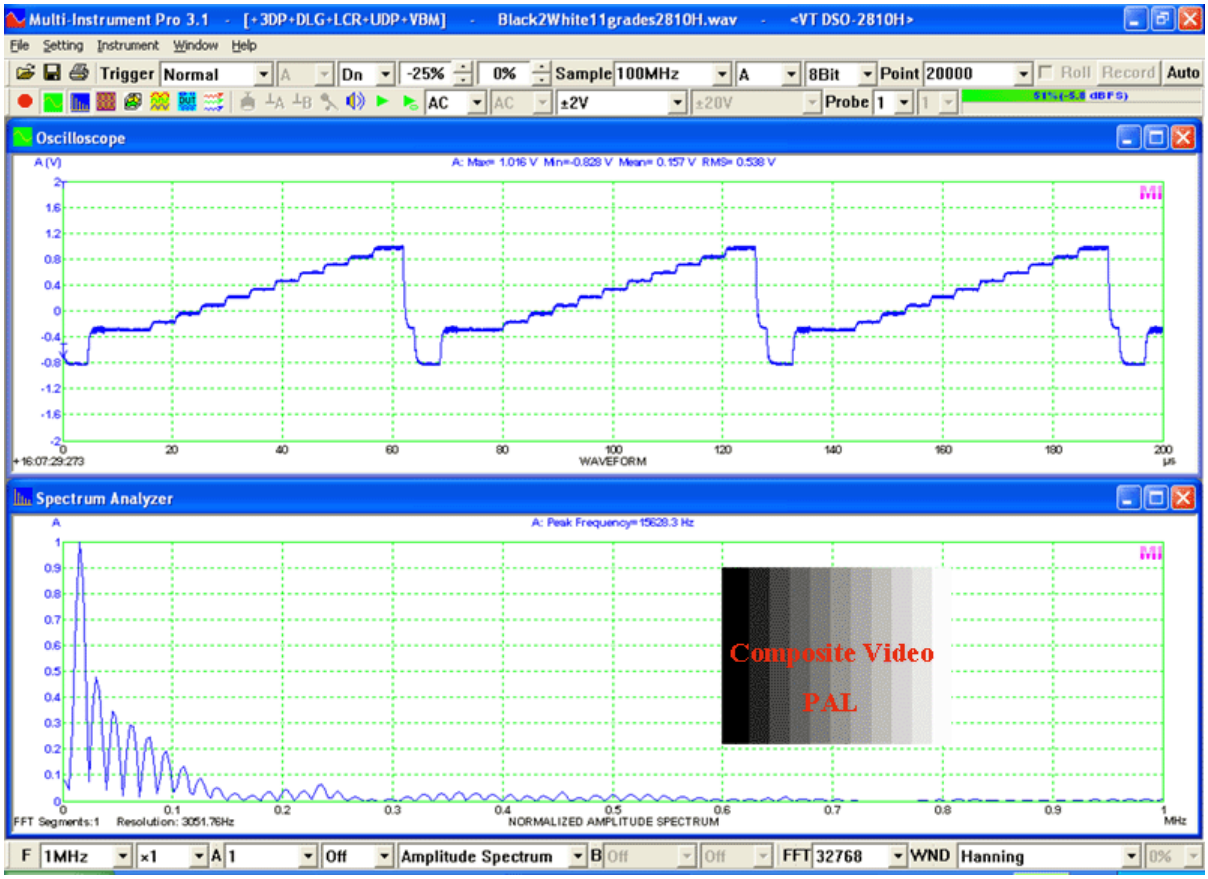
The VT DSO-2810H unit does not support DAC, thus no signal generator function is available within the hardware unit, except the 2Vpp 1kHz square wave output signal for probe calibration. However, you can choose other DAC device via [Setting]>[DAC Device]>[Device Model] (Note: this menu item is disabled when the oscilloscope or the signal generator is running). For example, you can use your computer's sound card as the DAC device and thus make full use of the signal generator function of Multi-Instrument.

