



PC Based Instrument Integration Tendency

Preface

Now, most of products are designed based on the MCU or DSP. These designs also include a variety of analog and digital signals.

Analog signal is a kind of continuous signal, such as temperature, humidity, light and so on. In order to observe the voltage, current and other information in the analog signal, it usually uses oscilloscope to measure.

Digital signal is a kind of non-continuous signal which uses 0 or 1 to represent. Because the signal state is relatively simple, using logic analyzer to record the measurements is more appropriate when observing the digital signal.

For more convenient to deal with these signals, Mixed Single Oscilloscope appears to meet the users' needs.

In general, Mixed Single Oscilloscope can be used in the embedded product design, system development, serial signal debugging, FPGA design and verification, A/D or D/A debugging and so on. It not only can observe the analog signal, but also can analyze the digital signal. But in terms of the hardware cost, if the existing logic analyzer can match with the oscilloscope on the hand to achieve the same purpose, it is bound to save the purchase costs of instrument.

Evolution of the Instrument

Like the evolution of consumer electronic products, the instrument has also been progressing. The users' impression about measuring instrument is larger volume, inconvenient operation, expensive price and so on. Along with more and more powerful function of computer, it begins to appear the PC Based measuring instrument based on the computer, such measuring instrument is light weight and easy to operate. And it matches with the laptop, users can perform the measurement and analysis anywhere and at any time. In order to allow the users to analyze the circuit signal more quickly, ZeroPlus Technology introduces the PC Based Oscilloscope from the UK Pico Technology. The UK Pico Technology was established in 1991. It constantly provides the high-quality measurement tools which is innovative, high performance and easy to use in the development of measuring instrument. And it also achieved the ISO 9001 Quality Certification in 2008. ZeroPlus PC Based Logic Analyzer matching with Pico Technology PC Based Oscilloscope can create the best measuring environment and improve the R&D efficiency.



Stacking and Measurement between ZeroPlus Technology Logic Analyzer and Oscilloscope

LAP-A & C Series Logic Analyzer of ZeroPlus Technology can stack with Textronix 1000, 2000, 3000, 5000 Series, GwInstek GDS-1000A Series, Agilent DSO5000 and PicoScope 3000 Series after connecting with the computer by the USB. So the majority of ZeroPlus Technology users can do the mixed-signal measurement and analysis with their oscilloscopes. It also can do the Oscilloscope Remote settings through the ZeroPlus Logic Analyzer Software with V3.11.01 version.

