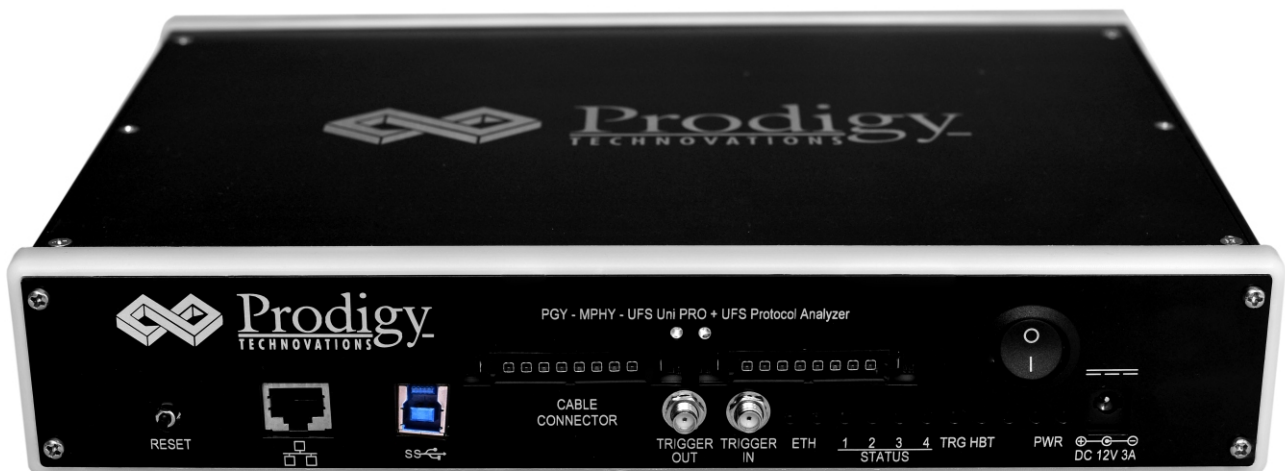


PGY-UFS-PA MPHY, UniPRO, UFS Protocol Analyzer

Deep Capture, Powerful Trigger, In-depth Analysis



www.prodigytechno.com

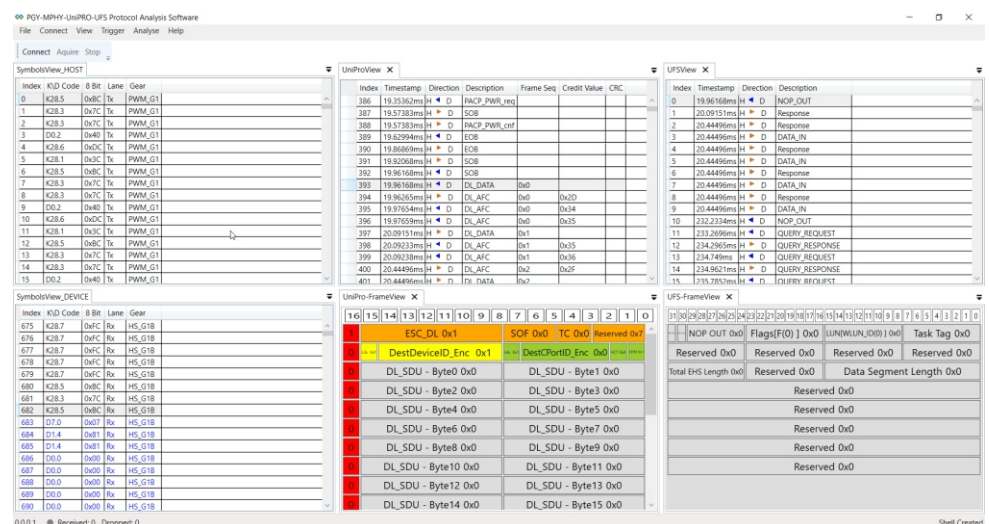
Key features

- Supports version MPHY 3.1, UniPRO 1.61 and UFS version 2.1
- Supports PWM G1 to G7 and HS G1,2,3 A and B Series
- Supports one/two data lanes (2 TX and 2 RX)
- Flexibility to capture very large data using continuous streaming of Protocol data to host computer
- Solderdown active probe provide high signal fidelity
- Decoding at MPHY, UniPRO and UFS layer
- Trigger based on MPHY, UniPRO, UFS layer packet content
- Supports triggering in PWM and HS data rate speeds
- Trigger out signal at trigger event allows the triggering of other instruments such as oscilloscope
- Interface to host system using USB3.0 or Gigabit Ethernet Interface
- Flexibility to upgrade the hardware firmware using GbE interface provides easy field up gradation of FPGA firmware
- Decoded data packets can be exported to txt file for further analysis
- PGY Protocol Analyzer is light weight and can be deployed for on-site/ field tests

