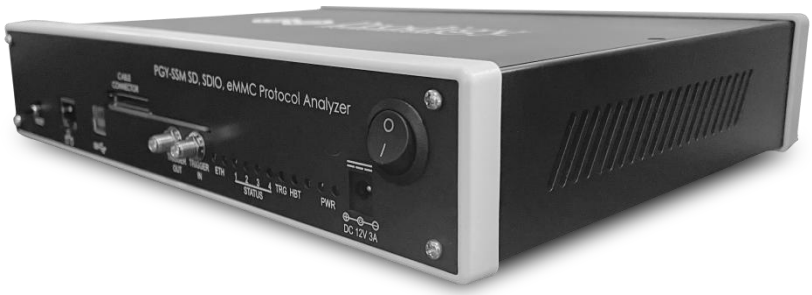
PGY-SSM SD/ SDIO/eMMC
Protocol Analyzer



PGY-SSM SD/SDIO/eMMC Protocol Analyzer is a comprehensive Protocol Analyzer with multiple features to capture and debug communication between host and memory under test. PGY-SSM Protocol Analyzer supports SD, SDIO, and eMMC for data rates up to 200MHz DDR mode. PGY-SSM is the industry's first eMMC protocol analyzer that supports versions 4.41, 4.51, 5.0, and 5.1 specifications. The innovative active probe has minimum electrical loading on the device under test (DUT) and allows protocol data capture without affecting the performance of the DUT. In an industry-The first feature, the PGY-SSM protocol analyzer allows continuous streaming of protocol data from the PGY-SSM Protocol Analyzer to the host system (using USB3.0 or GbE interface) running the UI. Comprehensive decoding of protocol data, command units, and real-time error analysis enables effective verification of communication of SD/SDIO/eMMC host and device.

PGY-SSM Protocol Analyzer enables design and verification engineers to test and debug SD, SDIO, and eMMC by triggering command, response, data, or CRC errors. It also provides instantaneous decoding of Command, Response, CID, CSD, and Ext CSD registers. The analytics feature offers an easy analysis graphical representation of command, response, data, and frequency of operation for the acquired duration.

Key Features

- Continuous monitoring of protocol data for a long time to capture elusive events (more than 30GB data capture).
- Analysis of captured data per standards for protocol integrity, count of data bursts, CMD CRC errors, Response CRC errors, Data CRC errors, Timing Values, and Reserved commands.
- Hardware-based protocol-aware trigger capability in real-time enables capturing specific Events. Triggering facility on patterns, commands, or error events.
- Users can identify the anomalies by decoding command and response arguments.
- Analytics feature provides analysis of acquired protocol data by plotting command, response, data, and frequency of operation over acquired time.
- The analytics feature also provides the decoding of device registers for easy analysis.
- Filters allow you to view specific packets in decoded protocol packets.
- Search feature for specific events in protocol activity.

- Easy-to-use user interfaces save time on the learning curve.
- Handles long-duration capture and displays the decoded data without demanding extensive resources in the host computer.
- Inserting markers [using Trigger-In] in protocol activity helps in correlating the input digital signal with Protocol Activity.
- Trigger-out signal for any specific protocol event allows triggering of other instruments such as an oscilloscope.
- Interface to host system [running UI] using USB3.0 or Gigabit Ethernet interface.
- Flexibility to upgrade the hardware firmware using the GbE interface provides easy field up-gradation of the firmware.
- Export of Decoded data packets to txt file for further analysis.

Specifications

Interfaces Supported	SD3.0 (UHS-I), SDIO4.0, and eMMC 4.41/4.51/5.0/5.1 Specifications
Protocol Decode	Command, Response, CRC, Data, Boot Data, Arguments, Device registers
Data Decode	1 bit, 4 bit, 8 bit SDR, or 4,8 bit DDR
Protocol Test	Protocol Integrity, CRC Errors, Timing values, Data CRC Errors, Reserved commands
Operating Voltage levels	1.8V, 3.3V
Storage Capability	Continuous streaming of protocol activity up to 30GB or 4 to 5-hour capture duration
Capture Mode	Manual Run/Stop, Time-specific
Capture Duration time	1 sec to 5 hours
Trigger on	Command, Response, CRC errors, Sequential trigger
Trigger Actions	Capture data and/or trigger out signal
Signal Input	Digital Signal input to mark the activities in Protocol activity
Protocol Decode	MPHY, UniPro, and UFS layers
Host System Interface	USB3.0 or GbE interface
Host Machine Minimum Requirements	Microsoft Windows® 8, Windows 7, 16GB of RAM. Storage with at least 50 GB HDD space for storing the acquired data. Display with resolution of at least 1024×768

