USBEE AX Oscilloscope Logic Analyzer Instructions

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1 Introduction

USBEE AX oscilloscope logic analyzer circuit analysis is cost-effective PC-based debugging tool. Fully compatible and support "USBee AX P ro" PC software. Can oscilloscopes, logic analyzers and so many features.

Software Download:

USBEE AX Pro: http://pan.baidu.com/s/ 1c 0CdW1E

USBEE Suite: http://pan.baidu.com/s/1bnhDOuz

Taobao goods Address:

http://item.taobao. com / item.htm? spm = a230r.1.14.21.3jOXJi & id = 38579565283 & ns = 1 # detail

Note: Incorrect use can cause equipment damage and personal injury!

Use:

- Guarantee at least a GND line with your target board connected to ground potential;
- Digital channels DCH1 - 8, TRG and CLK and other voltage range of 0-5V;
- Analog channel ACH voltage range of -10 to + 10V; x10 is +/- 100V; x0.2 is +/- 2V.
- USBEE AX digital channel can drive output before use must not exceed the voltage and current range;
- First USBEE AX is connected to the PC, and then connect the target board to be tested.

1.1 Computer System Requirements

- Windows 7 / XP or Windows 2000 operating system;
- Above Pentium processor;

- USB2.0 high-speed interface, does not support full-speed USB1.1 port work;
- 32MB RAM
- 125MB hard disk

1.2 Equipment List

- USBEE AX device, one Taiwan;
- Clamp a test platoon (with 10 test clip)
- A USB cable;

1.3 hardware parameters

PC Connection Requirements	USB2.0
Power supply	PC USB powered
USB cable length	1 m
Size	
Test clip	2 0cm

Since the device is working at the highest sampling rate, the higher of the PC's USB bandwidth and processor resource requirements, so in order to ensure stable operation,

- Do not connect other USB high speed device on PC;
- Do not run other programs during software sampling and output signals.

1.4 Software Installation

When USBee software installation process, you are prompted to install Windows .NET components, be sure to install the .NET components, or software does not work properly. First download the online version installed, start the installation. When you can not properly online to download and install, please go to Microsoft's official website to download and install Microsoft .Net Framework

3.5　　　　SP1.exe,　　　　http://www.microsoft.com/downloads/details.aspx?displaylang=zh-cn&FamilyID=ab99342f -5d1a-413d-8319-81da479ab0d7

The lower part, download the full version installed on the page, size of 230MB. When the installation **USBee** software successfully, **USBEE AX** connected to the computer, **Windows** Device Manager will recognize the new hardware, click automatically install the driver, display **USBee AX-Pro Test Pod** After successful.
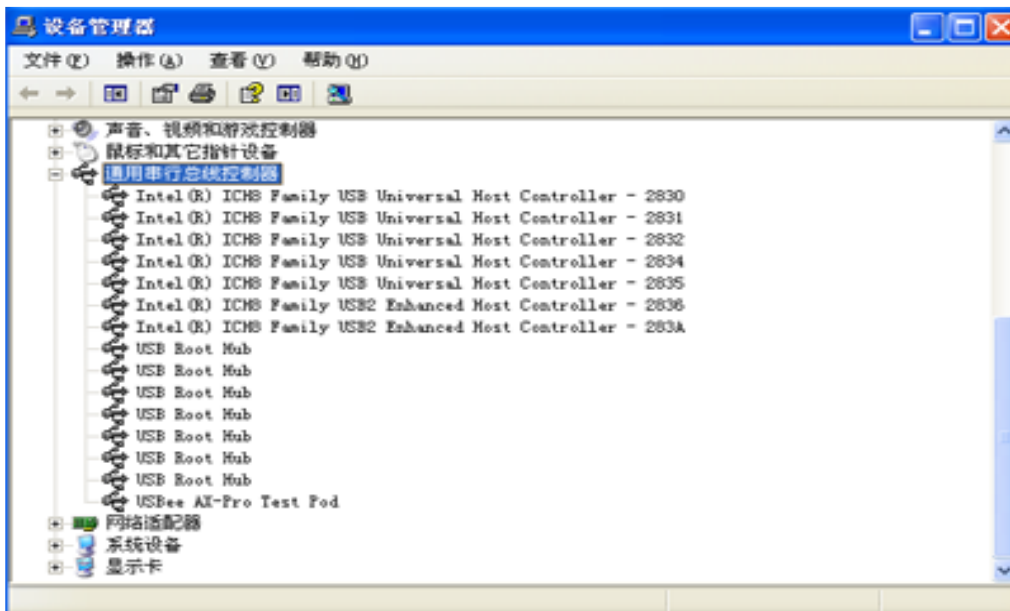

USBee Suite register

USBee Suite has many functions, it must be registered in order to be implemented in the software. Open **USBee Suite** software, select **Register USBee Suite Pro** in **Setup** drop-down menu in the middle of the page pops up, find the software's **ID** number, enter the registration software to calculate generate the registration number and registered to **USBee** Suite, you can get a complete **USBee Suite Pro** function.