PGY-UFS-PA, UFS Protocol Analyzer, value based analyzer in its class, offers capture and debug of data across MPHY, UniPRO and UFS protocol layers. It allows for instantaneous decoding of UFS layer, UniPRO layer and MPHY layer with flexibility to correlate decoded data across these protocol layers. PGY-UFS-PA Supports PWMG1 to HSG3B data rates and two TX, two RX lane decode. The active probe has minimum electrical loading on device under test (DUT) and captures protocol data without affecting the performance of DUT. PGY-UFS-PA protocol Analyzer can support two lane data. Comprehensive decoding of data, protocol tests and error analysis enables validation of communication between UFS host and device.

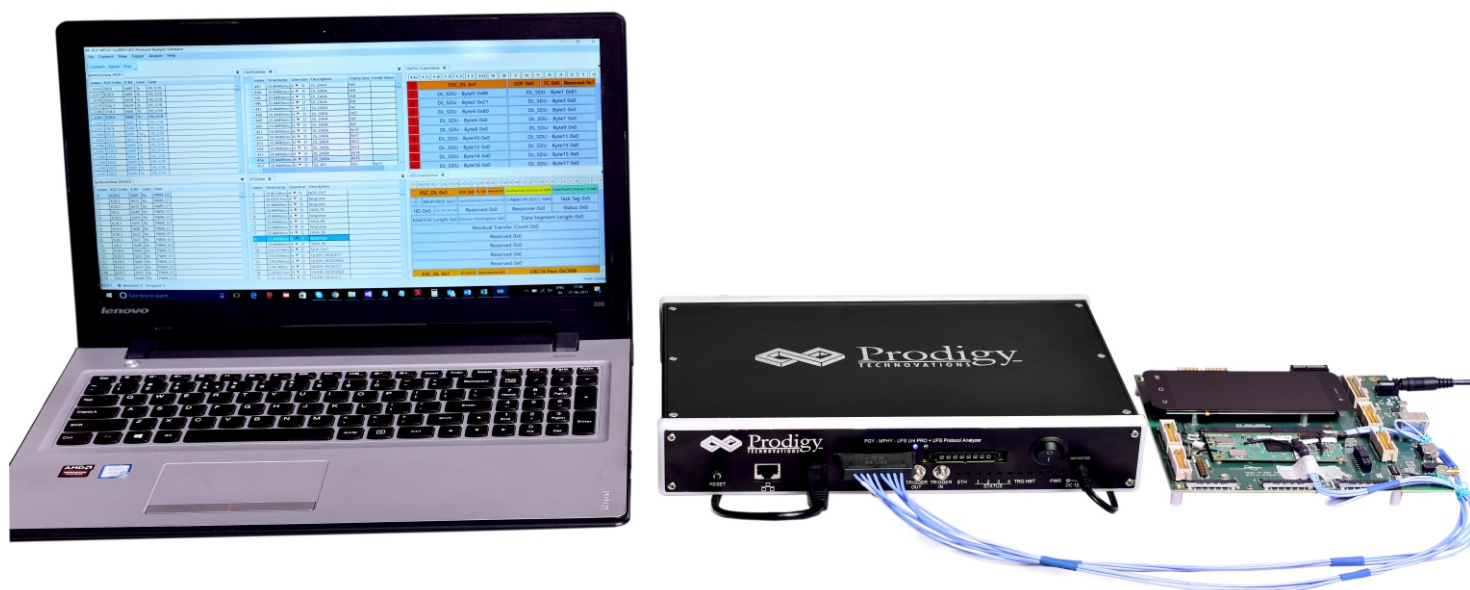
PGY-UFS-PA, UFS Protocol Analyzer allows Design and Test Engineers to obtain deep insight into UFS host and device communication. MPHY/UniPRO/UFS packet based triggering allows specific protocol data capture and analysis. PGY-UFS-PA Protocol analyzer instantaneously provides decoding of UFS layer, UniPRO layer and MPHY layer with a correlation to MPHY, UniPRO and UFS layer.