Test Setup

PGY-SSM Protocol Analyzer works on the principle of fat-pipe analysis where the analyzer probes are connected on the interface bus between host and device[memory] of the unit under test. It captures all transactions that are going on between the host/device and does real-time analysis for errors + a detailed analysis of the captured data which is made available through UI running on a host system. Captured data is stored in the hard disk of the system running UI, enabling a long capture [expect to have enough free space in the hard disk].

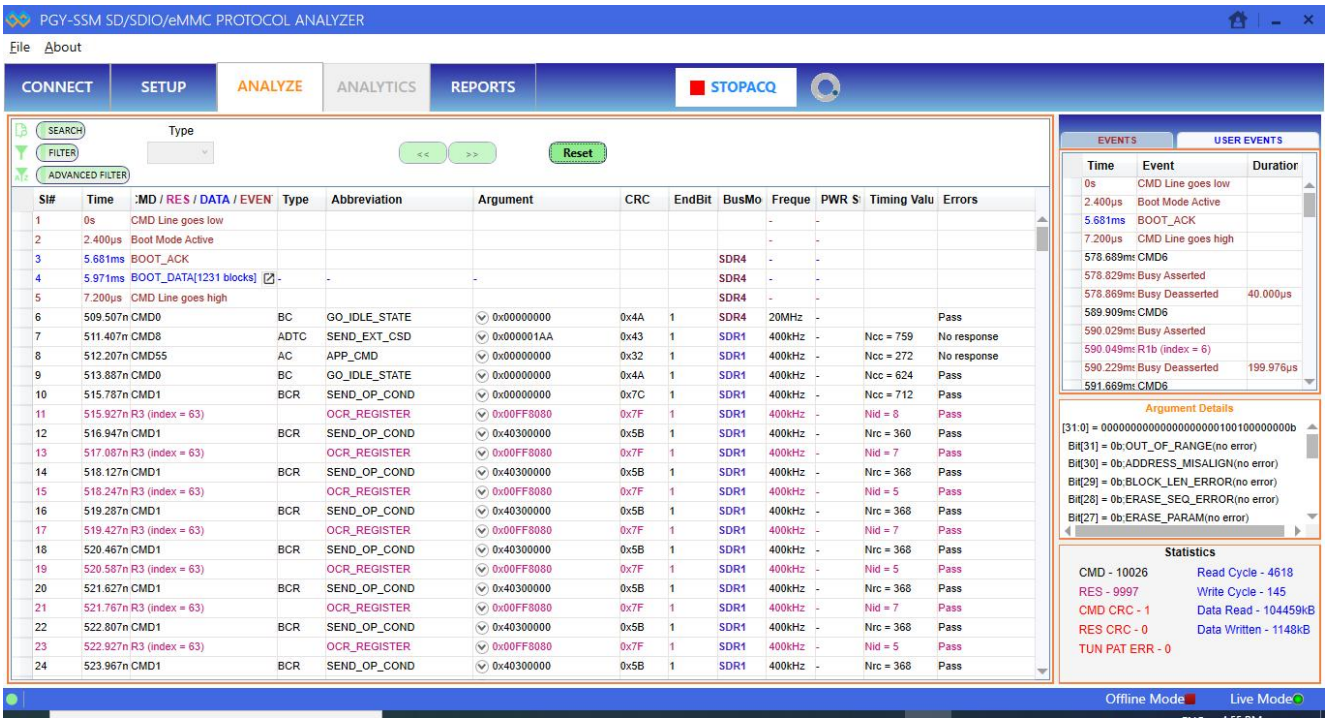
PGY-SSM Protocol Analyzer interfaces to host using USB3.0 [Super Speed] and GbE. PGY-SSM analyzer & UI software runs in the host machine. PGY-SSM protocol analyzer also has the capability to capture boot data for eMMC.