2 oscilloscope

This oscilloscope is a PC-based virtual oscilloscope, feature-rich, easy to use.
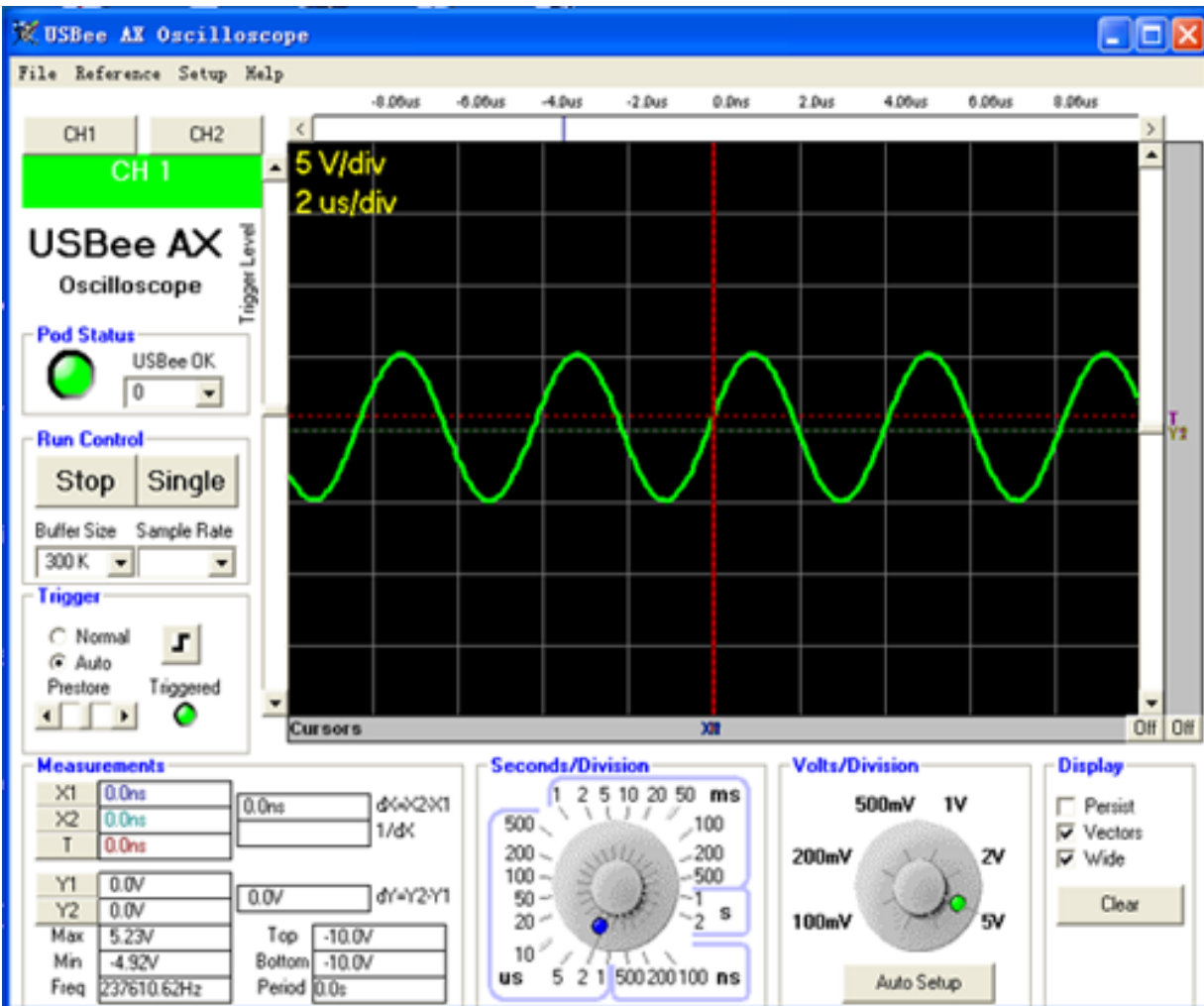
2.1 oscilloscope function parameters

Analog Input	1
Analog channel	1
The maximum sampling rate	16Msps
Analog Bandwidth	3MHz
Input voltage range	-10V ~ + 10V
Simulation Sensitivity	78mV

Analog resolution	256 Indexing
Memory Depth	> 1M

2.2 Quick Start

- The device is connected to the target board **GND**;
- 1 **ACH** signal source and the target board to be tested is connected;
- Run oscilloscope software;
- Click the **Auto Setup** button, you can automatically select the most appropriate **Seconds**/Division, **Volts**/**Division** and trigger settings equality;
- You can move the waveform display area by moving the frame slider, or click and drag waveforms. You can also adjust each knob to enlarge or shrink the waveform;
- Right and the gray area below the waveform display area is a pointer drop zone, click the left mouse button to place the first pointer, the second pointer right place, you can simply measure the waveform. Measurement results are displayed in the screen area **Measurements**.