Solder down active probes allows probing the MPHY test points. This allows the design and test engineers to capture UFS traffic between the host and UFS memory with high signal fidelity. Today's test engineers need the ability to test use case scenarios in their labs that mimic real-life use cases. The PGY-UFS-PA, UFS Protocol Analyzer has been designed to enable engineers to closely monitor and analyze the traffic between the host and the device while executing the various use case scenarios



Windows based UFS protocol Analysis software, provides industry best protocol correlation between UFS layer to UniPRO layer and MPHY layer. Time correlation between the different protocol layers significantly reduces debug time of designs. Floating window design of this software allows engineers to view UFS view, UniPRO view and MPHY view on different computer monitors and automatically correlate the UFS packets to MPHY layer. This makes analysis very easy while analyzing gigabytes of Protocol information.

Setup



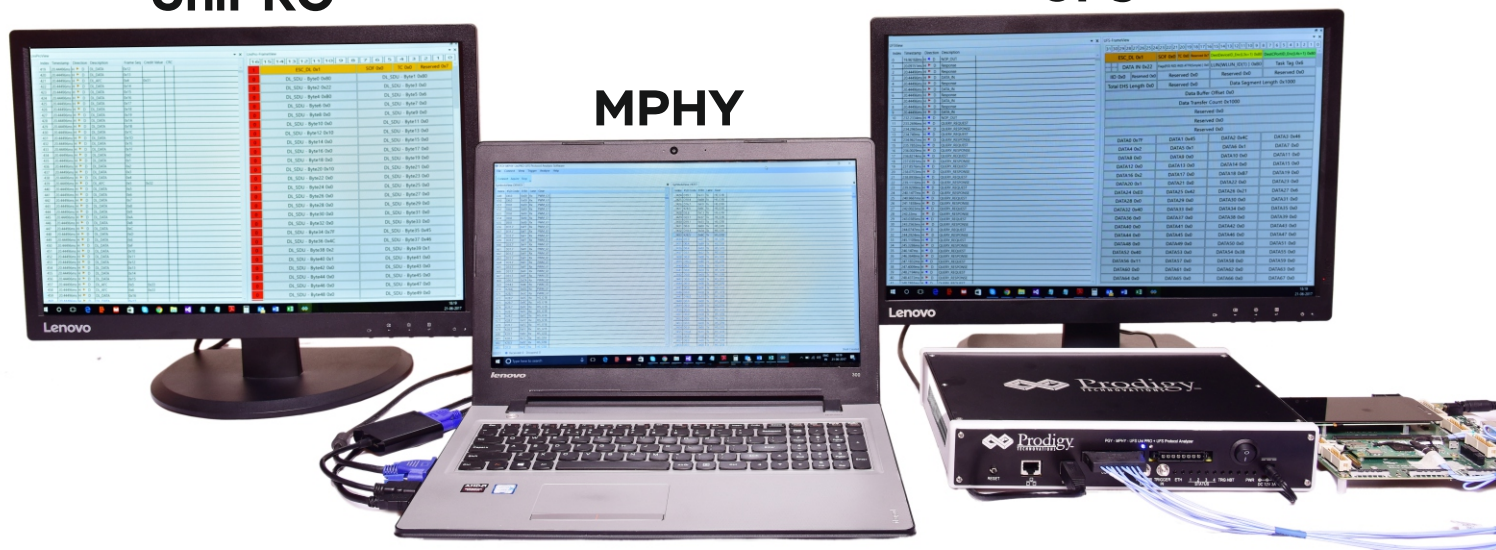
PGY-UFS-PA UFS Protocol Analyzer provides USB3.0 and Gbe interface for host computer connectivity. High-speed host connectivity enables continuous streaming of protocol data to host HDD and storage for long period of time. Floating window software architecture allows the user to view each protocol layer on separate monitors for easy debug. Autocorrelation of each selected packet from UFS layer to MPHY layer simplifies the debug activity

