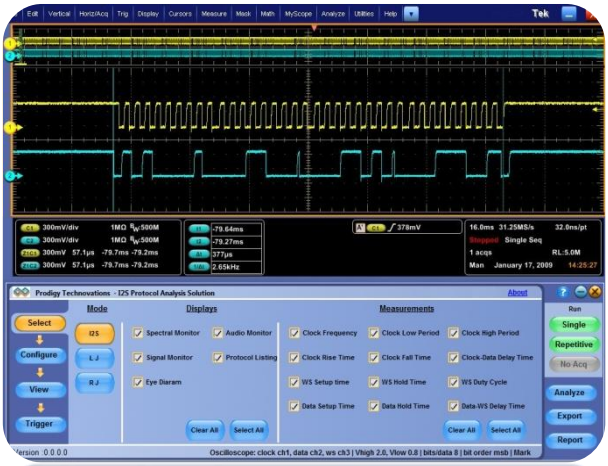
I2S Electrical, Audio and Protocol Testing Software

PGY-I2S Data Sheet



Comprehensive I2S Electrical, Audio and Protocol Testing Software

Engineers designing hardware and firmware for I2S are constantly seeking ways to differentiate their designs. Often times, they need a single tool to cross-examine the protocol layer and the Physical layer while verifying the audio performance.

The I2S Electrical, Audio and Protocol testing Software offers unprecedented cross-layer analysis tools and automation to improve quality and productivity while managing your schedules.

Protocol Decoding and Debugging Made Easy

PGY-I2S offers unmatched flexibility in performing exhaustive tests that help find problems quickly to ensure high-quality design.

PGY-I2S provides flexibility in analyzing the various I2S implementations and configurations.

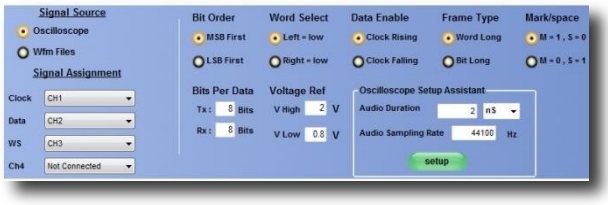
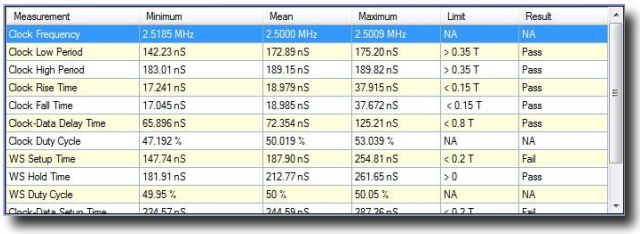


Figure 1: Configuration panel

Powerful triggering capabilities*[1] include I2S protocol and customized setup and hold triggers helps to identify and analyze the circuit problems.



Measurement	Minimum	Mean	Maximum	Limit	Result
Clock Frequency	2.5185 MHz	2.5000 MHz	2.5009 MHz	NA	NA
Clock Low Period	142.23 nS	172.89 nS	175.20 nS	> 0.35 T	Pass
Clock High Period	183.01 nS	189.15 nS	189.82 nS	> 0.35 T	Pass
Clock Rise Time	17.241 nS	18.979 nS	37.915 nS	< 0.15 T	Pass
Clock Fall Time	17.045 nS	18.985 nS	37.672 nS	< 0.15 T	Pass
Clock-Data Delay Time	65.896 nS	72.354 nS	125.21 nS	< 0.8 T	Pass
Clock Duty Cycle	47.192 %	50.019 %	53.039 %	NA	NA
WS Setup Time	147.74 nS	187.90 nS	254.81 nS	< 0.2 T	Fail
WS Hold Time	181.91 nS	212.77 nS	261.65 nS	> 0	Pass
WS Duty Cycle	49.95 %	50 %	50.05 %	NA	NA

Figure 2: Timing measurements display

Compliance of a wide range of automated electrical measurements to I2S standard helps you to address the physical layer interoperability problems.

Industry's first and best Penta Monitor (Spectrogram monitor, Audio monitor, Signal monitor, Protocol monitor and Eye diagram monitor) offers a single window to examine and analyze the I2S data in different domains.