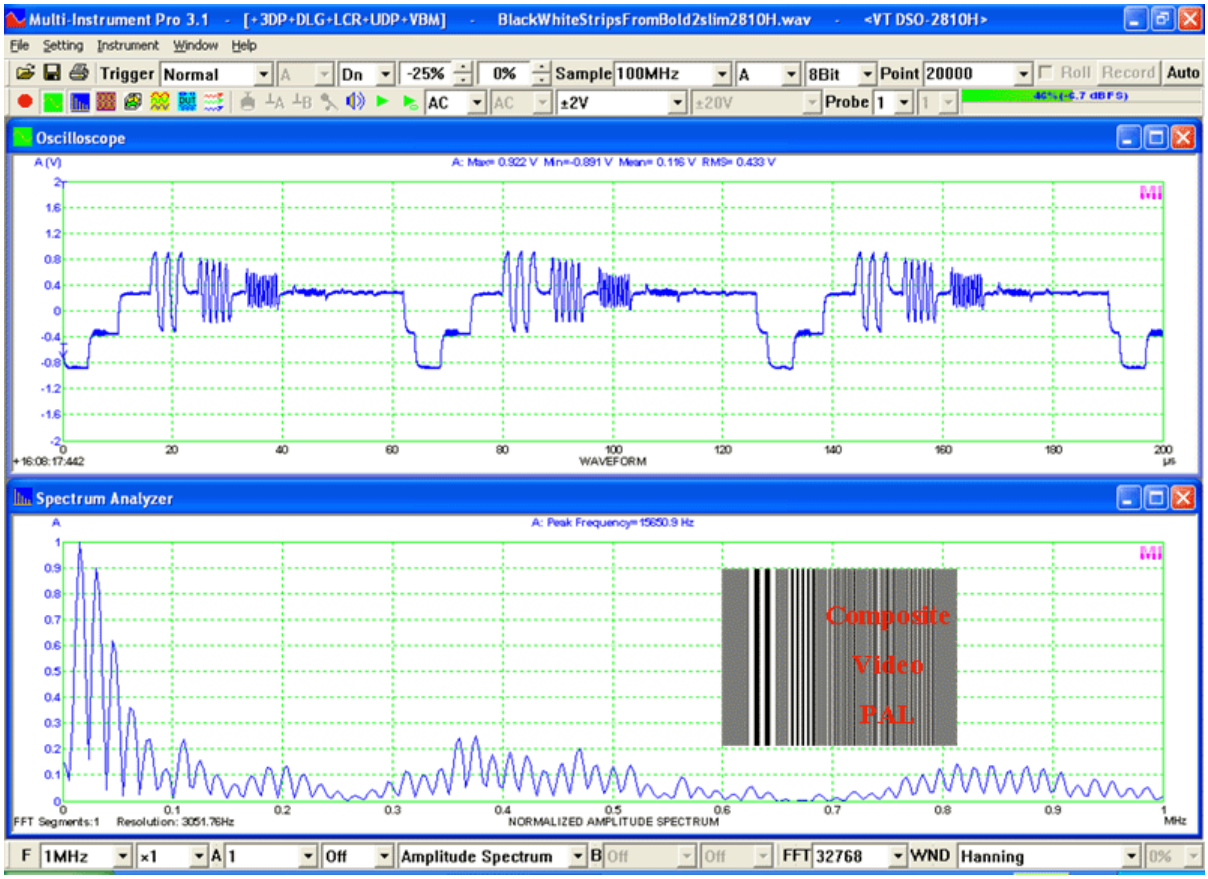
If you want to use the sound card as the ADC/DAC device, you may need to purchase the dedicated sound card oscilloscope probe kit from Virtins Technology separately, or you may make the connection by yourself.

