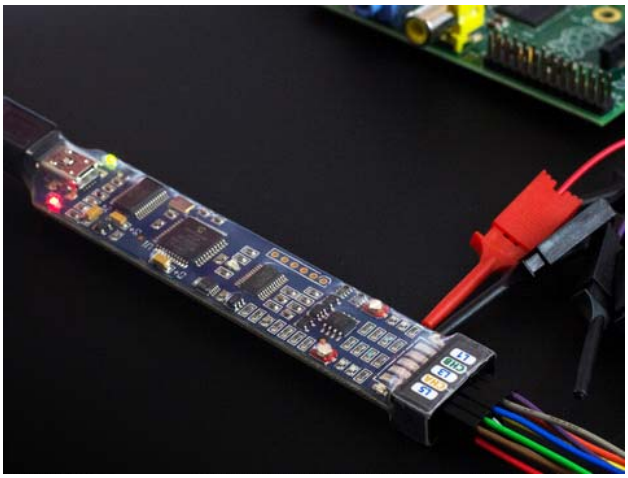
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BitScope Micro - a mixed signal test & measurement system for Raspberry Pi

BS BS05U



The BS05U is a fully featured mixed signal test & measurement system. A mixed signal scope in a probe!

- 20 MHz Bandwidth.
- 40 MSps Logic Capture.
- 2 Analog Scope Channels.
- 2 Analog Comparator channels.
- 6 Logic/Protocol Analyzer channels.
- 8 & 12 native analog sample resolution.
- Decodes Serial, SPI, I2C, CAN and more.
- Windows, Linux, Mac OS X & Raspberry Pi.
- Built-in analog waveform & clock generators.
- User programmable, C/C++, Python, VM API.
- Tiny, light weight (12g) and water resistant.

This is the **BitScope Micro**, a *go anywhere* problem solver that fits in the palm of your hand.

In the lab or in the field, working in hot or wet conditions, even attached to a flying quadcopter, it's the perfect diagnostic tool for hardware hackers, experimenters, students and engineers.

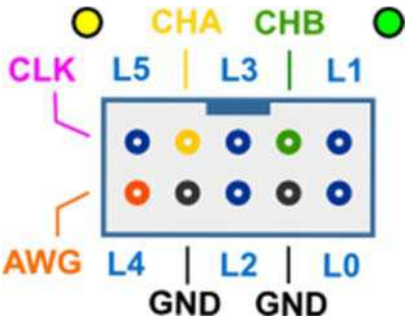
Powerful software, flexible solutions...

BS05 is no toy. It works with the full suite of BitScope software and it's fully user programmable. Program it in a variety of languages including **C/C++**, **Python** and**Pascal** or integrate it with third party software.

You can even program it directly via the BitScope VM API; all you need is a spare USB port and if you want to use it remotely or share it among multiple clients, simply plug it into a Raspberry Pi or any Windows, Mac or linux system and fire up BitScope Serverfor a full IP addressable network connected test, measurement and data acquisition system.

All the inputs and outputs you need...

BS05 uses an IDC-10 connector for access to all its analog and digital inputs and waveform and clock outputs.



It's conveniently arranged so the two ground pins can pair with the analog inputs, waveform and clock generator outputs or logic inputs L0, L2 and L4.

Like all BitScopes this model can capture 8 logic/timing channels but in this case logic channels L6 and L7 are derived from the analog channel comparators.

This is a very powerful feature because it means the voltage ranges and switching levels for those two channels can be adjusted to suit almost any logic family, even inverted ones!

It's a dual channel oscilloscope...

BS05 is a real dual channel digital oscilloscope with fully compensated 1M/20pF analog inputs.

It's specifically designed to be able to be used with standard oscilloscope probes.

All that's needed is a two pin header to BNC adapter which can be made for a few dollars using standard off-the-shelf components.

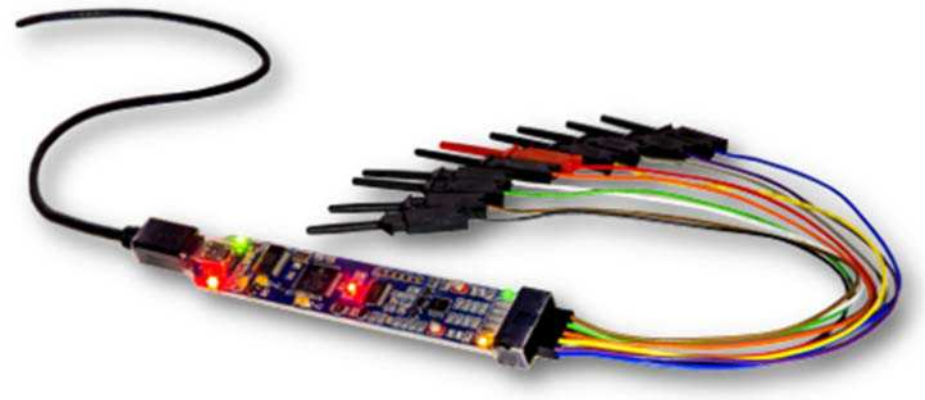
In addition to the supplied set of mixed signal clips it means the full range of scope probes designed for any BitScope can be used.

In fact probes sourced from anywhere can be used so if you already have them, they'll work with BS05. For example, use 10:1 probes like PRB-04 when a higher input impedance is required or when looking at voltages higher than 12V.

BS05 is not designed for use with the BitScope dual channel active differential probe DP01 (for that you need BS10).

It's an eight channel logic analyzer...

Of course BS05 would not be a BitScope if it did not also have an 8 channel logic analyzer built-in!



