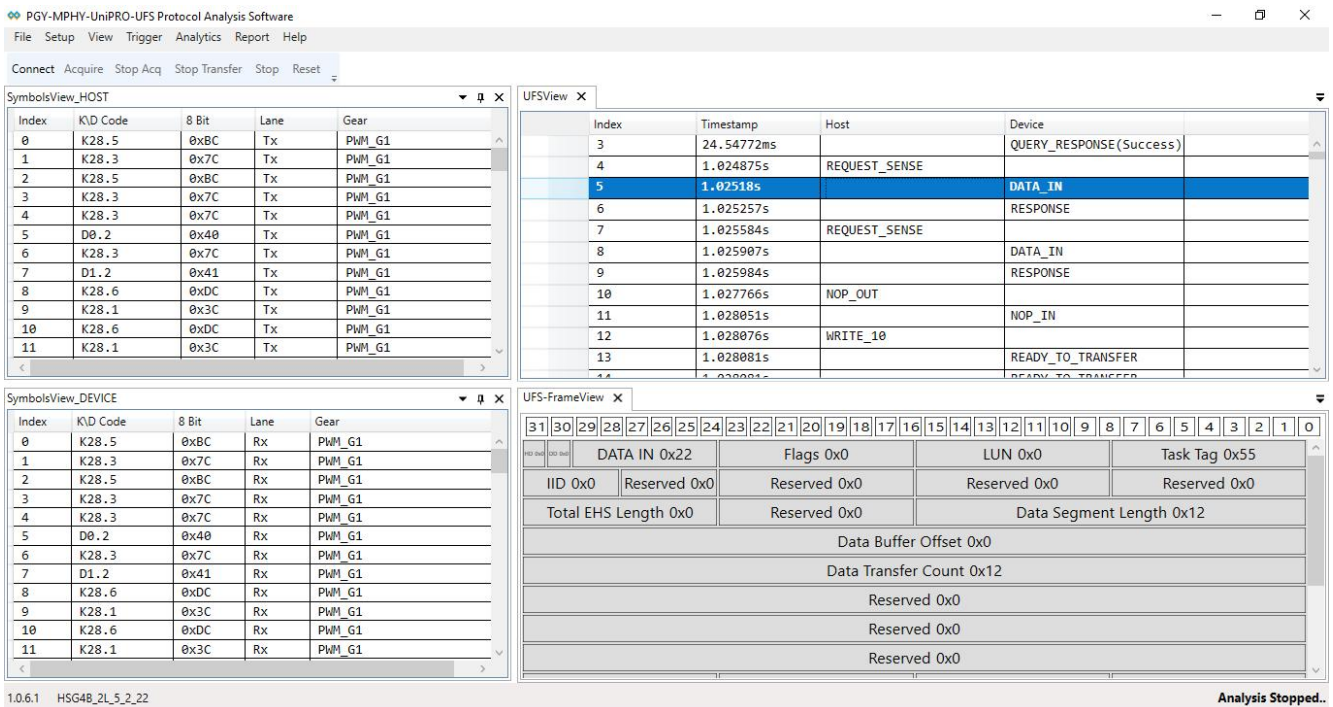


MIPI-MPHY-UniPRO/LLI/UFS

Protocol Decode Software



The screenshot displays the PGY-MPHY-UniPRO-UFS Protocol Analysis Software interface. It features a menu bar (File, Setup, View, Trigger, Analytics, Report, Help) and a toolbar with buttons for Connect, Acquire, Stop Acq, Stop Transfer, Stop, and Reset. The main workspace is divided into several panes:

- SymbolsView_HOST**: A table listing host symbols with columns for Index, K/D Code, 8 Bit, Lane, and Gear.
- SymbolsView_DEVICE**: A table listing device symbols with columns for Index, K/D Code, 8 Bit, Lane, and Gear.
- UFSView**: A table showing protocol events with columns for Index, Timestamp, Host, and Device. Row 5 is highlighted, showing a DATA_IN event at 1.02518s.
- UFS-FrameView**: A detailed view of a frame structure, including fields like DATA IN 0x22, Flags 0x0, LUN 0x0, Task Tag 0x55, IID 0x0, Reserved 0x0, Total EHS Length 0x0, Data Buffer Offset 0x0, and Data Transfer Count 0x12.

At the bottom left, the version and file path are shown as 1.0.6.1 HSG4B_2L_5_2_22. At the bottom right, the status is "Analysis Stopped..".