Comprehensive Protocol Analysis using Multi-View

UniPRO

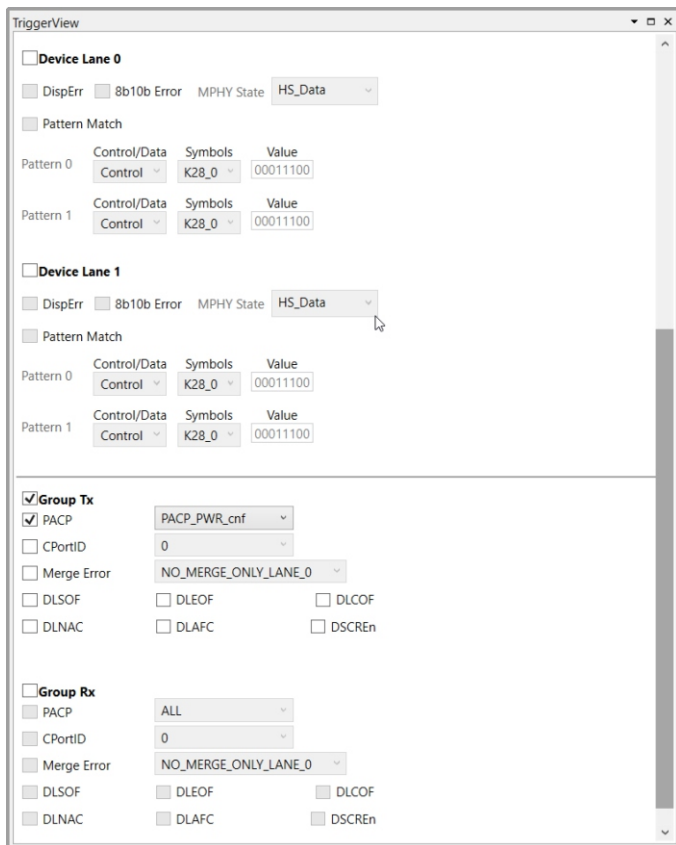
MPHY

UFS



PGY-UFS Software offers multi-view MPHY view, UniPRO view and UFS View. Each view lists the respective protocol packets and its details with correlation of each layer for easy debug.

Powerful Trigger Capabilities



PGY-UFS-PA UFS Protocol Analyzer offers powerful hardware based trigger capabilities allowing design and test engineer to capture the protocol activity at specific event. Hardware based algorithm computes the CRC values in real time and can trigger on CRC error. Triggering on any of the UniPRO layer protocol packet or Bad alignments (Improper marker values) reduces the debug time.

UniPRO Protocol Layer view

PGY-MPHY-UniPRO-UFS Protocol Analysis Software

File Connect View Trigger Analyse Help

Connect Acquire Stop

SymbolsView_HOST

Index	K/D Code	8 Bit	Lane	Gear
233	D18.0	0x12	Tx	PWM_G1
234	D8.7	0xE8	Tx	PWM_G1
235	D23.7	0xF7	Tx	PWM_G1
236	K28.5	0xB8	Tx	PWM_G1
237	D3.6	0xC3	Tx	PWM_G1
238	D31.7	0xFF	Tx	PWM_G1
239	D12.1	0x2C	Tx	PWM_G1
240	D28.3	0x7C	Tx	PWM_G1
241	D9.0	0x09	Tx	PWM_G1
242	K28.6	0xDC	Tx	PWM_G1
243	K28.1	0x3C	Tx	PWM_G1
244	K28.6	0xDC	Tx	PWM_G1
245	K28.1	0x3C	Tx	PWM_G1
246	K28.5	0xB8	Tx	PWM_G1
247	K28.3	0x7C	Tx	PWM_G1
248	K28.3	0x7C	Tx	PWM_G1