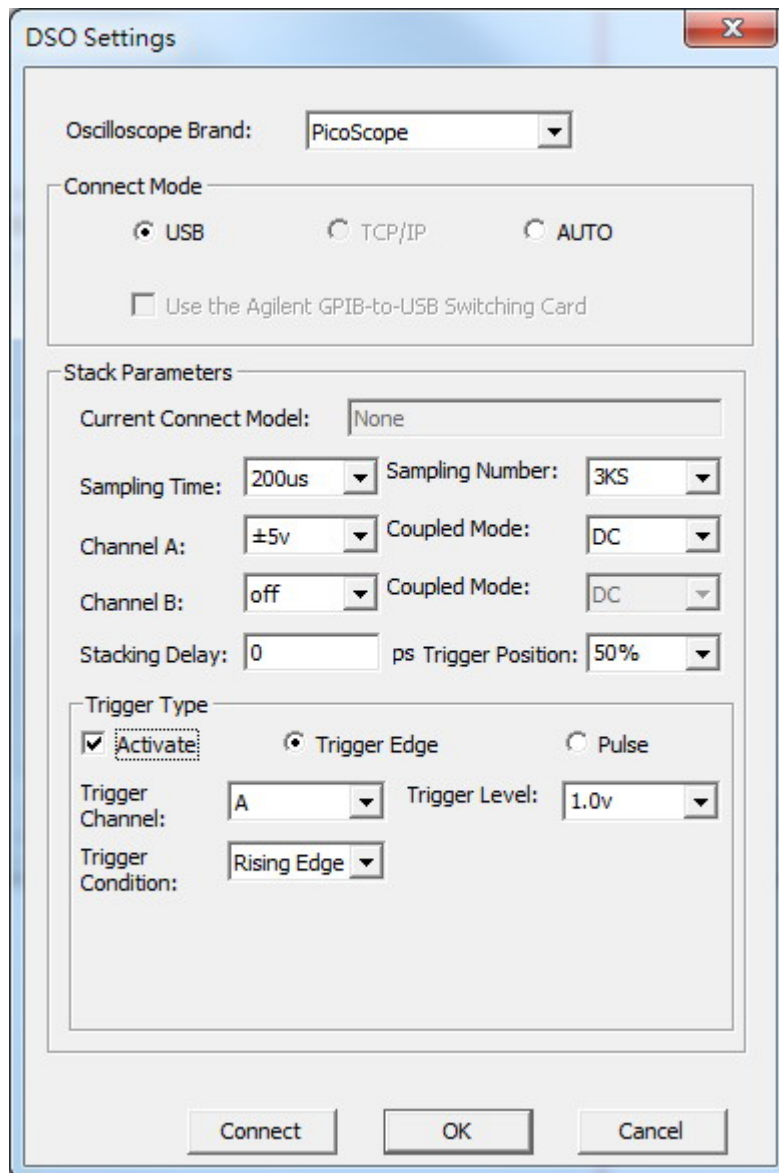


Figure 1: DSO staked settings of PICO

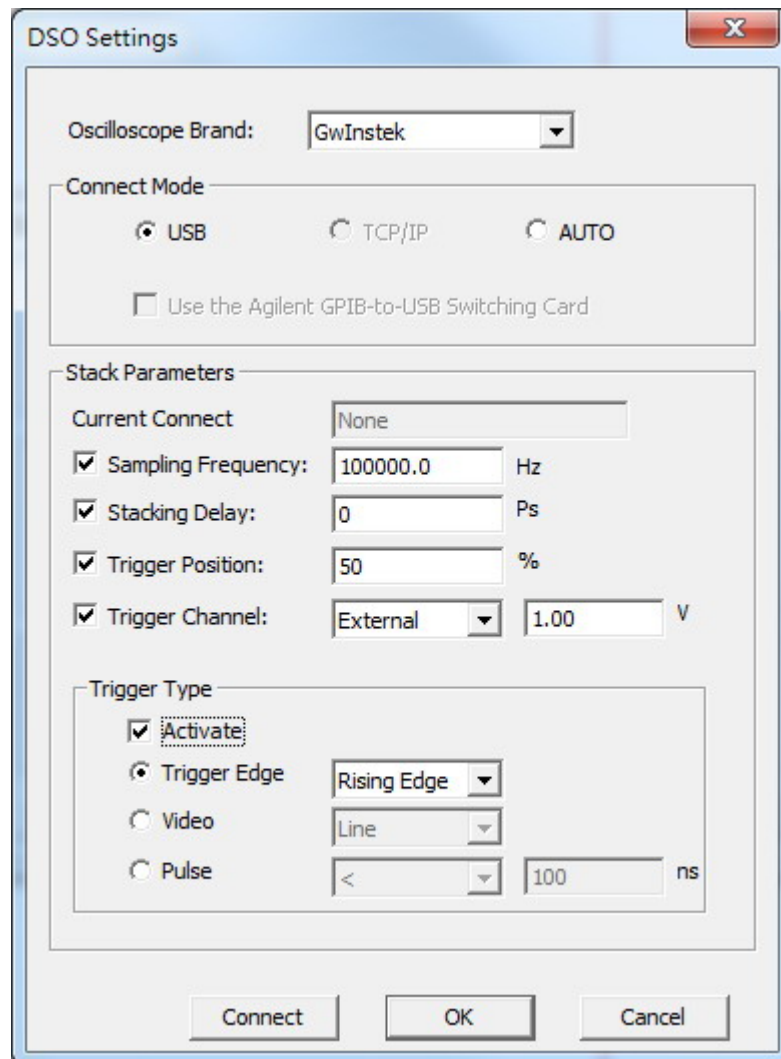


Figure 2: DSO staked settings of GwInstek

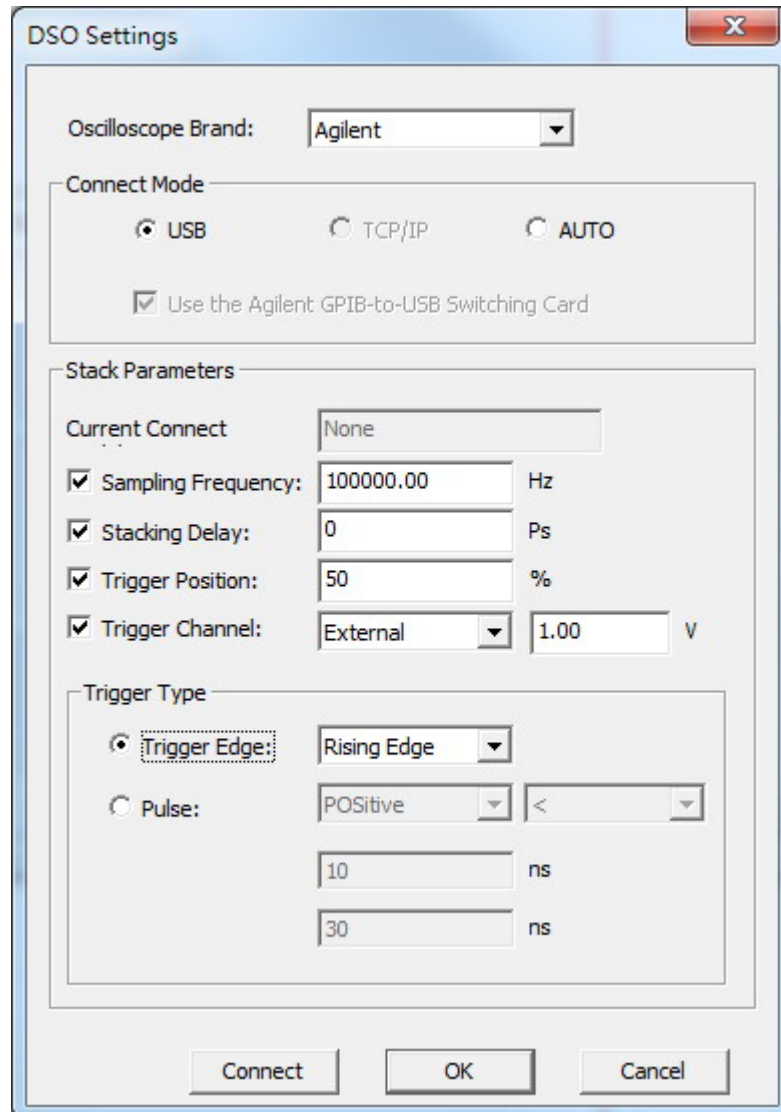


Figure 3: DSO staked settings of Agilent