In an emerging technology, engineers test and debug UniPRO/LLI/UFS designs with easy-to-use instruments such as oscilloscopes. But oscilloscopes normally provide extensive details about electrical characteristics of the signal. But engineers need more information such as protocol content at different protocol layer. Manually interpreting the protocol layer information using oscilloscope data is time consuming and prone to human error.

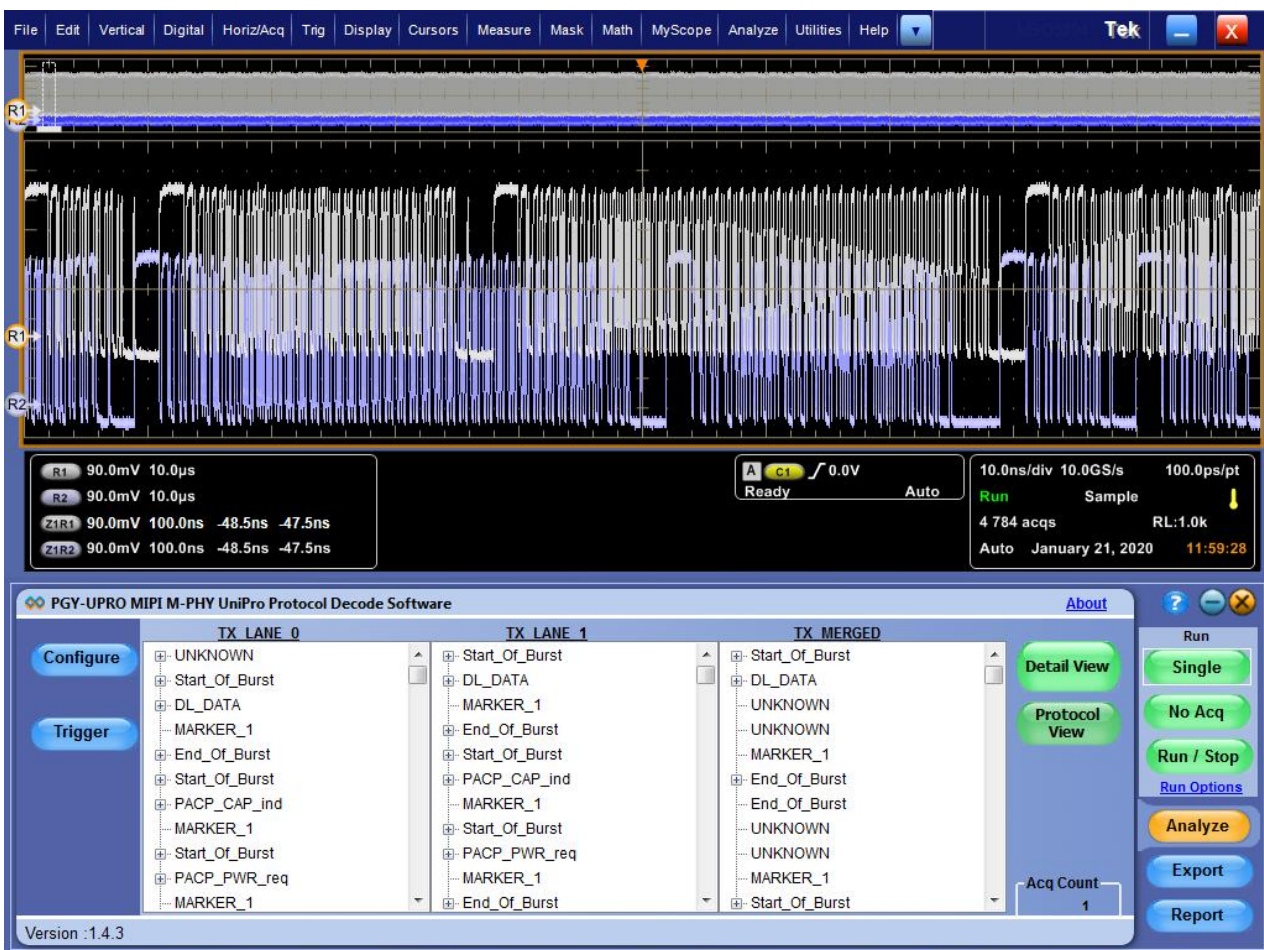
The PGY-UniPRO/LLI/UFS Protocol Decode Software offers extensive protocol decoding for MIPI-MPHY-UniPRO, LLI, and UFS protocol standards. This software offers Real-time hardware based UniPRO/UFS Protocol aware trigger for PWM, NRZ and 8B/10B data type. Now design and test engineers can automatically make accurate and reliable decode of multi-lane UniPRO/LLI/UFS using PGY-UniPro/LLI/UFS software using data acquired by Tektronix, DPO/DSA/MSO70000 oscilloscope series to reduce the development and test cycle.