SymbolsView_DEVICE

Index	K/D Code	8 Bit	Lane	Gear
636	K28.3	0x7C	Rx	PWM_G1
637	D1.0	0x01	Rx	PWM_G1
638	D1.0	0x01	Rx	PWM_G1
639	D14.0	0x0E	Rx	PWM_G1
640	D0.0	0x00	Rx	PWM_G1
641	D27.6	0xD8	Rx	PWM_G1
642	D9.1	0x29	Rx	PWM_G1
643	D9.1	0x29	Rx	PWM_G1
644	D0.0	0x00	Rx	PWM_G1
645	D0.0	0x00	Rx	PWM_G1
646	D0.0	0x00	Rx	PWM_G1
647	D0.0	0x00	Rx	PWM_G1
648	D0.0	0x00	Rx	PWM_G1
649	D0.0	0x00	Rx	PWM_G1
650	D0.0	0x00	Rx	PWM_G1
651	D0.0	0x00	Rx	PWM_G1

UniProView

Index	Timestamp	Direction	Description	Frame Seq	Credit Value	CRC
366	10.66119ms	H	PACP_CAP_ind			
367	10.70149ms	H	EOB			
368	10.8011ms	H	EOB			
369	10.98382ms	H	SOB			
370	10.98382ms	H	DL_AFC	0x1F	0x12	
371	10.99318ms	H	DL_AFC	0x1F	0x2C	
372	11.04466ms	H	EOB			
373	11.89886ms	H	SOB			
374	11.90462ms	H	DL_AFC	0x1F	0x0	
375	11.91613ms	H	DL_AFC	0x1F	0x34	
376	11.92189ms	H	EOB			
377	12.07402ms	H	SOB			
378	12.07871ms	H	DL_AFC	0x1F	0x12	
379	12.0834ms	H	DL_AFC	0x1F	0x2C	
380	12.13957ms	H	EOB			
381	12.39966ms	H	SOB			
382	12.40542ms	H	DL_AFC	0x1F	0x0	
383	12.41694ms	H	DL_AFC	0x1F	0x34	
384	12.42269ms	H	EOB			
385	19.34786ms	H	SOB			
386	19.35362ms	H	PACP_PWR_req			
387	19.57383ms	H	SOB			
388	19.57383ms	H	PACP_PWR_cnf			
389	19.62994ms	H	EOB			
390	19.86869ms	H	EOB			
391	19.92068ms	H	SOB			
392	19.96168ms	H	SOB			
393	19.96168ms	H	DL_DATA	0x0		
394	19.96265ms	H	DL_AFC	0x0	0x2D	
395	19.97654ms	H	DL_AFC	0x0	0x34	
396	19.97659ms	H	DL_AFC	0x0	0x35	
397	20.09151ms	H	DL_DATA	0x1		
398	20.09233ms	H	DL_AFC	0x1	0x35	
399	20.09238ms	H	DL_AFC	0x1	0x36	