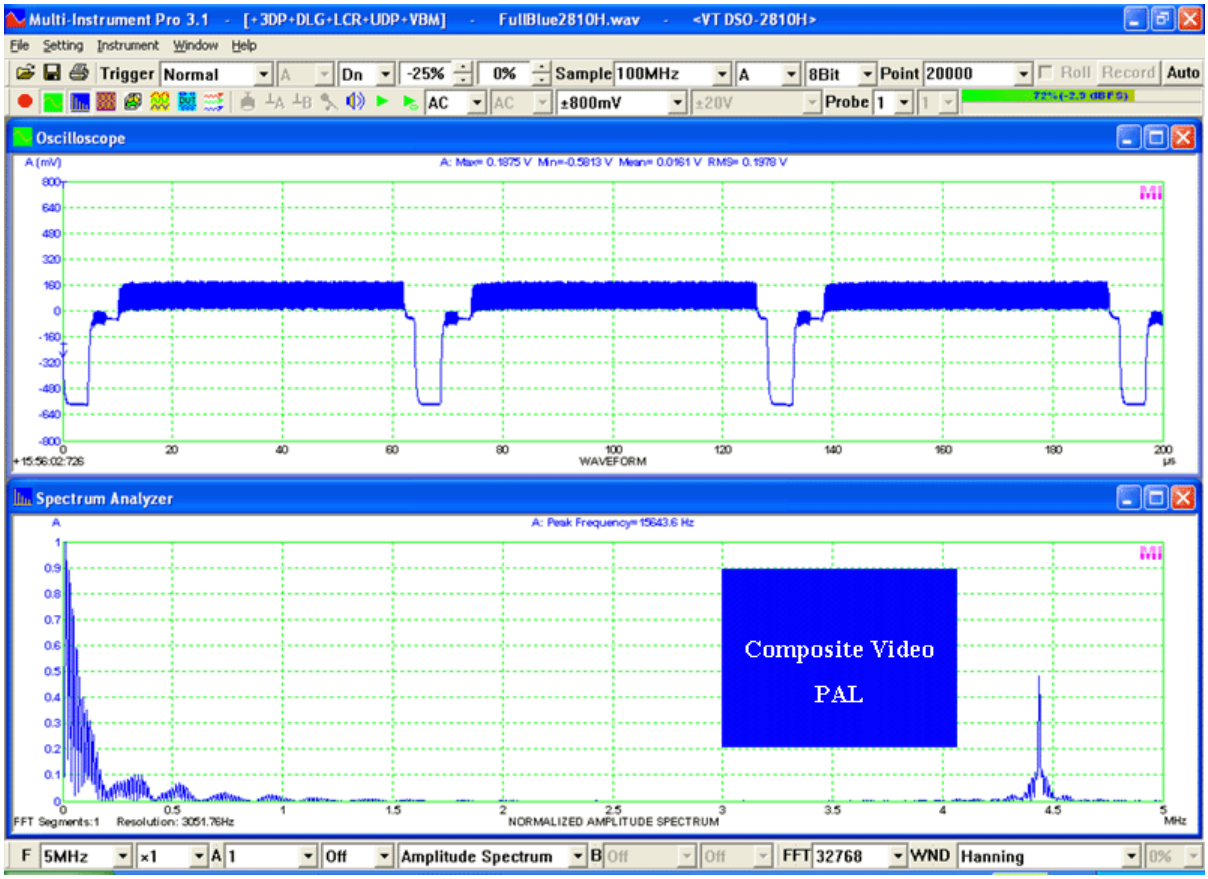
# 5 Measurement Examples

The following figures show the measurements of the PAL composite video signal from a VCD player with different video test patterns on the TV screen.