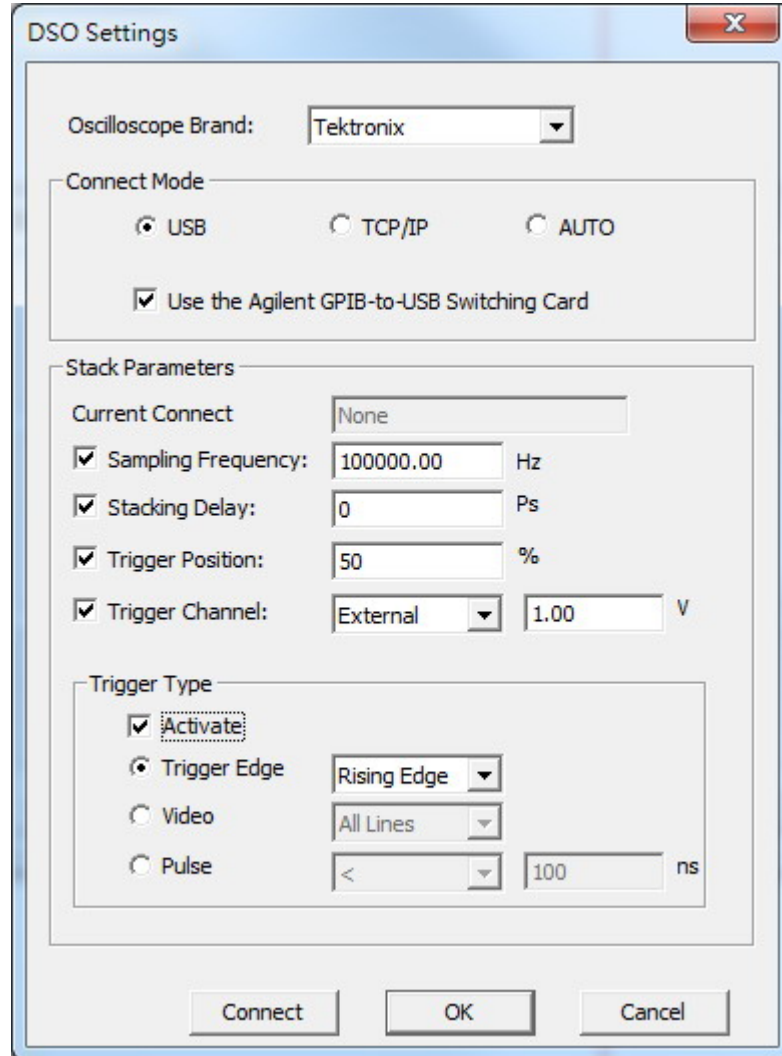


Figure 4: DSO staked settings of Tektronix

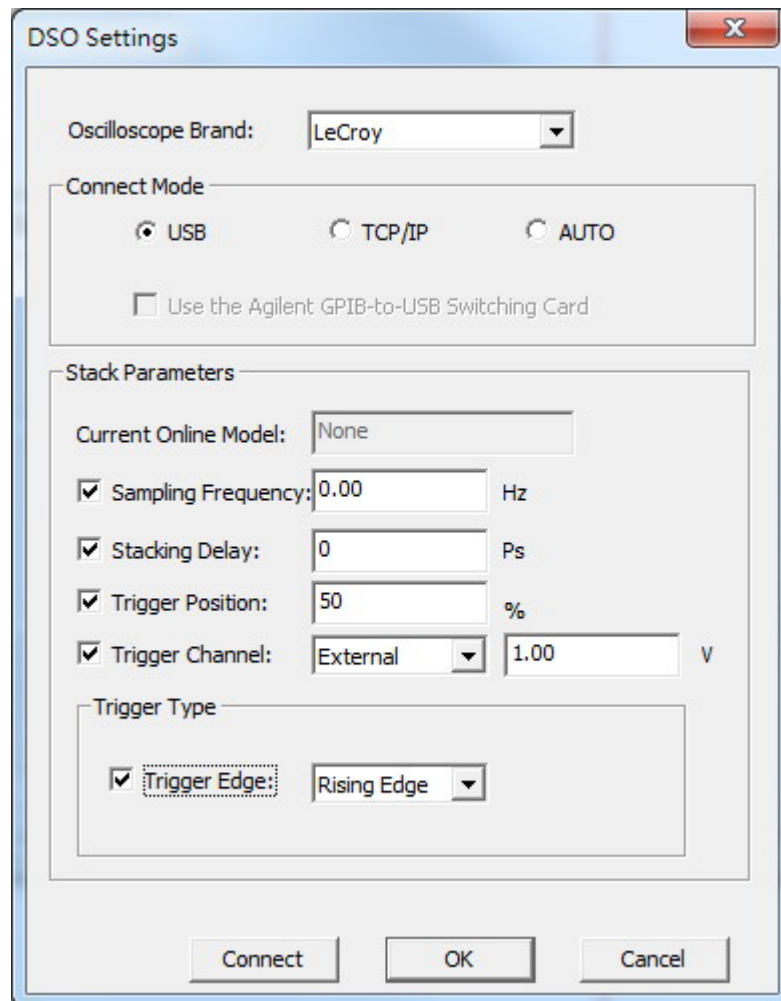


Figure 5: DSO staked settings of LeCroy

To give a better understanding of PC Based Instrument measuring mixed-signal for users, then we do measurement description through the 8Bit DAC AD558 of ANALOG DEVICE.

AD558 Digital input interface is the 8 Bit parallel bus, and use Up Counter to input from 0x00 to 0x3F, then you can get the voltage waveform changes from 0V to 4V at Analog output end.

