



Bus Doctor™ Family of Analyzers

Protocol, Timing and Statistical Analysis for
Consumer Electronics and Computing Design and Test

Protocol, Timing and Statistical Analysis for Consumer Electronics and Computing Design and Test

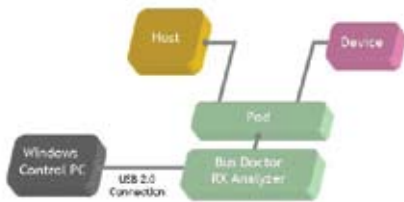


Figure 1: Typical Bus Doctor Configuration



Figure 2: One Modular Platform – 14 Distinct Serial and Parallel Bus Analysis Tools

The JDSU proven family of Bus Doctor RX analyzers empowers computing, storage, silicon, and design engineers to simplify and accelerate the design and troubleshooting of serial and parallel buses used in electronics and computing products. The industry's most comprehensive testing platform, the Bus Doctor provides affordable real-time capture, decode, and analysis with unparalleled visibility, flexibility, and advanced trace capture capabilities across 13 different protocols. With Bus Doctor, engineers can quickly identify, locate, analyze, and resolve even the most complex issues

Bus Doctor RX Analyzer

The Bus Doctor RX is a powerful modular bus analyzer for computing and consumer electronic applications offering engineers the widest range of advanced features for accelerating product design and troubleshooting on the market. Bus Doctor is unmatched in its flexibility and advanced analysis capabilities, including the industry's large trace buffers – twice the size of computing solutions – at 16 GBs and capable of capturing 256 million events bi-directionally with 4 nanosecond capture resolution. Trace capabilities are further extended through hardware-assisted features such as powerful cross-sequence triggering up to 12 levels with counters and timers, extensive filtering options, protocol-aware capture including automatic bus configuration, the ability to segment trace buffers, and accurate capture of specific bus events even across protocol domains. Available in a number of configurations to meet every design need and budget, the Bus Doctor is the ideal analyzer for anyone designing and troubleshooting serial and parallel bus-based products.

Modular Advantage

With its modular architecture, the Bus Doctor becomes a dedicated analyzer for different bus types simply by changing out protocol pods and TAPs (see Figure 1). In this way, users can leverage the Bus Doctor platform to extend their test tool budget across 13 serial and parallel buses, including SCSI, P-ATA, USB, SATA, Memory Card (MC), and PCI Express. With an additional logic analyzer probe, the Bus Doctor is effectively 14 distinct analysis tools in one.

Users also have the ability to attach logic pods to provide both protocol and logic analysis capabilities on a single platform. This enables users to perform analysis from the physical layer all the way up through the protocol stack. In addition, multiple analyzers can be stacked to capture and analyze traffic from multiple buses with captured data interleaved, color-coded, and synchronized based on time stamps. This capability is unique to the JDSU Bus Doctor RX analyzers and enables users to correlate bus transactions end-to-end across protocol domains, such as tracking a data write from an internal laptop disk drive out over a USB port.

Unparalleled Data Capture and Search Capabilities

Users need the flexibility to capture complex events to gather the information they need to resolve bus and protocol issues. The Bus Doctor is built upon efficient, patented hardware-based circuitry that provides the advanced capabilities required to quickly identify, locate, analysis, and resolve serial and parallel bus issues.

Fast Searches: the JDSU patented search technology enables users to locate specific bus events in the trace buffer – as large as 16 GBs – within seconds. This level of search performance is simply not possible using the CPU-based searches of other analyzers.

Pre-Programmed and Customizable Capture Triggers: The Bus Doctor provides users with a range of pre-programmed triggers to stop capture on errors, protocol violations, or other similar events, as well as supports advanced capabilities including a 12-level sequencer (see Figure 3) facilitating the creation of user-defined triggers. External trigger-in and trigger-out abilities allow users to connect to other equipment such as an oscilloscope.

Filtering Efficiency: The Bus Doctor samples and captures incoming data in different modes to maximize trace buffer efficiency and the number of events that can be captured over time. In Timing Mode, only samples that are different from previous samples are captured. In State Mode, the analyzer searches for specific terms or patterns on incoming channels and keeps only those samples which match the pre-programmed terms. In both modes, buffer memory is conserved by capturing only samples of interest.

Trace Memory Segmentation: The Bus Doctor Capture Memory Buffer can be divided into up to 1024 segments. Users can exploit this capability to keep traces to a more manageable size when appropriate, as well as store multiple traces of similar events for later comparison. Alternatively, the Bus Doctor can be configured to increment to the next segment when a trigger condition is met, enabling over 1000 traces to be taken without requiring user interaction during extended overnight or weekend test sessions.

