

100BASE-T1 Automotive Ethernet Protocol Analyzer



100BASE-T1 Automotive Ethernet Protocol Analyzer is the Protocol Analyzer with multiple features to capture and debug communication between host and design under test. Automotive Ethernet interface scales up to address current and future needs of in-vehicle bus speed requirements. The need for higher-speed in-vehicle buses is increasing to support feature-rich ADAS and connected vehicle needs. Two-wire full-duplex 100BASE-T1 PAM 3 signaling is the choice of interface bus to address these needs.

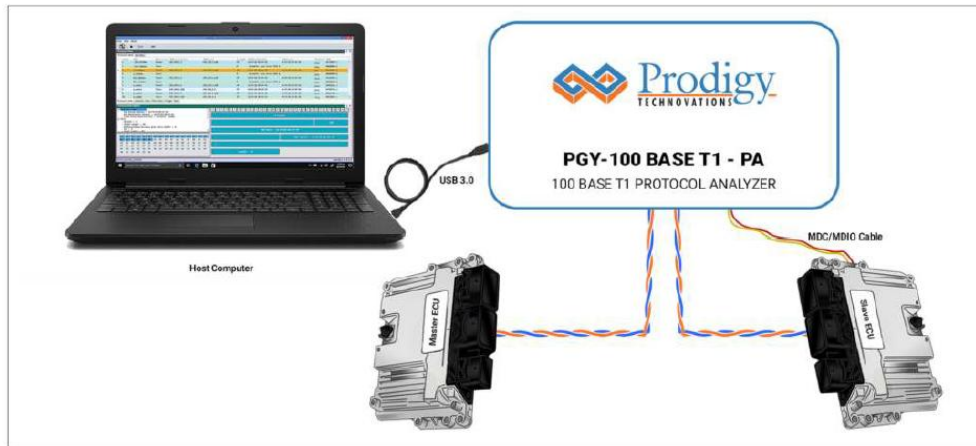
Prodigy Technovations 100BASE-T1 Automotive Ethernet Protocol Analyzer provides an industry-first solution for the non-intrusively passive tap of the 100BASE-T1 bus at the physical layer and ensures no latency and accurate capturing of protocol data. Powerful basic and multi-level layer 2 to layer 7 protocol trigger capabilities enables the design engineer to capture protocol activity at a specific event. PGY-100BASE-T1-PA supports continuous streaming of captured protocol data to host computer SSD/HDD enabling long-duration capture.

Key Features

- ❖ Protocol decode and Analysis of 100BASE-T1 Bus.
- ❖ Passive tapping allows a non-intrusive method of monitoring the 100BASE-T1 Bus.
- ❖ Powerful multi-layer protocol layer trigger capabilities enable capturing data at specific events.
- ❖ Decoding of TC10 Sleep and Wake-up events of master and slave.
- ❖ Continuous streaming of protocol activity SSD/HDD enables long-duration capture of protocol data.
- ❖ Simultaneously monitoring of 100BASE-T1 and MDIO/MDC protocol activity.
- ❖ Live protocol decode capabilities allow you to view the protocol information while the test case actively running in DUT.
- ❖ The analytics feature provides statistical information on protocol packets.
- ❖ FCS error report helps in monitoring the protocol errors.
- ❖ The simplified Protocol Listing view with search and filter capabilities is easy to use.
- ❖ Software and firmware are fields upgradable.
- ❖ Report generation.