Firstly, measure the output waveform of Analog End by the Pico 3206B.

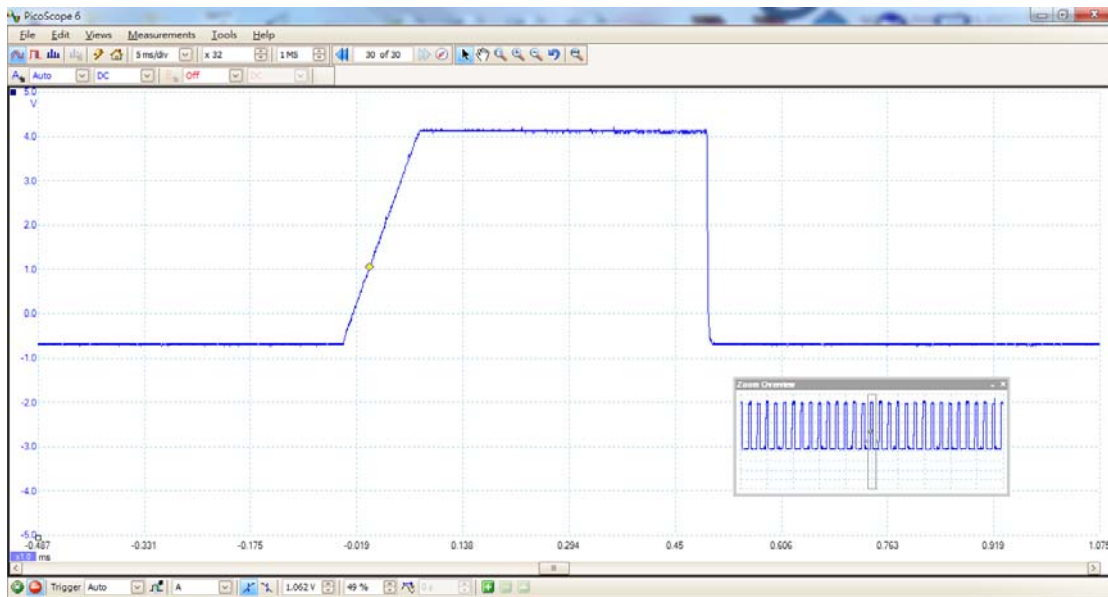
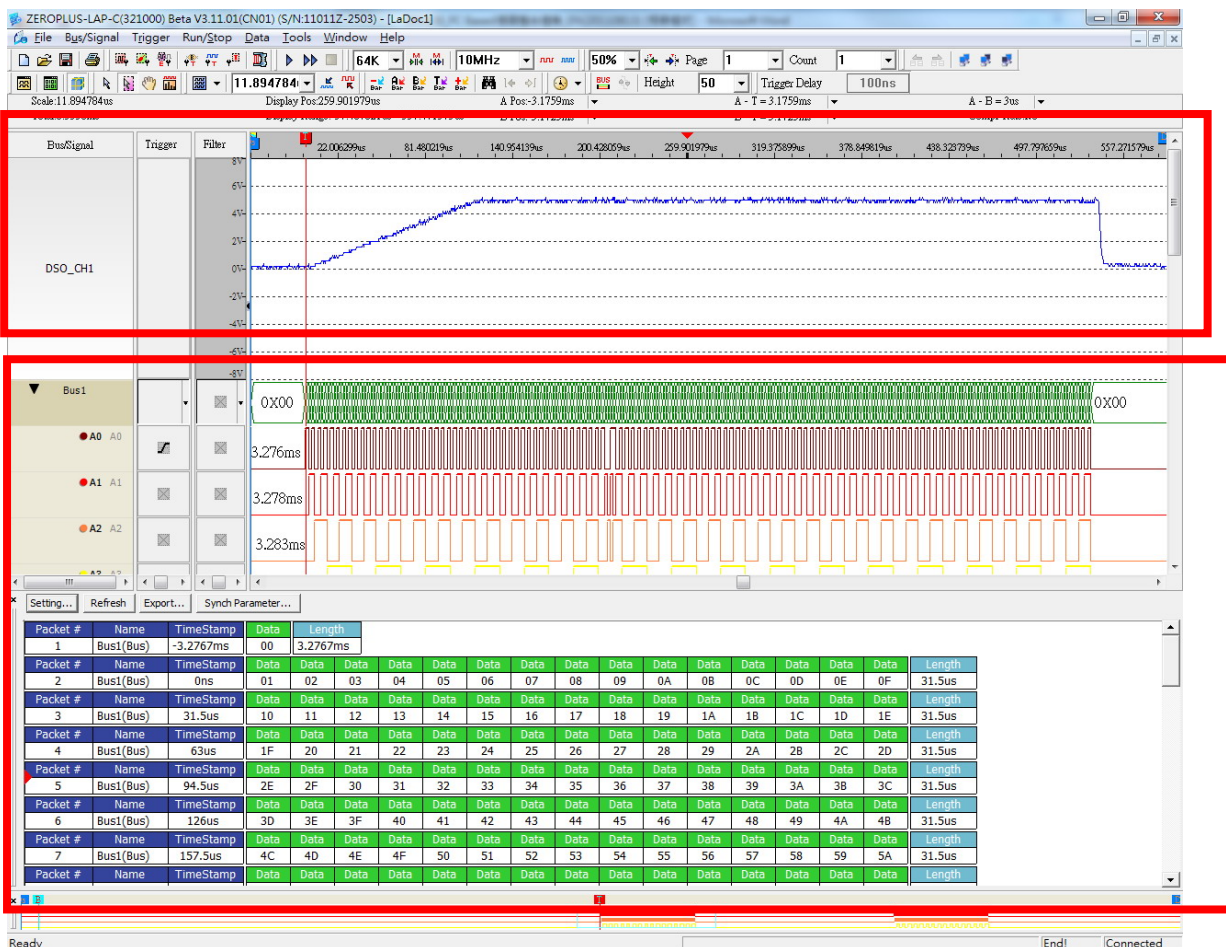