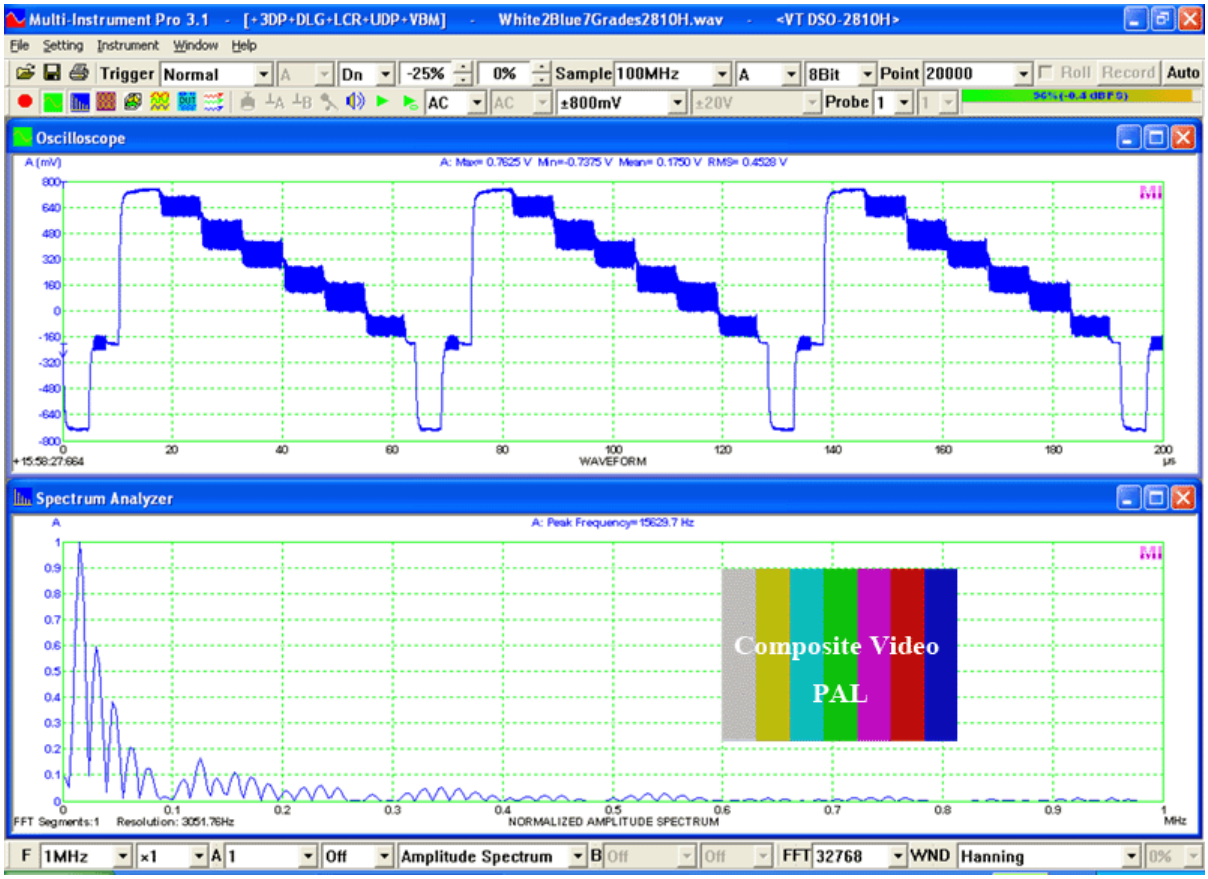




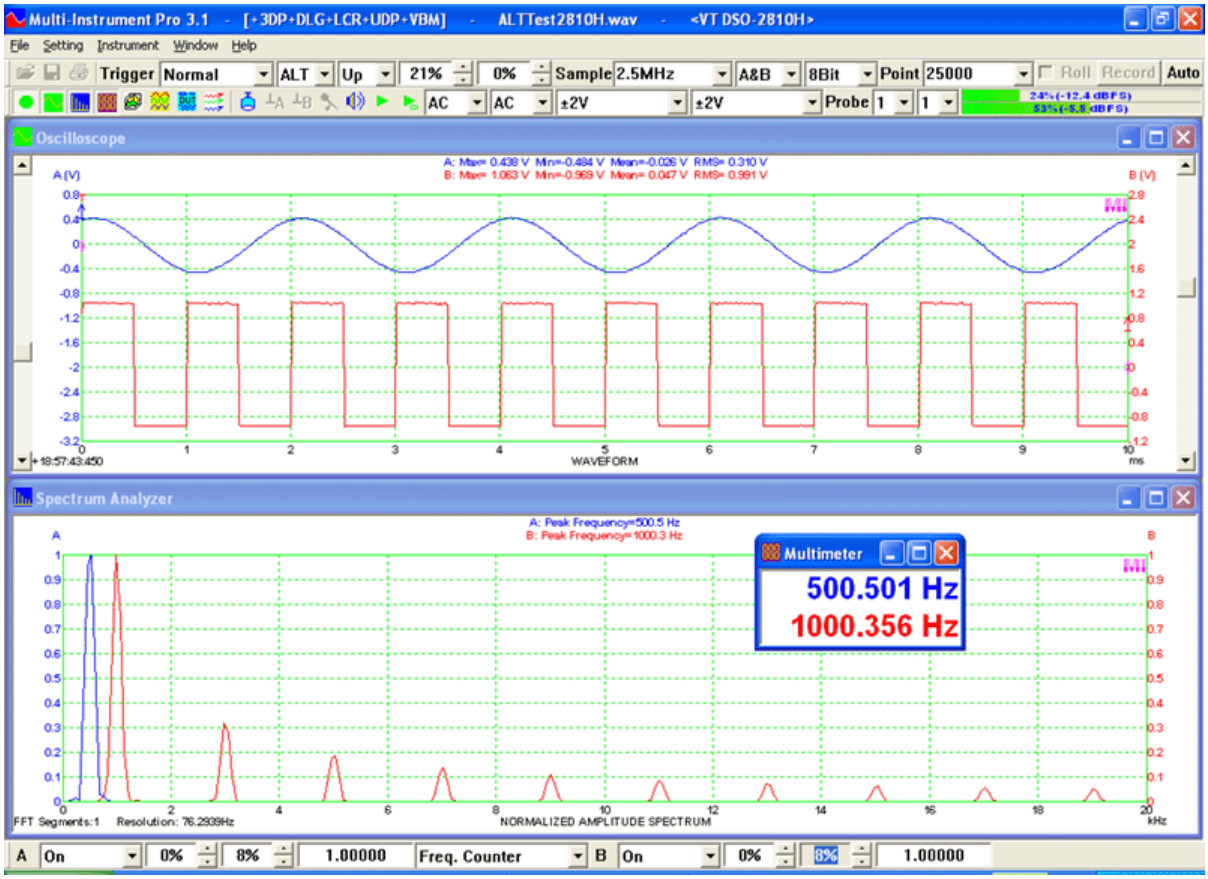





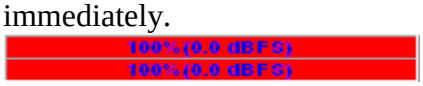

The following figure shows the measurement of a 500Hz sine wave and a 1kHz square wave under ALT trigger mode. The trigger level for both channels can be adjusted independently under this mode. The trigger level for Channel B can be adjusted by dragging the arrow on the B axis in the oscilloscope window.




# 6 Safety Instructions

- Always keep in mind that the input of the probe and the input of the VT DSO-2810H are NOT galvanically isolated from the computer connected.
- Never connect to a signal with unknown amplitude.
- Never connect to a signal with voltage greater than the measurement range.
- If you are not very sure about the exact voltage under test, always start measurement by putting the attenuation switch of the oscilloscope probe to ×10 and selecting the highest measurement range of the VT DSO-2810H unit.
- When the input peak level indicator of the Multi-Instrument software turns full RED with 100% (see the figure below), switch the probe to a higher attenuation ratio, switch the VT DSO-2810H unit to a higher measurement range, or disconnect the input signal immediately.




- Be extremely careful when the voltage under test is greater than 5V.
- It should be noted that for many computer (typically a desktop PC or a laptop PC with a built-in AC power supply adapter), the ground line of the probe is connected to mains earth. This is not a problem if the circuit under test is floating (i.e. isolated from earth).

Otherwise, you MUST make sure that the ground lead of the probe is connected to a point on the circuit that is also at earth potential.

