BITSCOPE MODEL 310


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Dual Channel Mixed Signal Oscilloscope

BS310 is BitScope's classic design high performance Mixed Signal Oscilloscope designed for use with a PC or notebook.

Key features:

- **100 MHz Analog Bandwidth Scope.**
- **40MS/s Logic Analyzer, 25nS capture.**
- **Dual Analog Channels (4 inputs via BNC & POD).**
- **8 logic/timing channels and Smart POD.**
- **Arbitrary Waveform Generator.**
- **Real-Time Spectrum Analyzer.**
- **Mixed Signal Data Recorder.**
- **Networkable (BS310N).**
- **User Programmable.**

BS310 combines a dual channel digital storage oscilloscope and 8 channel logic analyzer with an arbitrary waveform generator, real-time spectrum analyzer and data recorder in a virtually indestructable package.

It is the ideal scope for dual channel analog, small scale digital or mixed signal applications.

Robust Physical Design

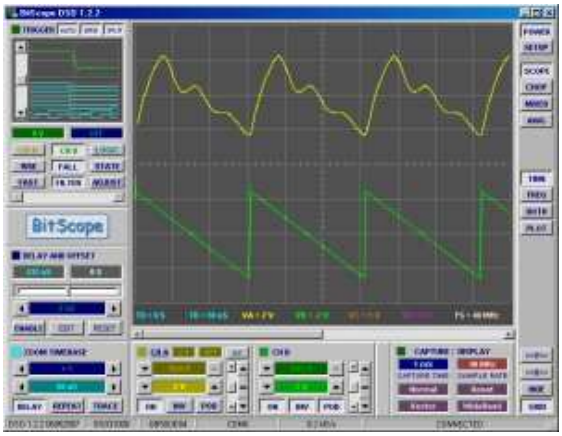
BS310 is housed in a solid extruded aluminium case so it's well suited to harsh environments like student labs and engineering workshops.

The front panel provides access to the analog and logic inputs and includes 50 ohm termination switches on the BNC inputs and a switch for AWG control.

And on the back panel are the 12VDC power socket, USB (or Ethernet) connector and a ground reference.

Capture LEDs in analog channel colors (yellow and green) on the front panel provide live visual feedback of capture operation and USB (or network) connection, data and power LEDs on the back indicate power and communication status for the scope.

Powerful Software



Included with BS310 is **BitScope DSO**, BitScope Design's powerful test and measurement software application.

When BS310 is powered on, the DSO presents a familiar dual channel digital oscilloscope display.

But there's *much more* to it than that.

By selecting the ***virtual instrument*** and split screen display buttons down the right side of the application you can select from an array of integrated test instruments.

Whether you're looking at waveforms down at audio frequencies or analyzing clock edges at the high speed of microcontroller and digital logic circuits, DSO and BS310 meet the challenge

And of course you can select the mixed signal or logic capture modes to analyze logic state transitions and timing or choose the spectrum analyzer to display waveforms and their spectra together, and all in real-time with display refresh rates as high as 50Hz.

Analog Probes

BS310 is compatible with industry standard oscilloscope probes.

The BitScope **PRB-01** (pictured left) is the best choice for general low voltage work.

If offers switchable x1 and x10 attenuation, includes a full accessory kit and has a 100 MHz bandwidth to match the BS310 itself.

Other choices are available such as the x100 attenuating **PRB-03** designed for working with higher voltages (600 V) or when an extremely high input impedance is required (100M ohm).

Of course if you already have standard 100 MHz ocilloscope probes they will work with BS310 which is why probes are optional when buying BitScope.

Logic Probes and Hardware Expansion

Like all BitScopes, BS310 has a ***Smart POD*** expansion connector on the front panel. This is where you can connect high speed buffered logic probes such as **LP103W**.

Design for use with TTL, 3.3V and 5V CMOS logic, these probes also provide test clip access to the two *additional* analog inputs provided on BS310's connector.

Of course the POD connector is not just for connecting logic probes. It can also be used for special function and software controlled signal processing modules such as waveform generators, RF convertors and probes.

The key to this capability is the POD connector's 12V and 5V power, ground and serial I/O pins. This makes it possible to connect your own circuits to BS310 with the BitScope providing power, serial control and data capture for your own circuits.