Probing

PGY-SSM Protocol Analyzer has an active probe, which provides very flexible probing with minimum electrical loading of DUT. This is specifically designed keeping to address challenges in probing eMMC/SD/SDIO signals. The probe supports 200MHz DDR bandwidth so that eMMC/SD/SDIO signals can be captured without any error. Probes have a flying probe lead set with a berg post connector and solder-able probe tips making it very convenient to connect to DUT.

Comprehensive Protocol Analysis

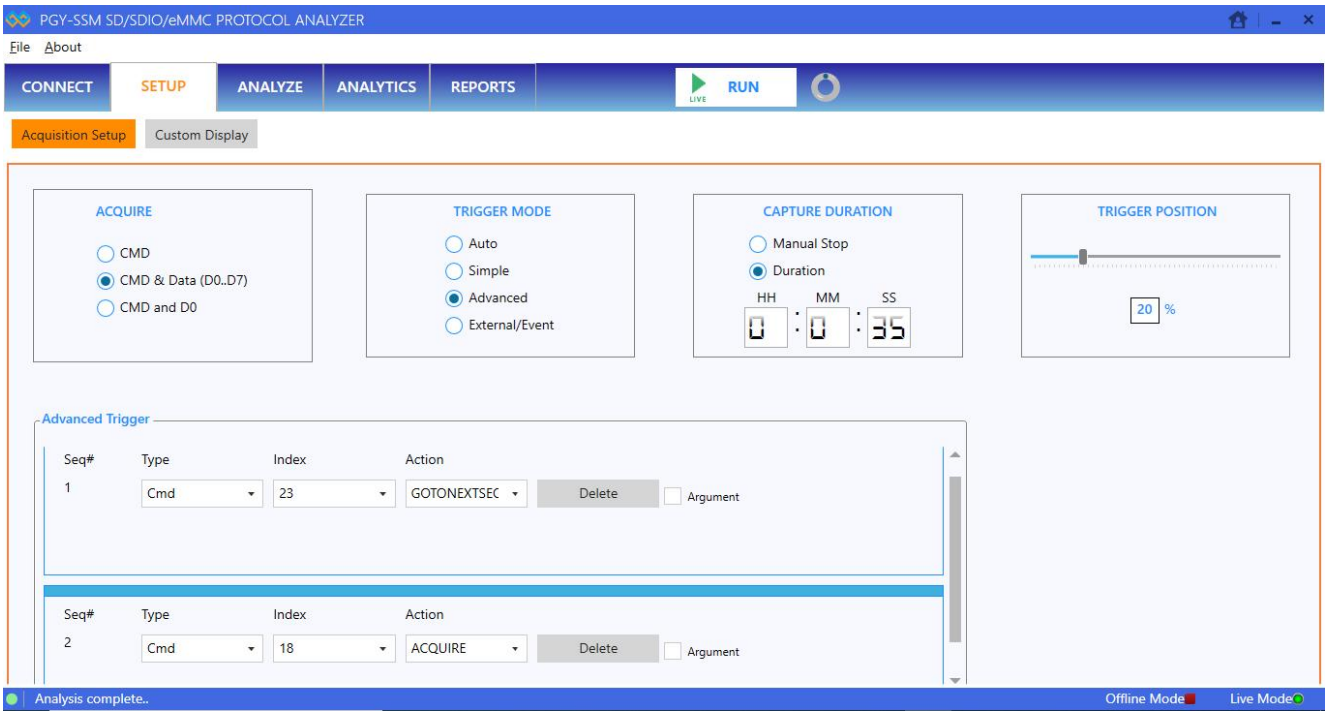
PGY–SSM Software provides the industry's best protocol analysis capabilities. A simple-to-use interface reduces the complexities and time for protocol debugging. Time-stamped view of decode listing provides a complete view of protocol activities between host and device. By clicking on selection prompts, the user can get the decode of arguments, CSD, CID registers, data activities, and more [detailed view]