# 7 Warranty

Virtins Technology guarantees this product against defective materials and manufacutring defects for a period of 12 months. During this period of warranty, a replacement of the faulty part will be shipped to the buyer's address free of charge upon receiving and verifying the returned faulty part. The Warranty is only applicable to the original buyer and shall not be transferable. The warranty shall exclude malfunctions or damages resulting from acts of God, fire, civil unrest and/or accidents, and defects from using wrong electrical supply/voltage and/or consequential damage by negligence and/or abuse, as well as use other than in accordance with the instructions for operation. The Warranty shall immediately cease and become void if the hardware is found to have been tampered, modified, repaired by any unauthorised person(s). Decisions by Virtins Technology on all questions relating to complaints as to defects either of workmanship or materials shall be deemed conclusive and the buyer shall agree to abide by such decisions.

# 8 Disclaimer

This document has been carefully prepared and checked. No responsibility can be assumed for inaccuracies. Virtins Technology reserves the right to make changes without prior notice to any products herein to improve functionality, reliability or other design aspects. Virtins Technology does not assume any liability for loses arising out of the use of any product described herein; neither does its use convey any license under it patent rights or the rights of others. Virtins Technology does not guarantee the compatibility or fitness for purpose of any product listed herein. Virtins Technology’s products herein are not authorized for use as components in life support services or systems. Virtins Technology should be informed of any such intended use to determine suitability of the products.