2.3 Characteristics

2.3.1. Status Indication

There are status lights on the oscilloscope software interface when the device is connected, shown in green, and the edge of the display box shows the **PID** of the device. If the device is not connected properly, or is not connected, the indicator is displayed in red.

2.3.2. Channel Control

Click **CH1** or **CH2** can select the channel number you want to test, and displays corresponding waveforms.

2.3.3 Operation Control

The left **RUN / STOP** button, control and continuous sampling oscilloscope display, easy to observe dynamic changes over time waveform.

**Single** key on the right, only one sample of each event can be analyzed in detail.

Buffer Size Set the sampling buffer size, each first sampling oscilloscope software fill the buffer, and then update the display. You can set the buffer size needs, but the bigger the buffer filling time is longer. Too large buffer would take up too much computer memory, causing the machine to slow or even crash.

Sample Rate is the sampling rate, from **1Msps** (samples **per** second) to **16Msps**. The actual maximum speed pickup on your computer configuration. You can also run the menu item **Setup** | **Sample Rate Test** to test.

2.3.4 Trigger settings

Oscilloscope with powerful triggering capabilities. You can usually waveform window on the left side of the slider to set the trigger voltage (−10V ～ ＋10V). The red line represents the voltage level set by the letters on the right side of the "**T**" function in the same marked effect.
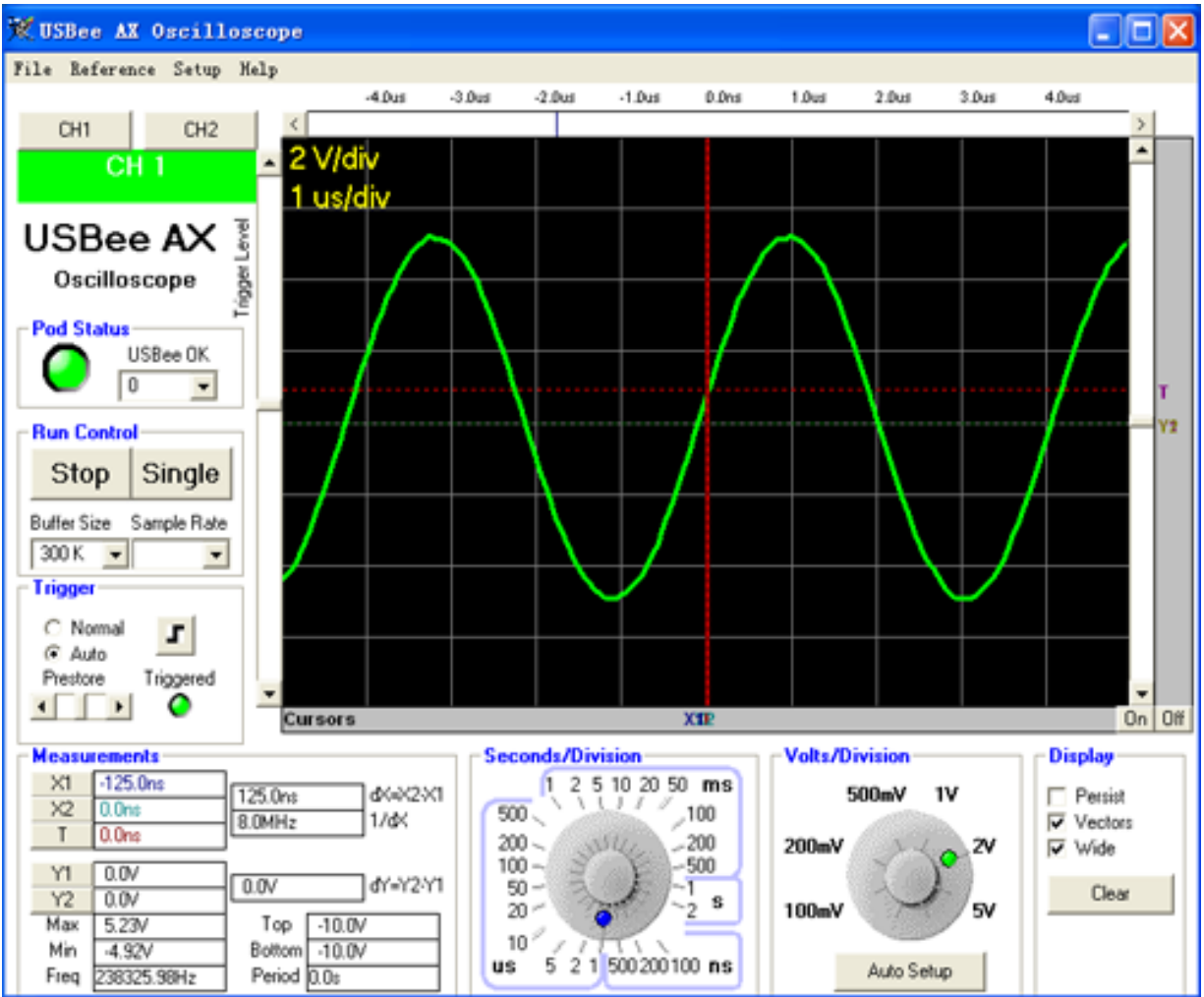
Time waveform display, you will see the trigger point. Trigger point with a red vertical dashed line and horizontal "T" shown.