PC Connectivity

BS310 is a PC based test instrument and you can choose to connect via USB (Model **BS310U**) or Ethernet (Model **BS310N**).

USB offers plug and play convenience and is well suited to single desktop or notebook use.

Networking is ideal when remote connection between the PC and the BitScope (via a local LAN or the Internet) is required. It also offers the ability to share one BitScope between several PCs or control multiple BitScopes from one (or more) PCs.

The network BitScope is also electrically isolated (to the same standard as ethernet) which can be very important in some high voltage or electrically noisy environments.

If you need both, BS310N can be used with most third party USB/Ethernet adaptors.

Technical Specifications

Feature	Specification
Analog Inputs [1]	4 (2 x BNC + 2 x POD)
Analog Channels	2 (alt/chop), 1 (mixed)
Analog Bandwidth [2]	100 MHz
Logic Inputs	8 (via POD)
Input Impedance	1M/20 pF (BNC), 100K/5 pF (POD)
Input Voltage Range (+/-)	10.3 mV (x50 prescale) to 1kV (x100 probe)
Vertical Scaling (DSO)	500 uV/Div to 500 V/Div (x100 probe)
Timebase Range (DSO)	50 nS/Div to 1 S/Div
Post-Trigger Delay (DSO)	8 uS to 2 hours (programmable)
Input Prescaler [3]	x10, x50 and GND reference
Analog Sensitivity	2mV to 40mV (x1, no prescale enabled)
Maximum Sensitivity [4]	300 uV (Time), 70uV (Freq), 10uV (Mean)
Fast Sample Rates	4, 5, 10, 13.5, 20, 25, 33, 40 MS/s
Slow Sample Rates [5]	4 kHz to 1 MHz (slow) & <1 Hz (burst mode)
Channel Buffer Depth	64 kS x 2 (analog), 128 kS x 8 (logic)
Resolution (Converter)	TLC5540 8 bit converter with 6.8 to 7.6 ENOB
Maximum Resolution [6]	12.5 ENOB
Glitch Capture>(min)	25 nS

Feature	Specification
External Trigger Bus	No (but logic input can be used)
BitScope Digital Trigger	8 bit combinatorial on logic or A/D output.
High Speed Analog Trigger	YES (on any analog input)
Waveform Generator [7]	10 MS/s (switchable through BNC Channel B)
Analog Interface	2 x BNC and 2 x POD
Logic Interface	1 x DB25 (inc. logic, analog, data and power)
Display Refresh Rate (max)	50 Hz (single channel), 25 Hz (dual or mixed)
Data Upload Speed (max)	1.2 Mb/s (BS310U) or 1.0 Mb/s (BS310N)
PC Host Interface	USB 2.0 (USB 1.1 compatible) or 10BaseT Ethernet
Included PC Software	**BitScope DSO** Virtual Instrument Application
Power Requirement [8]	12 VDC @ 500 mA (max), 2.5mm CP
Operating Temperature	0ºC to 50ºC
Storage Temperature	-20°C to +60°C
Size (WxHxD)	150x55x110 mm (BS310U) 150x55x160 mm (BS310N)

E&OE

[1] Analog capture for each channel is selectable from BNC or POD individually.

[2] Input bandwidth refers to the bandwidth of the analog input circuitry and the compensated A/D converter in all but the most sensitive input range.

[3] User selectable analog input prescalers with x10 and x50 gain for use with low level signals or when input bandwidth limiting is required.

[4] Minimum measurable peak-to-peak sinusoidal waveform voltage when both resolution enhancement and input multiplier are enabled, when viewed as a waveform (Time) or viewed as a spectrum (Freq) and the minimum measurable average DC voltage (Mean).

[5] In addition to the fast sample rates, a wide range of "slow clock" and "burst clock" rates are supported (to below 1 Hz). Burst clocking also supports further increased bit resolution (ENOB).

[6] Specifies the maximum effective number of bits (ENOB) achieveable with resolution enhancement enabled.

[7] The waveform generator is standard with BS310 models and supports concurrent waveform generation (BNC channel B) and waveform capture (BNC channel A).

[8] Includes **UPP-02** Universal AC adaptor and US power **cable** as standard.

Analog and logic **probes** are sold seperately.