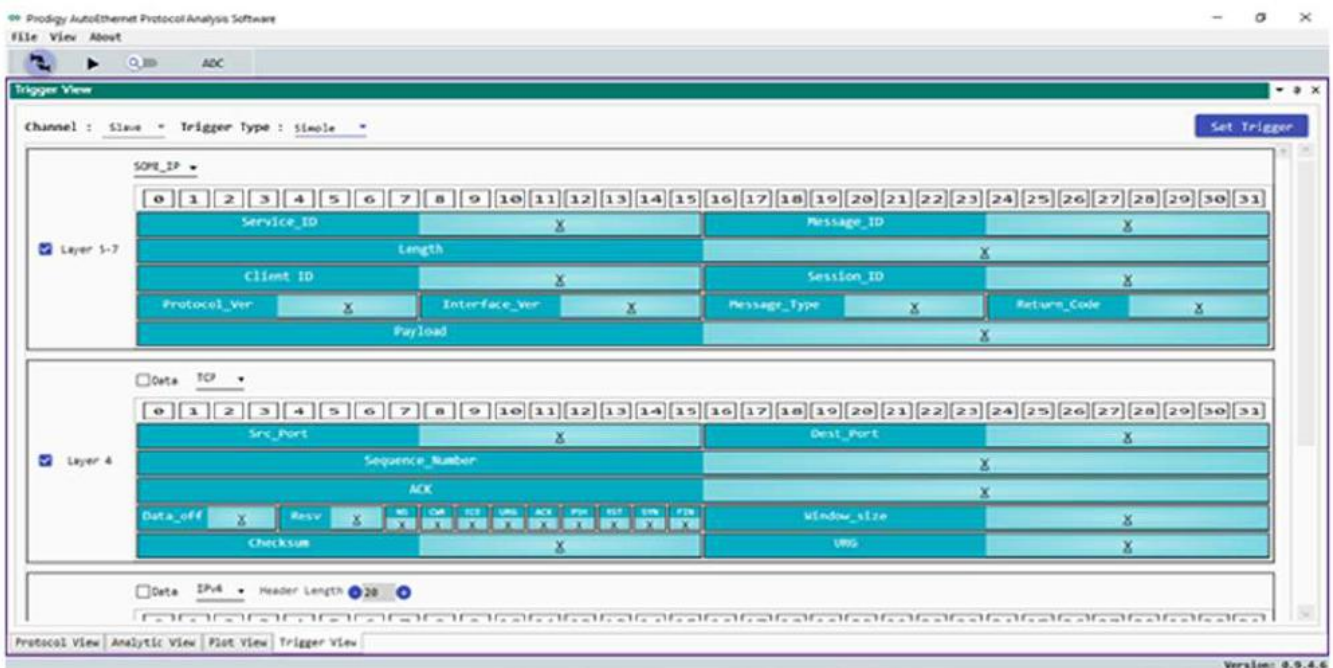


Test Setup



PGY-100BASE-T1-PA sniffs the automotive Ethernet bus and monitors the protocol activity between the Master and Slave ECU. Simultaneously monitoring MDIO and MDC lines and correlating with 100BASE-T1 protocol activity helps easy debug the design problems. The Automotive Ethernet Analyzer unit will extract bit values from full-duplex PAM3 signal using Prodigy's patent-pending solution. The host computer manages the operation of the analyzer unit, and stores and analyzes the acquired data. Passive tapping of 100BASE-T1 bus ensures the least latency in acquiring the data making this solution an industry-first Passive TAP patent-pending solution.