The trigger and the trigger voltage waveform position is intersect, move the left side of the trigger voltage position of the slider, you can select different trigger voltage.

The oscilloscope can also choose the trigger for the rising or falling edge (Rising Edge or Falling Edge).

Auto and **Normal modes** defines the style when the signal is outside of the set trigger conditions, the waveform display. In **Normal** mode, the display is updated only in the case of a trigger voltage signal is actually through the next. The **Auto** mode, regardless of whether the signal through the trigger voltage, regularly update the display. So even if you set the wrong trigger voltage level, the signal can also be seen through the display. If the trigger voltage levels within the voltage range of the signal, then the **Auto** and **Normal** modes are functionally identical.

2.3.5 Waveform display and zoom

Waveform display area is divided into separate cells, which will help measure the waveform. Each cell voltage (Voltage **per** division) and time per division (Seconds **per** division) is displayed in the upper left corner of the area.

Waveform is usually the trigger location in the middle of the screen. You can change the position of a waveform, see the waveform before the trigger or after. The waveform time, you can use the slider bar at the top of the display area, or use the mouse to drag the waveform.

See waveform voltage, you can use the display area to the right of the sliders, or by dragging the mouse up and down with the waveform.

If you want to change the per-cell voltage (Voltage **per** division) and time per division (Seconds **per** division), you can use the knob at the bottom. If you want to zoom every time waveform grid, you can use the mouse to click directly waveform, left widens, right becomes dense.

Display area of the screen, set the display method of the waveform.

Wide lines with a relatively wide waveform display for easy observation.

Vector connection with adjacent data point waveform display connection, if turned off, use RBI display.

Persist is not clear the screen, on top of the original waveform is repeatedly portrayed waveform.

2.3.6　Measurement and Pointer

It can be easily measured using a pointer process.

X1 and X2 cursor can be placed on any level sampling time, contribute to the measurement time interval or a specific point in time between two pointers. If you want to place the pointer in the waveform at the click of the mouse on the gray bar side. When you move the mouse, temporary marking would follow the movement. Click the left mouse button to place the pointer X1, X2 pointer right place.