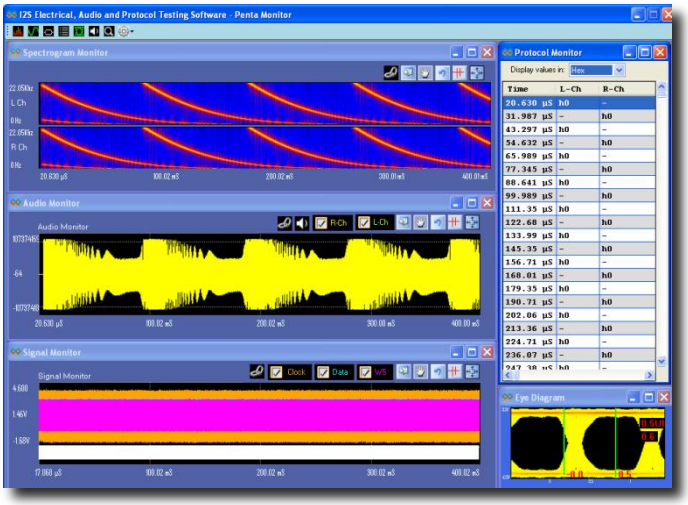


Figure 3: Penta Monitor

Spectral Monitor provides a deep insight into the transient audio behaviours in the design which are very hard to find in time domain audio waveforms.

Audio Monitor provides a way to visually inspect the transmitted audio and play the sound.

The **Protocol Monitor** provides the left and right channel data listing and timing with respect to trigger position.

The **Signal Monitor** provides insight into the transmitted I2S signals along with bus diagram and overlaid decoded data.

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Eye diagram monitor helps to understand the system performance, channel imperfections and clock to data skew.

Penta monitor along with the system utilities such as zoom, pan, un-do, fit to screen, cursors and audio play provides flexibility to the design and debug engineers to identify the problem areas quicker.

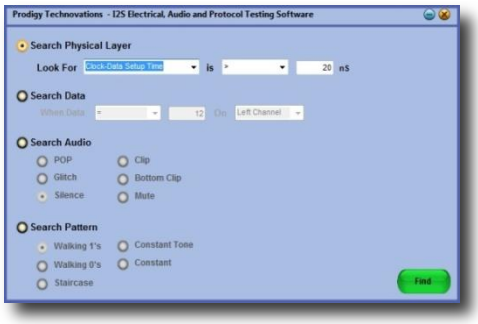

Figure 4: Search options

The unprecedented search capability compliments the trigger and helps to find problems in the physical layer, protocol layer, and audio layer faster.

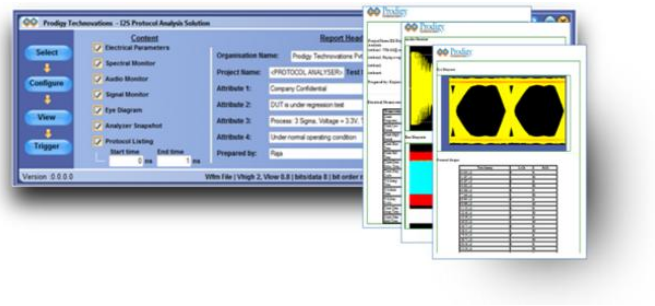

Figure 5: Light weight html Reports

PGY-I2S software's in-built automated report generator offers a very flexible report generation capability helps to communicate the test reports effectively between the fellow team members and management.

PGY-I2S Electrical, Audio and Protocol Testing software combined with a Tektronix oscilloscope provides a single tool to debug and validate the I2S digital audio physical and protocol layers.