UniPro-FrameView

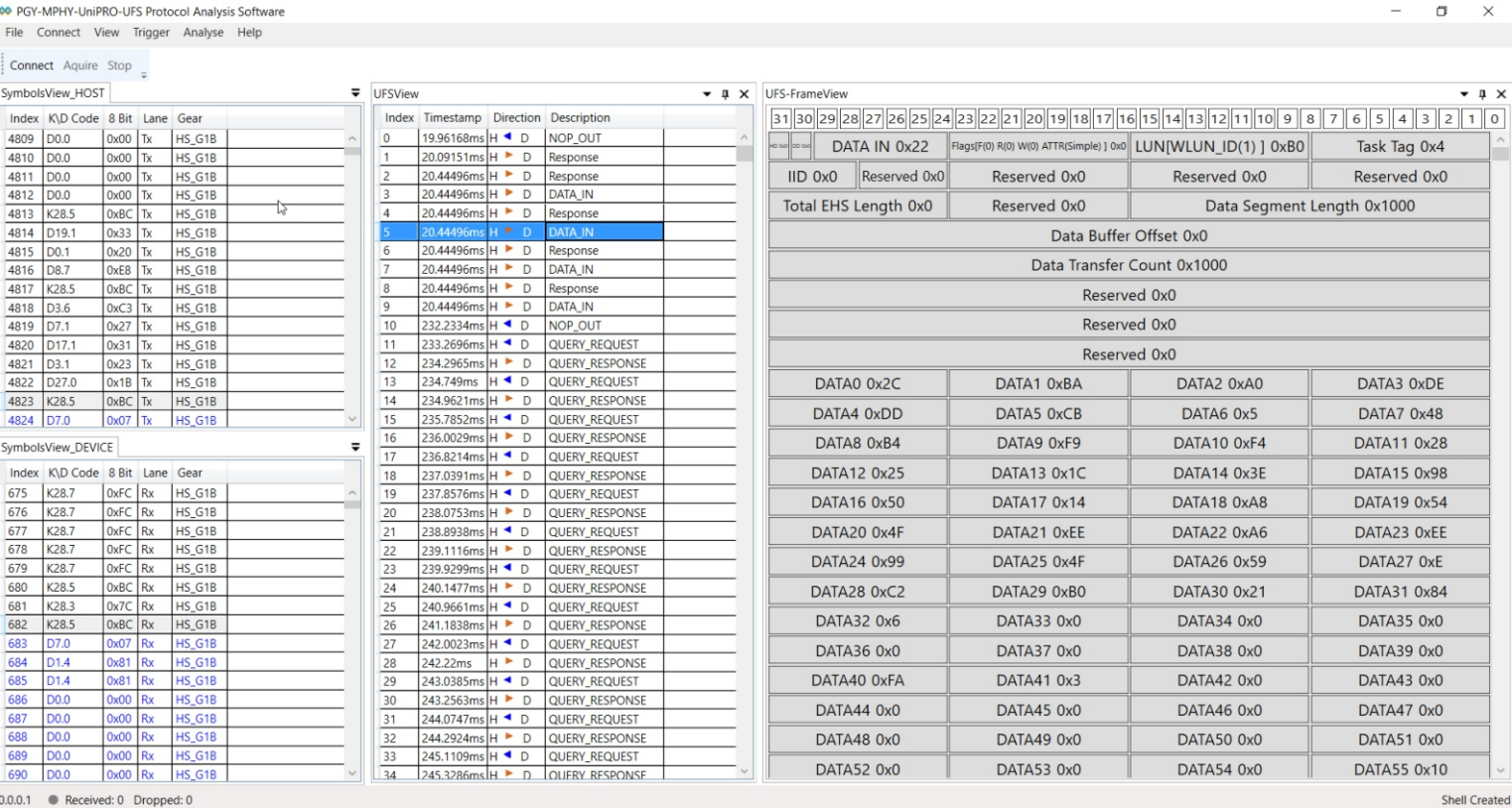
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ESC_PA 0x1																
EscParam_PA = PACP_BEGIN 0x1																
PACP_FuntonId = PACP_PWR_req 0x10E																
DevId 0x0																
Reserved 0x0																
TxMode 0x1																
TxLane 0x1																
TxGear 0x1																
RxMode 0x1																
RxLane 0x1																
RxGear 0x1																
PAPowerModeUserData[0] 0x0																
PAPowerModeUserData[1] 0x0																
PAPowerModeUserData[2] 0x0																
PAPowerModeUserData[3] 0x0																
PAPowerModeUserData[4] 0x0																
PAPowerModeUserData[5] 0x0																
PAPowerModeUserData[6] 0xFFFF																
PAPowerModeUserData[7] 0xFFFF																
PAPowerModeUserData[8] 0xFFFF																
PAPowerModeUserData[9] 0xFFFF																
PAPowerModeUserData[10] 0xFFFF																
PAPowerModeUserData[11] 0xFFFF																
CRC16 Pass 0x7A4E																

0.0.0.1 Received: 0 Dropped: 0 Shell Created

PGY-UFS-PA UFS Protocol Analysis offers multilayer of protocol view with flexibility to link all views for easy correlation of data. Selected packets details are displayed in a format which is similar to specification document format for easy correlation. This view provides bit level information to analyze the communication between UFS host and UFS memory.