Powerful Trigger capabilities





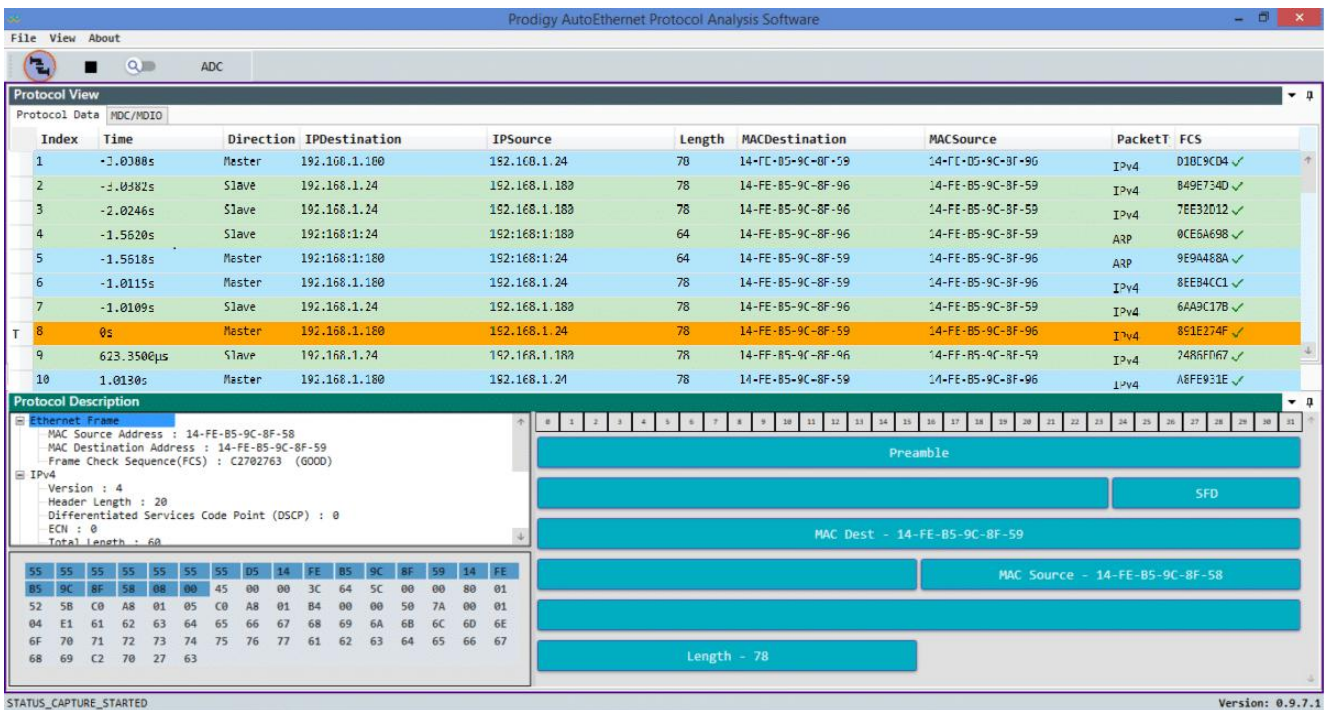
PGY-100BASE-T1-PA supports the industry's best protocol layer trigger capabilities. Users can define trigger conditions from Layer 2 to Layer 7. Advanced multi-layer trigger featured with If-then-else if allows the design engineer to monitor more than one trigger condition at the same time.

Trigger Condition

Protocol Layer	Packet type	Description
Layer 2	Ethernet type	Mac Destination Address
		Mac Source Address
Layer 3	IPv4	Source IP Address
		Destination IP Address
		TTL
		Checksum
		Fragment Offset
		DF
		MF
		Total Length
		Identification
		TOS
	IPv6	Destination IP Address
		Source IP Address
		Payload length
		HOP Limit
		Traffic Class
		Flow Label
	ARP	Target Protocol Address
		Source Protocol Address
		Target Hardware Address
		Source Hardware Address
Operation		
Layer 4	TCP	Source Port
		Destination Port
		Sequence number
		ACK
		Data off
		Window size
		Check sum
		URG
	UDP	Source Port
		Destination port
		Length
		Checksum

	ICMP	Rest of Header
		Type
		Code
		Checksum
Layer 5-7	SOME IP	Service ID
		Length
		Client ID
		Session ID
		Message ID
		Protocol Version
		Interface Version
		Message type
		Return Code
		Payload