Protocol Data Capture and Trigger

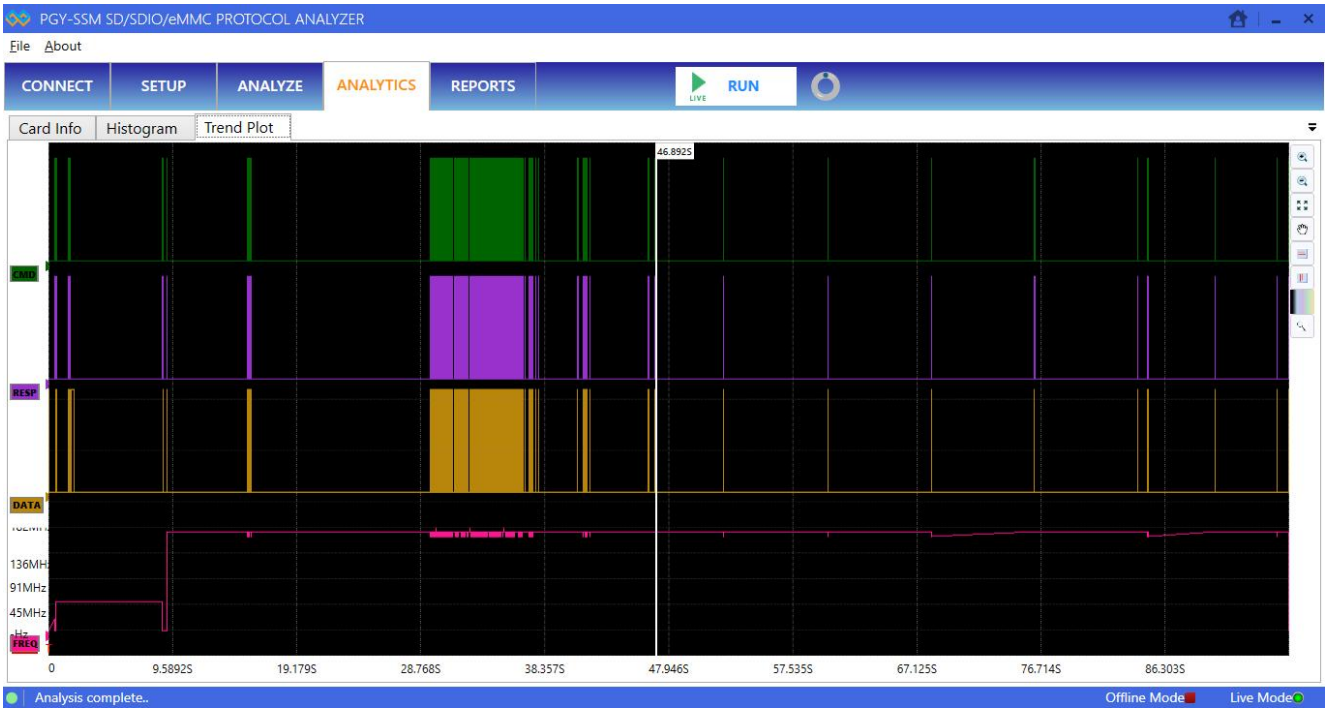
PGY-SSM Protocol Analyzer has powerful protocol-aware trigger capabilities that allow the capture of protocol events at specific events. PGY-SSM supports simple and advanced trigger capabilities. PGY-SSM can trigger specific command, response, and CRC error conditions. Advanced trigger capabilities allow sequential trigger conditions to capture protocol data after a sequence of events. In Auto mode, data is captured by pressing the RUN button.

Protocol data capture duration is controlled by manual stop or setting the capture duration. Manual stop offers the flexibility of set protocol data capture by visual activities in DUT. In time duration user set data capture in secs to 3 to 4 hours. During the capture mode, protocol data is continuously streamed to the host system hard disk drive for storage.