Y1 and Y2 cursor can be placed on any vertical sampling voltage, the voltage value of particular help to measure voltage points or between the hands. If you want to place the pointer, put the mouse on the gray bar on the right side of the waveform. When you move the mouse, temporary marking would follow the movement. Click the left mouse button to place the pointer X1, X2 pointer right place.
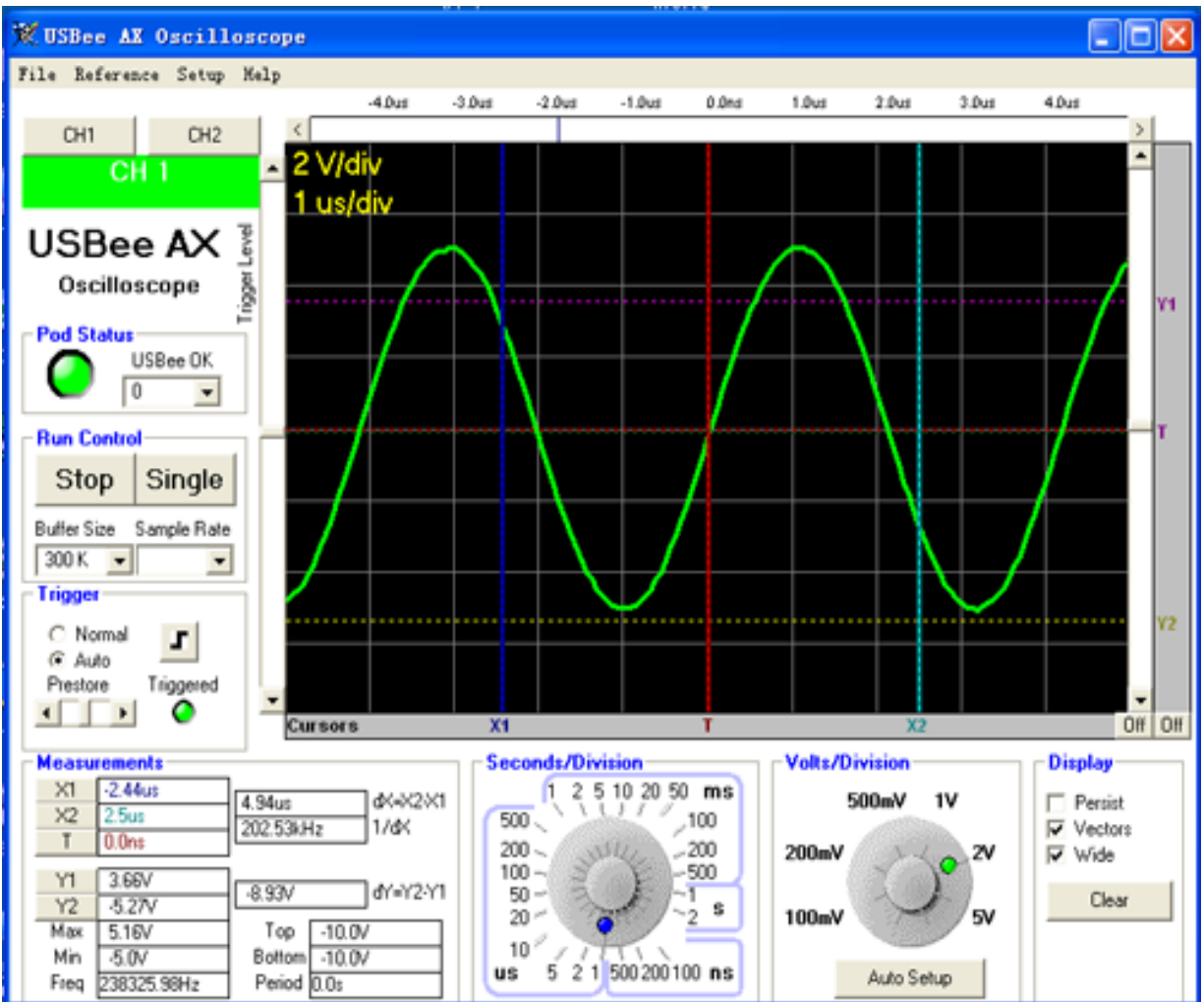
Under the **Measurement,** you can see the individual measurements.

X1 – X1 relative to the trigger point in time;

X2 – X2 relative to the trigger point of time;

dX – X2- X1 intervals;

1/dX – this time interval corresponding to the frequency;

Y1 – Y1 relative to the ground voltage;

Y2 – Y2 relative to the ground voltage;

dY – Y2- Y1 voltage difference;

There are automatically measured waveform parameters, can be obtained without the use of pointers:

Max - all sampling points maximum voltage value;

Min - all sampling points in the minimum voltage value;

Top - the average of the top of the waveform;

Bottom - the average value of the waveform at the bottom;

Freq - frequency signal;

Period - period of the signal;

2.3.7   File Save, Open, and Export

In the **File** menu, you can use the File Save, Open, and Export.

3 logic analyzer USBee Suite

3.1 Software installation and registration

Link USBee Suite Software for http://www.usbee.com/download.html

After downloading the software compression package, unpacked installation.

After USBee Suite software registration, will add more new features. Cracking process