Key Features

- ✦ UniPro and LLI Protocol Decoder enables faster system level protocol debugging.
- ✦ Conforms to UniPro Protocol Specification version 1.6 and LLI Protocol version 1.0.
- ✦ Conforms to UFS Protocol Specification Version 2.0.
- ✦ Supports NRZ (Non-Return-to-Zero) and PWM (Pulse Width Modulation) signaling schemes.
- ✦ Configurable four lane simultaneous protocol decode helps to correlate the lane to lane events.

- ✦ Auto link of decoded data from list table to oscilloscope waveform for easy protocol debug at PHY layer.
- ✦ Powerful UniPRO/LLI Protocol aware trigger features using option ST6G serial trigger feature of oscilloscopes.
- ✦ Triggering supports PWM, NRZ and 8b/10B encoded data schemes.
- ✦ Detail view provides a comprehensive protocol and physical layer data correlation.
- ✦ Frame listing and frame description provides comprehensive protocol layer information.
- ✦ Each frame is displayed in detail as per UniPro and LLI Standard specification document.
- ✦ Automated CRC computation to monitor CRC errors in protocol packet.
- ✦ Markers enables time measurement between messages in different lanes.
- ✦ Software automatically identifies the signaling scheme and gear for hassle free protocol analysis.
- ✦ Bus diagram functions such as zoom in, zoom out, pan, fit to screen, synchronize functions enables easy data analysis.
- ✦ Supports oscilloscope live channels, Tektronix .wfm waveform files.
- ✦ Generates comprehensive and customizable reports.
- ✦ Ability to export the protocol details to .txt and .csv file formats.

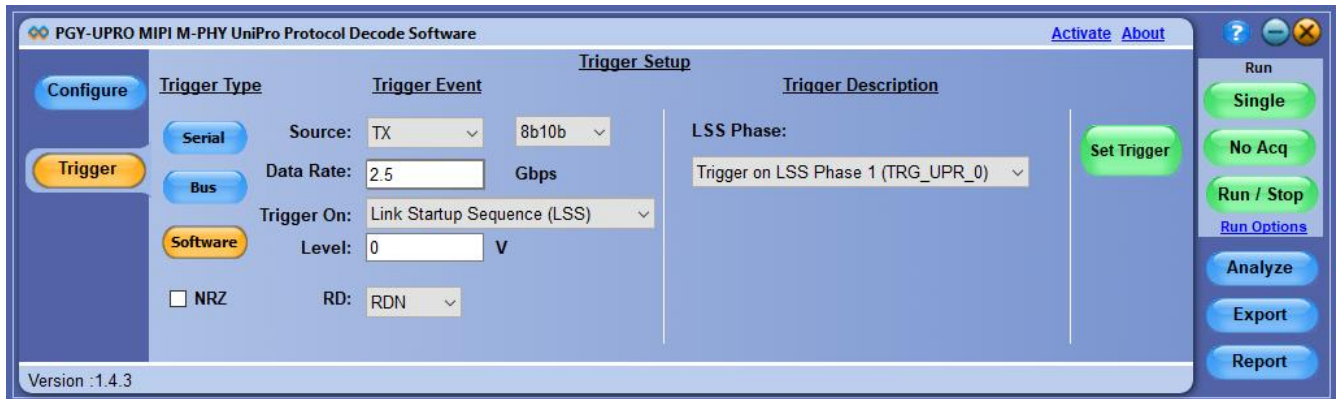
Seamless Integration with Tektronix Oscilloscope





PGY-UniPRO/LLI/UFS runs inside the Tektronix oscilloscopes and decodes protocols and displays the decoded data of multiple lanes. This software links the decoded data to the electrical signal in the oscilloscope display. UniPRO/LLI Protocol-based trigger can be set up using the built-in high-speed serial trigger capabilities in Tektronix oscilloscopes.