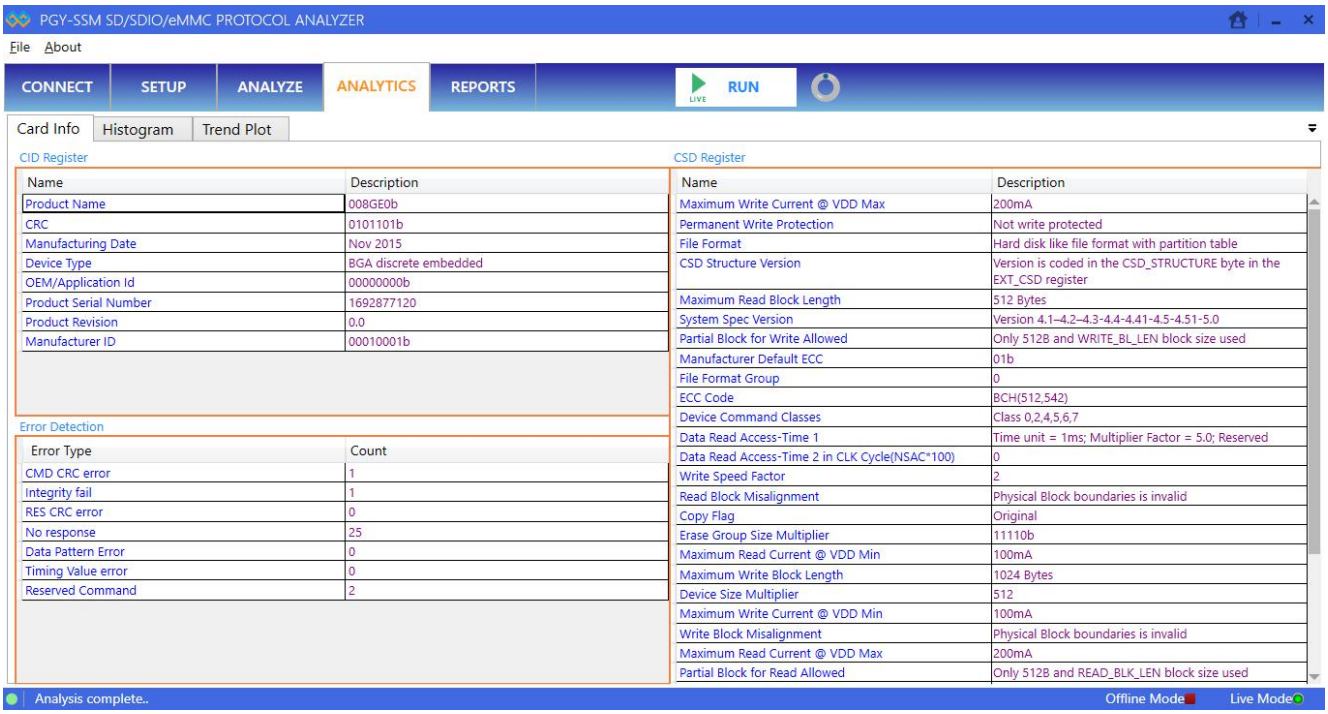
Analytics

A) Analytics features quickly provide insight into protocol activity without going through the complete protocol activity. A sample plot is shown below:



The Analytics view is a bird's eye view of protocol activity for the captured long-duration data. It reduces analysis time by viewing plot command, response, data, and frequency of operation of captured data. The user can search for specific commands or responses in the plot.

B) Card/Device Information provides decoding of register argument of device. Now the user no longer needs to manually decode each register value.



Ordering Information

The ordering information is as follows:

PGY-SSM SD, SDIO, and eMMC Protocol Analyzer
(Shipment includes Hardware, software CD, one set probe, USB3.0, an Ethernet Cable, and power adapters)

Options:

PGY-SSM–S/W offline SD, SDIO, eMMC Protocol Analysis Software
(Shipment includes software CD with USB key for license)

Warranty:

Hardware and software carry a warranty of one year.
Probes are covered three-month warranty for any manufacturing defects

Contact Information

About Prodigy Technovations Pvt Ltd

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