BS05 is very similar to BS10 in terms of its digital inputs and logic analysis features.

The six channels L0 to L5 are CMOS 3.3/5V compatible and switching levels are suitable for both logic families. These inputs all have 100k/5pF input impedance. For example, doubling the input range is as simple as inserting a 100k resistor in series.

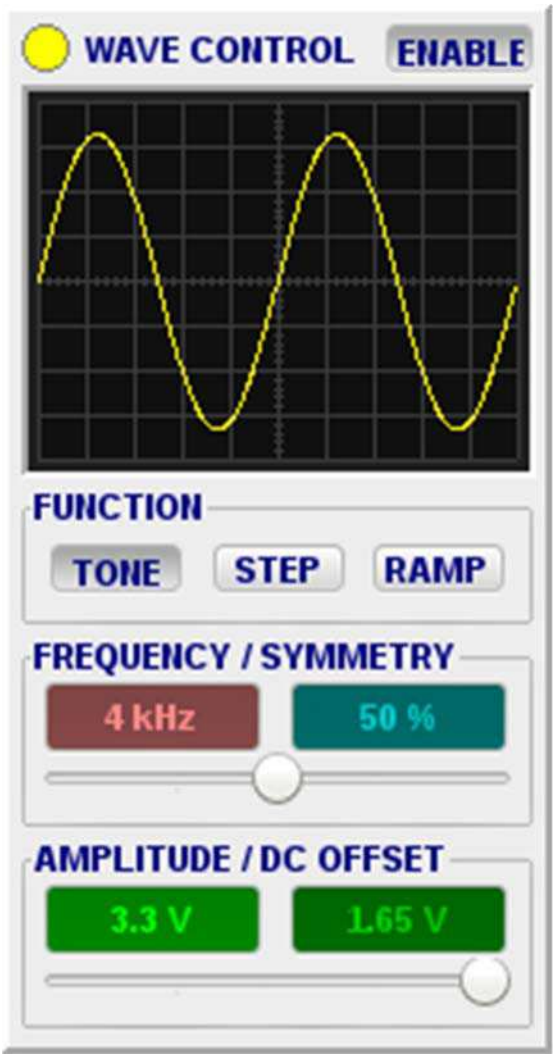
Logic channels L6 and L7 are special; their inputs are derived from the analog channels CHA and CHB via the user adjustable analog trigger comparators.

In addition to being able to capture and display the trigger signals from the analog channels it means the analog channels may be used as logic inputs with variable switching levels! For example, these two channels can be used to capture 1.2V or 1.8V logic families or 12V, 24V or other PLC logic levels.

It's an abitrary waveform and clock generator...

BS05 would not be complete without the ability to generate waveforms and drive clocks.

The standard waveform control panel can generate sinunsoidal, triangle, sawtooth and square waveforms out of the box.



The waveform generator in BS05 itself is completely arbitrary; it can replay any wavetable of up to 1024 sample points programmed into it.

It could not be easier to get started.

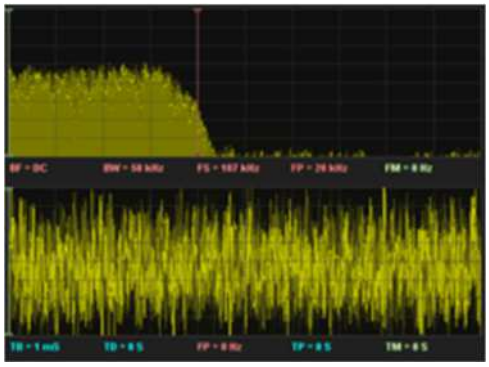
Simply connect the supplied loop back wire from the L4/AWG pin or the L5/CLK pin to any input channel to experiment with waveforms and clocks.

You can use the waveform or clock generators to calibrate oscilloscope probes, drive digital logic or test analog circuits such as amplifiers and signal processing systems.

The waveform and clock generators operate concurrently with the oscilloscope and logic analyzer functions. This means you can use it to drive logic circuits while monitoring the results or use impulse or step functions to evaluate analog system responses. You can vary the waveform parameters in real-time to produce dynamically changing waveforms. For example, create a sweep to measure the frequency response of a system which BS05 can do just as well because...

...it's a Spectrum Analyzer too...

There's a lot you can see in the time domain but for complete systems analysis you'll need a spectrum analyzer too.



BS05 can be used as a powerful real-time mixed domain (time and frequency) spectrum analyzer. It can be used in baseband or narrow band (RF) applications.

The example above shows white noise passed through a 20 kHz audio amplifier where the roll off starts at 15 kHz to -3dB at 17 kHz, -20dB at 20kHz and -50dB beyond 22kHz.

The spectrum analyzer is mixed domain; it operates in real-time simultaneously as the waveform is displayed. It can provide some very good insights into the operation of analog, RF & communications.

...all in real-time...

BS05 is all these test, measurement & data acquisitions systems in one tiny low cost device. Most functions can operate concurrently and the BS05 is very fast with a frame rate up to 50 Hz driving a digital phosphor display. It may be small and very low cost but works just like a quality stand-alone mixed signal oscilloscope. View waveforms, plots, spectra and more on its smooth flowing real-time display. Even live captured logic data can be viewed this way.

With its large buffers it can support very high speed one-shot capture for such a small device with post-capture zoom, scrolling and measurement. Alternatively stream capture direct to disk for off-line replay and analysis.

Compatible with popular systems.

BitScope DSO and Logic software applications are included as standard. They are compatible with Windows, Mac OS X, Linux and Raspberry Pi and a growing range of other applications are also available for download at no extra cost. Many other options are already available and more software is in development for the entire BitScope range including support for mobile and online.