Protocol Analysis



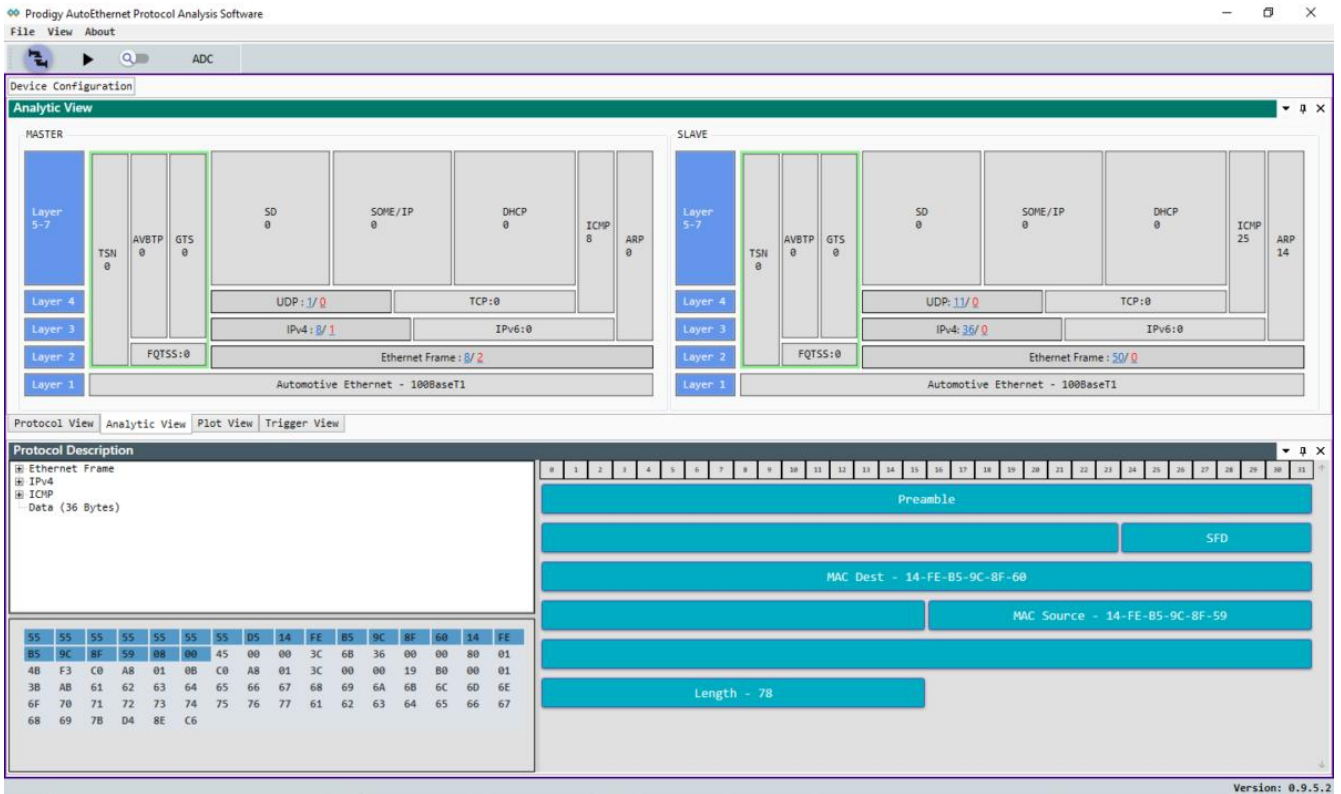
The screenshot displays the Prodigy AutoEthernet Protocol Analysis Software interface. The main window shows a 'Protocol View' table with columns for Index, Time, Direction, IP Destination, IP Source, Length, MAC Destination, MAC Source, Packet Type, and FCS. Below the table, the 'Protocol Description' for an Ethernet frame is shown, including details like MAC Source Address, MAC Destination Address, Frame Check Sequence (FCS), and IP Version. A hex dump of the frame data is also visible at the bottom left of the description pane.