- First connect the device to a PC;
- Run USBee Suite software, click on the menu item Setup | Register USBee Pro in pop-up window, you need to enter the registration code;
- Run the crack software, in the ID box, enter USBee Pro page pop-up window in the middle of the figures, click on computing, License Key was filled to USBee Pro, you can complete the registration process.
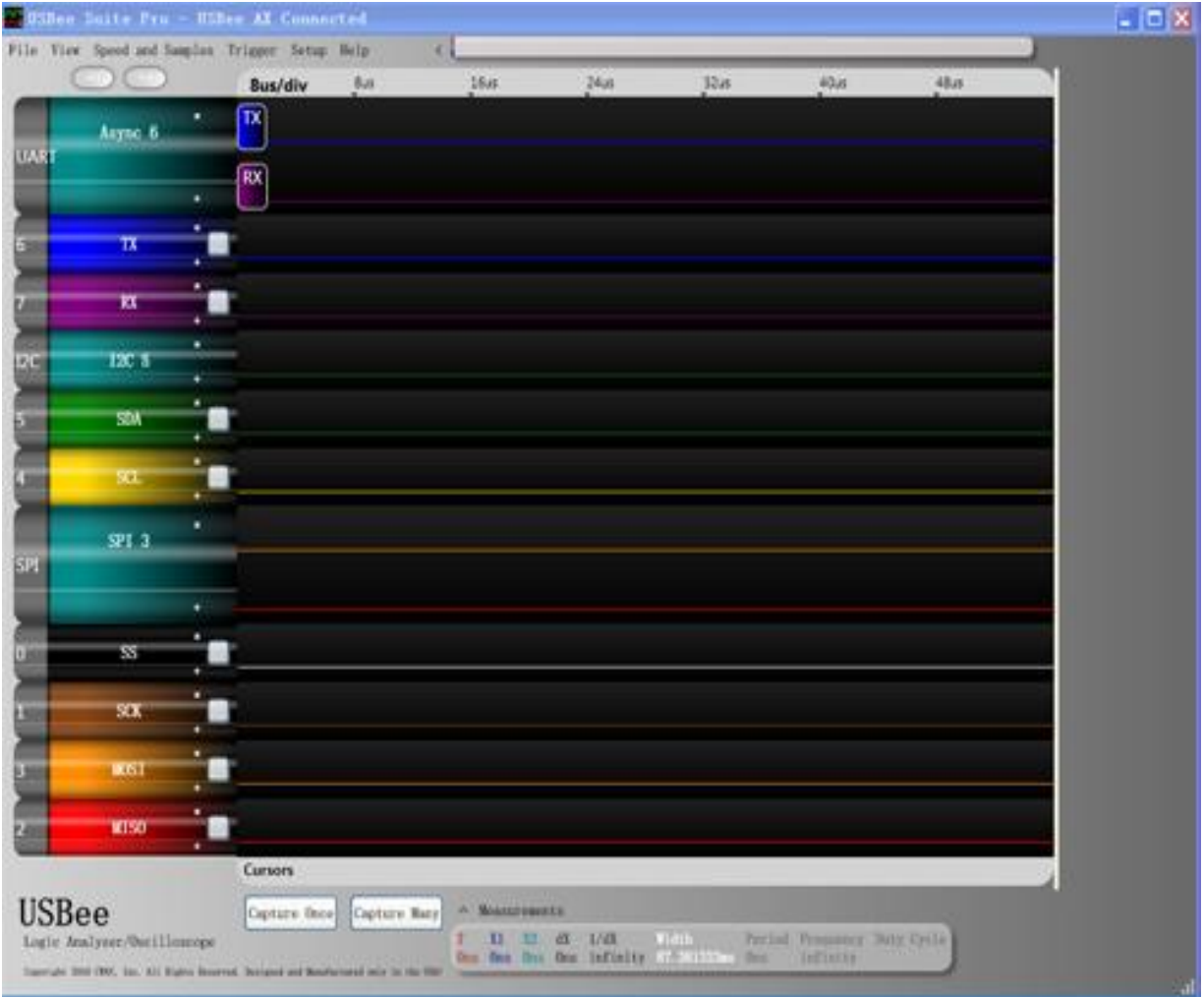
3.2 Quick Start

- First connect the device to a PC;
- The device is connected to the target board GND;
- The signal on the target board is connected to the DCH 1 ~ 8 channel;
- Run USBee Suite;
- Click the "Capture" button;
- View waveforms.

3.3 Characteristics

3.3.1. Logic Analyzer software settings

USBee Suite quick setting options, you can easily use.

Quick Set SPI

Before configuring the four channels 0, 1, 2, 3 SPI bus SS, SCK, MOSI and MISO, and increased line SPI decode information.

Quickly set I 2C

Configuration Channel 4, and 5 is I 2C bus SDA and SCL, and increased the line I 2C decode information.

Quick Set asynchronous communication

Configuration Channel 6, 7 full-duplex asynchronous communication TX and RX, need to set up the relevant baud rate, data bits and parity parameters to normal use. And increased line UART decoding information.

Channel Name

Click the name of an existing channel, you can enter the name of the custom channel.

Buffer size (Buffer Size) and sample rate (Sample Rate)

Speed and Samples menu, you can set the buffer size and sample rate. Sampling buffer size determines the waveform memory depth, the bigger the buffer, the longer the sampling time. Sampling rates from 1Msps to 24Msps. The actual sampling rate and configuration of the PC, when PC was unable to set the value of the work, will be prompted to reduce the sampling rate.

Set the trigger

The right of each channel name, there is a white box where setting adjustment triggered are rising, falling or no trigger condition (blank set).