Data sheet

UFS Protocol layer view



UFS layer view has UFS view and UFS Frame view. UFS view list all the UFS packets and UFS Frame view provides selected packets decoding at UFS packet format.

Specifications

Data Rates Supported	PWM G1 to G7, High Speed Gear 1, Gear 2, and Gear 3 A and B Series
Link Width	Configurable for 1TX/1RX or 2TX/2RX
Probes	Solder Down Active Probes/ SMA Probes at probe tip
Protocol Decode	MPHY, UniPRO and UFS layer
Trace Capture Size	Supports Continuous streaming of Protocol data to Host computer SSD/HDD.
Trigger	Based MPHY, UniPRO and UFS Packets
Front Panel Connectors	Interface for Active probes. Trigger in/out SMA connectors
Interface for Host Computer	USB3.0 and Gigabit Ethernet interface
Host Computer Requirements	Windows 7/8.0/8.1/10 64bit operating System. It requires RAM of minimum 8GB but the product would give a faster response for a 16GB.The minimum storage capacity of 1GB should be available in the hard disk drive. User can use more storage based on trace storage requirement. Display resolution of the monitor is 1024X768. Host computer should support USB3.0 or GBe interface.
Dimension (W x H x D)	(20.5X5X25)cms
Weight	Approx. 2.5Kg
Power Requirement	12V, 3A DC Power Supply (AC/DC Adapter Supplied along with Analyzer)

Trigger Specifications

Stack	Protocol Layer	Packet Type
UniPRO	Link Start-up Sequence	Trig_UPRO0
		Trig_UPRO1
		Trig_UPRO2
	PHY Capability Adapter Packets (PACP)	PACP_PWR_reg
		PACP_PWR_cnf
		PAC_Cap_ind
		PACP_Cap_EXT1_ind
		PACO_EPR_ind
		PACP_TestMode_req
		PACP_Get_req
		PACP_Get_cnf
		PACP_SER_req
		PACP_SET_cnf
		PACP_TEST_DATA_0
		PACP_Test_DATA_1
		PACP_Test_DATA_2
		PACP_Test_DATA_3
	Data Link packets	SOF
		EOF
		EOF_ODD
		EOF_EVEN
		COF
		AFC/NAC
		Traffic Class 0/Traffic Class 1
UFS	UFS layer Packets	NOP IN
		NOP OUT
		Command
		Response
		Task Management Request
		task Management Response
		Ready To Transfer
		Query Request
		Query Respond

Data sheet

Search and Filter

PGY-UFS-PA UFSProtocol Analyzer offers flexibility to search or filter for specific packets. This allows the easy location of specific packets in huge protocol packet data.

Analytics

PGY-UFS-PA UFS software would allow an engineer to quickly view the error conditions.

- Errors reported in packets
- Linking the error bit info to packets
- CRC errors
- Gear changing information
- Lane width
- Credit information
- Performance Analysis of packets

Ordering information

PGY-UFS-PA UFS Protocol Analyzer

(Shipment includes Hardware, software CD, One set probe, USB3.0, Ethernet Cable and Power adapter)

Warranty

Hardware and software carries a warranty of one year.

Probes are covered for a three month warranty for any manufacturing defects

Contact

Prodigy Technovations Pvt. Ltd.

Bangalore, India 560076, Phone: +91 80 42126100

Email: contact@prodigytechno.com

www.prodigytechno.com

About Prodigy Technovations Pvt. Ltd

Prodigy Technovations is the leading provider of innovative protocol analysis solutions for mainstream and emerging technologies. We provide Protocol Decode, and PHY layer testing solutions on Test & Measurements equipment's. The company's ongoing efforts include successful implementation of innovative and comprehensive protocol Analysis solutions using latest hardware technologies.



Prodigy-
TECHNOVATIONS