Index	Time	Direction	IP Destination	IP Source	Length	MAC Destination	MAC Source	Packet Type	FCS
1	-1.0308s	Master	192.168.1.100	192.168.1.24	78	14-FF-B5-9C-8F-59	14-FF-B5-9C-8F-96	IPv4	D18C9C04 ✓
2	-1.0302s	Slave	192.168.1.24	192.168.1.100	78	14-FF-B5-9C-8F-96	14-FF-B5-9C-8F-59	IPv4	849E7340 ✓
3	-2.0246s	Slave	192.168.1.24	192.168.1.100	78	14-FF-B5-9C-8F-96	14-FF-B5-9C-8F-59	IPv4	7EE32D12 ✓
4	-1.5620s	Slave	192:168:1:24	192:168:1:100	64	14-FF-B5-9C-8F-96	14-FF-B5-9C-8F-59	ARP	0CE5A698 ✓
5	-1.5618s	Master	192:168:1:100	192:168:1:24	64	14-FF-B5-9C-8F-59	14-FF-B5-9C-8F-96	ARP	9E9A488A ✓
6	-1.0115s	Master	192.168.1.100	192.168.1.24	78	14-FF-B5-9C-8F-59	14-FF-B5-9C-8F-96	IPv4	8EEB4CC1 ✓
7	-1.0109s	Slave	192.168.1.24	192.168.1.100	78	14-FF-B5-9C-8F-96	14-FF-B5-9C-8F-59	IPv4	6AA9C17B ✓
8	0s	Master	192.168.1.100	192.168.1.24	78	14-FF-B5-9C-8F-59	14-FF-B5-9C-8F-96	IPv4	851E274F ✓
9	623.3500µs	Slave	192.168.1.24	192.168.1.100	78	14-FF-B5-9C-8F-96	14-FF-B5-9C-8F-59	IPv4	2486FD67 ✓
10	1.0130s	Master	192.168.1.100	192.168.1.24	78	14-FF-B5-9C-8F-59	14-FF-B5-9C-8F-96	IPv4	A8FE931E ✓

Ethernet is one of the oldest protocols widely used protocol for many applications. Design engineers are used to viewing and analyzing the protocol data in a specific format. PGY-100BASE-T1-PA Protocol Analyzer software maintains the traditional views and provides advanced analysis capabilities. Live decoding capability provides decoding with any FCS error packets.



Analytics of Protocol Data



The screenshot displays the Prodigy AutoEthernet Protocol Analysis Software interface. The main window is titled "Analytic View" and shows a comparison between a MASTER and a SLAVE device. The MASTER side shows a protocol stack with layers 1-7, including TSN, AVBTP, GTS, SD, SOME/IP, DHCP, ICMP, and ARP. The SLAVE side shows a similar stack with Layer 2 protocols (FQTS) and Layer 3 protocols (UDP, TCP, IPv4, IPv6). Below the analytic view, the "Protocol Description" section shows a detailed view of an Ethernet frame, including the Preamble, SFD, MAC Dest (14-FE-B5-9C-8F-68), MAC Source (14-FE-B5-9C-8F-59), and Length (78). A hex dump of the frame data is also visible.

Analyzing Protocol data to identify the design issues is a challenging task in millions of protocol packets.

PGY-100BASE-T1-PA provides statistical information about each layer packet count and error packets. This simplifies the process of isolating the errors to specific protocol packets or protocol layers. Powerful expression-based search capabilities quickly help in locating packets of interest in the acquired entire protocol data for further analysis.



Product Specifications

Ports input	Four 100Base-T1 Ports Upgrade Two additional 100Base-T1 Port MDIO/MDC Port Two CAN Ports
Protocol Analysis	Layer 2 to Layer 7 Automotive Ethernet protocol Analysis MDIO/MDC Protocol Decode Upgradable to CAN Protocol Analysis
Protocol Views	Protocol Listing of Layer 2 Decoding of Protocol layer Packet view Tree view Line training view Analytics
Event Monitoring	FCS errors
Search and Filter	Boolean expression based search and filter capabilities
Capabilities Export of Results	CSV or TXT report generation
Host Computer System requirements	Windows® 7/8.0/8.1/10 64bit operating system. It requires RAM of 16GB but the product would give a faster response for a 32GB. The maximum storage capacity of 1GB should be available in the hard disk drive. Users can use more storage based on trace storage requirements. The Display resolution of the monitor is 1024x768 host Computer should support a USB 3.0 Interface.

Ordering Information

- PGY-100BASE-T1-PA 100BASE-T1 Automotive Ethernet Protocol Analyzer.
- Monitors one link.
- MDIO/MDC links.
- Option port1: Additional one master/slave monitor.
- Option port2: Additional Two Master/slave monitors.
- Option AdvTrg: Advanced Trigger Capabilities.
- Option Layer3-7 Protocol Decoding of layers 3 to 7.



Warranty:

Hardware and software carry a warranty of one year.

Probes are covered three-month warranty for any manufacturing defects.

Contact Information



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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 the 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.