Menu **Trigger** (trigger) function, you can set the trigger position, trigger position when the slider is set to the left, most of the sampling is completed after the trigger. Conversely, when the slider trigger position set to the right, most of the sampling is completed before the trigger. This easy to observe the changes in the conditions before and after the trigger signal.

Observe the waveform

Live waveform with the left mouse button, drag around, can be observed

3.4 Protocol Analysis

Equipment enclosure on the digital channel identified as DCH1 ~ 8, the channel number corresponds to the software from 0 to 7, please note this difference.

I 2C protocol analysis

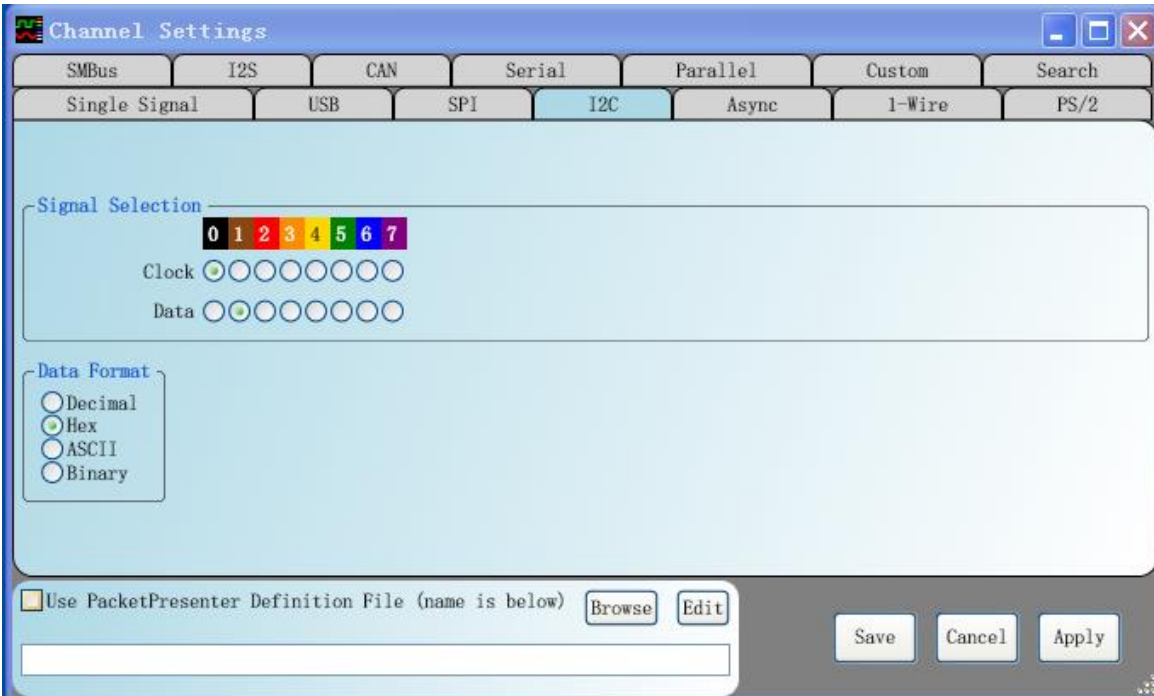I 2C protocol decode analysis can display the content of communications I 2C bus.

Note:

Sampled signal voltage range is **0-5V,** any more than the range of voltage will damage the device. If the target board to the ground level and the ground level there is pressure computer can not be common ground, set the signal isolation can be sampled in order to prevent "hot land" effect caused by equipment damage. Please users carefully judge!
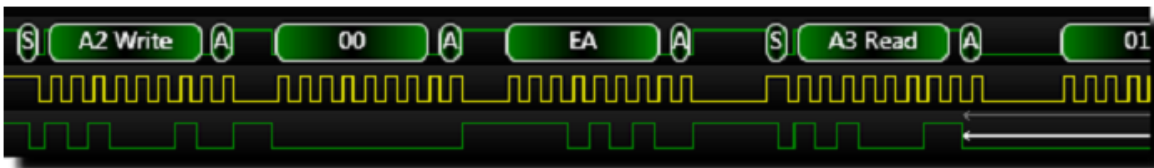
When I 2C protocol analysis, sampling SDA and SCL require two signals the target board, the two signals are connected to different channels and devices GND and the target board is connected.

Software Setup

First select the sampling rate and memory depth according to I 2C speed.

Click the channel number 0-7, pop channel settings window, select the channel SDA and SCL two signals actually used, according to "Apply" and "Save".

Click on the "**Capture Once**" is sampled, after adjusting signal interval with the mouse, you can see decoding content.

Asynchronous communication protocol analysis

Asynchronous communication protocol decode analysis can display the content of communications **UART** bus.