Features

- A single tool for physical, protocol, and audio analysis helps to cross examine the electrical, protocol, and audio layers.
- Industry's first and best Penta monitor (Spectrogram monitor, Audio monitor, Protocol monitor, Signal monitor and Eye diagram monitor) provides flexibility in analyzing the digital and analog audio data in a single window.
- Cross linking of spectrogram, audio waveform, protocol data and analog physical layer signal, and eye diagram helps to identify the problem quickly.
- Support for I2S, Left Justified and Right Justified.
- Wide range of automated timing measurements as per I2S standards helps to test compliance to I2S standard timing specification.
- Sophisticated protocol- and timing-based I2S triggering quickly to pinpoint the symptoms*[1].
- Oscilloscope setup assistant automatically performs oscilloscope setup to obtain accurate and reliable measurements.
- Bus diagram and overlay of protocol data on analog waveform in a signal monitor.
- Unprecedented "Search" capabilities locate unique events in thousands of protocol data.
- Ability to play and store the uncompressed I2S waveform.
- Comprehensive and customizable report generation.
- Ability to export the analyzed data to .wav, Matlab, csv and txt file formats for advanced analysis.

Applications

Debugging I2S protocol in:

- Digital home appliances
- Portable audio devices / MP3 players
- Mobile smart phones / PDAs
- Surveillance systems
- Netbooks
- Gaming machines

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Characteristics

***I2S* Protocol Trigger**[*1]**-** Standard I2S, LJ, RJ, Left or right data (equal and not equal), world long only (I2S signal with bit long LRCLK is not supported)

I2S Timing Trigger[*1]**-** WS setup time, WS hold time, Data setup time, Data hold time, clock high, clock low, clock to data delay, WS data delay.

I2S Measurements and compliance- Clock rise time, Clock fall time, Clock low period, Clock high period, Clock frequency, WS Setup time, WS hold time, Data setup time, Data hold time, Data –WS Delay time, Clock – Data delay time.

Displays – Spectrogram monitor, Audio Monitor, Protocol Monitor, Signal Monitor (Bus diagram), Eye Diagram Monitor

Protocol Display formats –Decimal, Signed (2's complement), Hex, Binary, Octal, ASCII

Configuration settings – I2S, Lj, RJ, Data, Clock, WS, Suspicious Pop/Click source, Bit order(MSB/LSB first), world select (left = low/ Right =low), Data enable (Clock rise/ clock fall), Frame type(world long/ bit long), Mark / Space, Bits per data (Tx and Rx), Voltage reference (Vigh and Vlow), Audio sampling rate.

Display Utilities – Zoom, Pan, Undo, Cursor, link, Channel on/ off

Search - Protocol data search -Less than, greater than, equal, not equal, range, ***Audio search*** – Mute, silence, Clip, bottom clip, glitch, pop, ***pattern search –*** Walking 1, walking 0, constant tone, staircase, constant, ***Physical layer search-*** Clock rise time, Clock fall time, Clock low period, Clock high period, Clock frequency, WS Setup time, WS hold time, Data setup time, Data hold time, Data –WS Delay time, Clock – Data delay time

Export formats - .wav, .txt, .mat, csv

Report format – HTML

Oscilloscopes Supported

Following Tektronix Oscilloscopes are supported

- DPO7000 Series Oscilloscope
- DPO70000 Series Oscilloscope
- MSO70000 Series Oscilloscope
- DPO70000B Series Oscilloscope
- DSA70000B Series Oscilloscope

*1 Trigger features only available with DPO7000 and MSO70000 Series oscilloscope

Ordering Information

Option: PGY-I2S

I2S Electrical, Audio and Protocol Testing Software is compatible with Tektronix DPO7000 and DPO/MSO70000 and DPO/DSA70000B series oscilloscopes.

To order contact the nearest Tektronix Sales office or Prodigy Technovations Pvt Ltd

E- Mail: Contact@prodigytechno.com

Phone: +91-80-3-255-1030

For more details, visit www.prodigytechno.com

About Prodigy Technovations Pvt Ltd

Prodigy Technovations Pvt Ltd (www.prodigytechno.com) is a leading global technology provider of Protocol Decode and PHY layer testing solutions on test and measurements equipments. The company's ongoing efforts include successful implementation of innovative and comprehensive protocol decode solutions as well as PHY Layer testing solutions that span the serial data, telecommunications, automotive, and defence electronics sectors worldwide.

Other products

- I2C Protocol Analysis Software
- SPI Protocol Analysis Software
- UART/RS232 Protocol Decode solution
- FlexRay Protocol and SI Analysis Software

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