UniPRO Protocol Aware Trigger

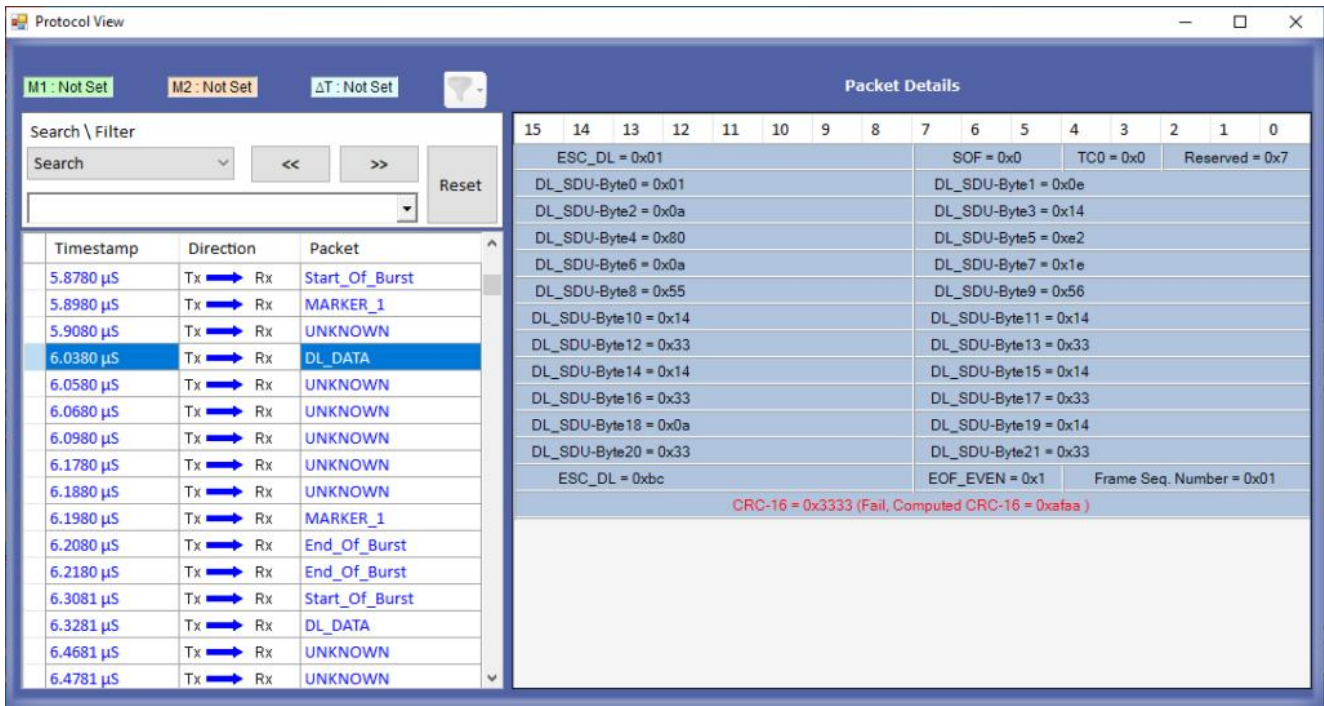


PGY-UniPRO/LLI/UFS software provides protocol aware trigger conditions such as link start-up sequence, PHY adapter layer content and data link layer content. The unique capabilities in this software allow trigger data types such as PWM, NRZ or 8B/10B serial data of the protocol. PGY-UniPRO supports the following Protocol Aware Trigger capabilities.

| Trigger Event | Trigger Content |
|-----------------------------|--|
| Link Startup Sequence (LSS) | Trigger on LSS Phase 1 (TRG_UPR_0) Trigger on LSS Phase 2 (TRG_UPR_1) Trigger on LSS Phase 3 (TRG_UPR_2) |
| PHY Adapter layer Content | PACP_PWR_req PACP_PWR_cnf PACP_cap_ind PACP_EPR_ind PACP_TEST_MODE_req PACP_GET_req PACP_GET_cnf PACP_SET_req PACP_SET_cnf PACP_Test_Data |
| Data Link layer Content | Data_SOF Data_COF AFC (Acknowledgement) NAC (No Acknowledgement) |



PGY-UFS is module is an optional module to PGY-UniPRO software, which provides protocol decode of UFS content present in the Data Link layer packet. PGY-UFS software extracts UFS information present in the data link packet and displays it in UFS Protocol Information Unit (UPIU). PGY-UFS has the flexibility of displaying only UFS protocol content or UFS and UniPRO data for easy debugging purposes.



Tektronix Oscilloscopes Supported

- DPO/MSO/DSA 70000 series
- MSO5 series, MSO6 series

All need to be windows 7 or higher OS based

Ordering Information:

PGY-UniPRO MIPI-MPHY-UniPro Protocol Decode Software.

PGY-LLI MIPI-MPHY-LLI Protocol Decode Software.

PGY-UFS MIPI-UFS Protocol decode Software (Pre-requisite PGY-UniPRO).

(Shipment includes CD with PGY- software and license key)



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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.