Note:

Sampled signal voltage range is **0-5V,** any more than the range of voltage will damage the device. If the target board to the ground level and the ground level there is pressure computer can not be common ground, set the signal isolation can be sampled in order to prevent "hot land" effect caused by equipment damage. Please users carefully judge!

Asynchronous protocol analysis, sampling **TXD** needs and/or the target board **RXD** two signals, the two signals are connected to different channels and devices **GND** and the target board is connected.

Software Setup

First select the sampling rate and memory depth based on asynchronous communication speed.

Click the channel number 0-7, pop channel settings window, select the channel **TXD** and **RXD** signals actually used two sets asynchronous protocol settings, including baud rate, word length, parity and so on, press "**Apply** "and" **Save** ".
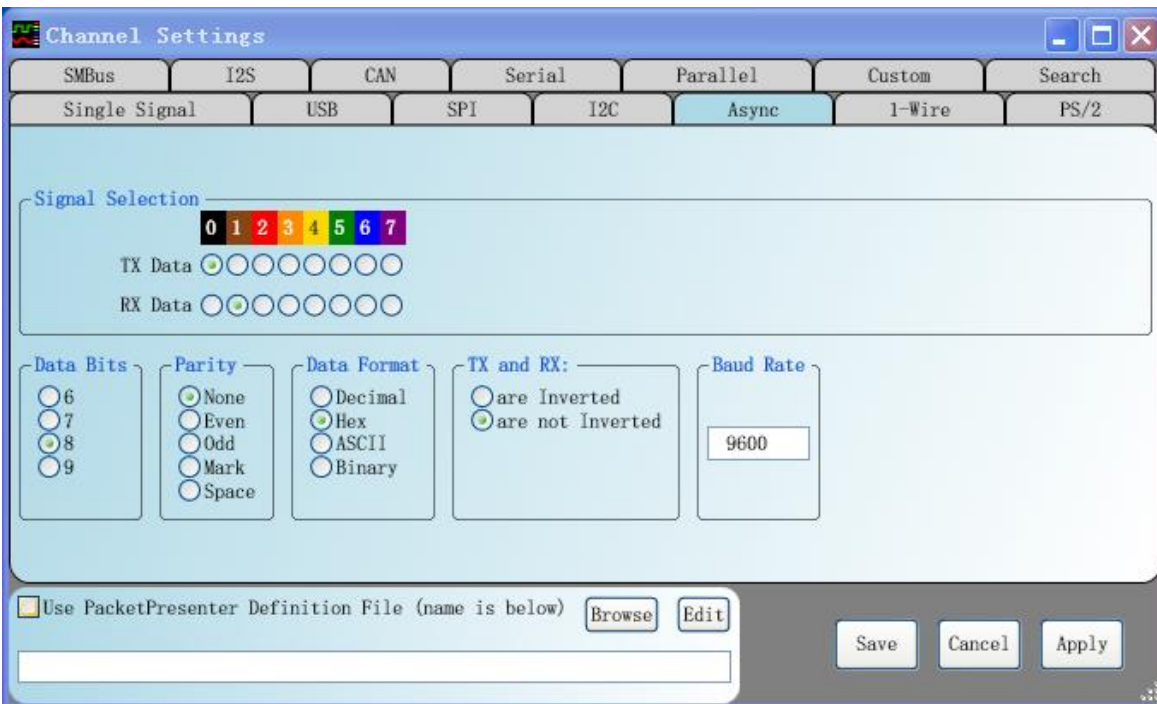
Click on the "**Capture Once**" sampling time interval with the mouse to adjust the signal, you can see the decoded content, you can display the hex, **ASCII** and other formats.
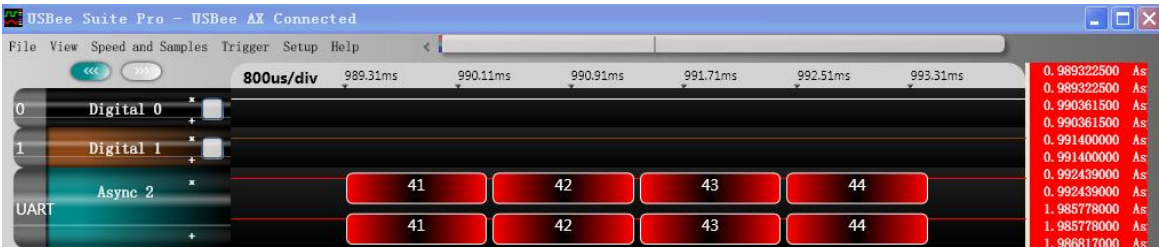
Protocol can also analyze a lot, not one by one in this presentation. Step is basically the same as the above example.

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