Figure 6: AD558 analog output signal captured by Pico 3206B.

In Figure 6, you can see that the different parallel value is input to DAC and converted to different voltage waveform. At this time, you can observe the inputting state of parallel value to match with ZeroPlus Technology Logic Analyzer.



Oscilloscope waveform from Pico 3206B

Parallel bus from Up counter

Figure 7: The mixed-signal measurement result of using logic analyzer with oscilloscope.



You can clearly see the parallel value sent by Up counter through the digital signal of the lower part of the Figure 7. Then you can understand the analog waveform changes when inputting the parallel value to DAC after comparing with oscilloscope waveform.

Conclusion

We often encounter the analog and digital signals in electronic circuit design. Different signal types must use the corresponding instrument to measure and analyze. But the waveform results recorded by a variety of instruments only can be displayed in its own platform. If we can integrate the waveform from a variety of instruments to show in the same platform, it is bound to be more convenient for users. The DSO-stacking Function of ZeroPlus Technology Logic Analyzer takes it as a starting point, and ZeroPlus integrates logic analyzer with other instruments further to get the more functional measurement instruments.

In order to make users more familiar with the operation and application of logic analyzer, ZeroPlus Technology is ready to hold the training seminars of logic analyzer recently, which is about the operation of logic analyzer, settings of bus decoding module and mixed-signal measurement of oscilloscope. Users can pay more attention to the news and information on our website. (ZeroPlus Technology website is www.zeroplus.com.tw.)

by ZEROPLUS Instrument Division FAE

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About ZEROPLUS

ZeroPlus Technology Co., Ltd was established in 1997. It focuses on the design of the peripheral products of computer games. In 2004, the business scope was extended to the electronic measurement instruments. Applying the advanced MCU programming technology, the company successfully developed the latest patented measurement instrument, PC-Based Logic Analyzer. The unique and innovative technology was accredited by a number of patents granted, and the regions or countries where the company applied for patents have covered the whole world and the number of the patent and the country continues to grow. Since the release in 2005, the Logic Analyzer has been widely adopted by tens of dozens of public-listed technological manufacturers in the IC industry and the tertiary educational institutions. The excellent sale has made the Logic Analyzer the most popular in the market.