Flexible Trace Capture Capacity: The Bus Doctor is available with three memory configurations: SLIM buffers up to 16 million events, FIT holds 64 million events, and BUFF captures up to 256 million events. Capture capacity is bi-directional. BUFF configuration on an RX-252P represents an 16 GB buffer.

Non-Intrusive Signal Tapping

Developers need unrestricted visibility into system buses during the development process whether they are working with prototype or production hardware. JDSU provides tapping solutions that sit between hosts and targets to minimize signal losses so that users can be sure they are working with the most accurate signaling information available. TAPs support protocol-aware capabilities, automatically configuring themselves to an application's particular bus setup.

For example, three PCI Express Interposer TAPs are available to address the specific constraints of prototype boards, motherboards, and add-on cards to provide the most non-intrusive access to signals during the various stages of development. Each Interposer TAP can monitor individual lanes of an x8 bus separately as well as automatically configure itself using initial bus training sequences to autodetect lane polarity and reversals.

Multi-Protocol Analysis

The Bus Doctor is the only analyzer on the market which supports multi-protocol analysis and time-correlation between up to 13 different protocols. In this way, developers can synchronize and track packets from an internal bus out

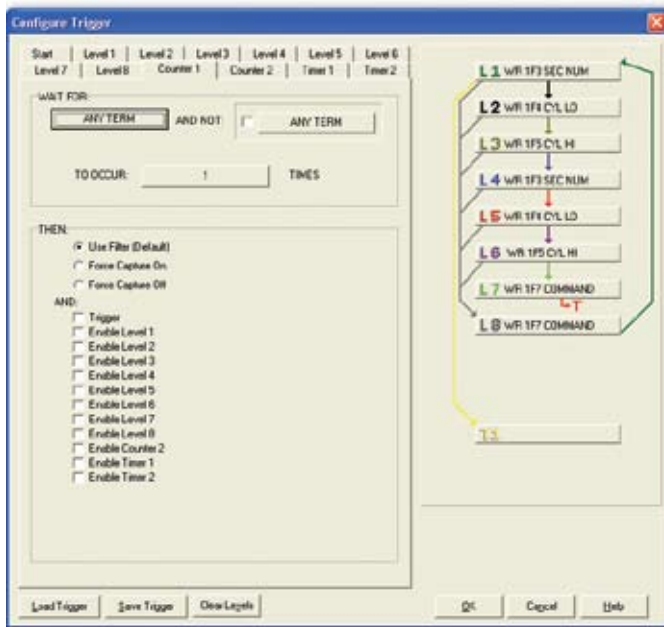


Figure 3: Setting up the Trigger Sequencer

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to a peripheral destination with the ability to correlate results end-to-end as packets cross protocol domains. This is achieved by stacking multiple Bus Doctor Analyzers together and synchronizing them to the same reference clock through the RX Key Slot on the top of the enclosures. Developers can also verify interoperability between devices using the same bus protocol or as transactions cross protocol domains. No other analyzer achieves this level of multi-protocol visibility within a single platform.

Powerful and Intuitive Interface Tools

Troubleshooting efficiently is directly affected by how quickly and easily users can identify, locate, analysis, and resolve issues. The Bus Doctor's software simplifies the entire debugging process through the same easy-to-use GUI across all buses and protocols, from facilitating the configuration of complex triggers to correlating captured data across devices and protocols. Running on a Microsoft Windows-based PC connected to the Bus Doctor Analyzer through USB 2.0, these powerful interface tools give users immediate and intuitive access to key data with unmatched flexibility and visibility:

❶ **Command Listing:** Command sequences are summarized at a high-level to provide an intuitive view of system transactions. This window shows the Store Numbers of the first event associated with a command as well as specific information including source and destination addresses. Color-coding and identifiers help organize the information displayed.

❷ **State Listing:** This chronological list of all captured events provides more detail than is shown in the Command Listing. Bus transaction primitives and packets/frames are decoded in this view, giving users complete access to all interactions taking place over the bus. Each event also shows the reference store number, direction of the data, and data values.

❸ **Histogram Listing:** An overall map view of the entire trace, the histogram listing serves as a navigation aid highlighting commands, data, and errors in blue, green, and red respectively to facilitate manual searches. User-defined terms are displayed in purple.

Data Blocking: This display provides quick reference to data payloads in both hex and ASCII.

❹ **Timing Waveform:** This window shows a signal-level representation of the trace, with each row representing a channel or channel group. Rows can be reordered and colors reassigned. Data may be displayed in decimal, binary, or ASCII.

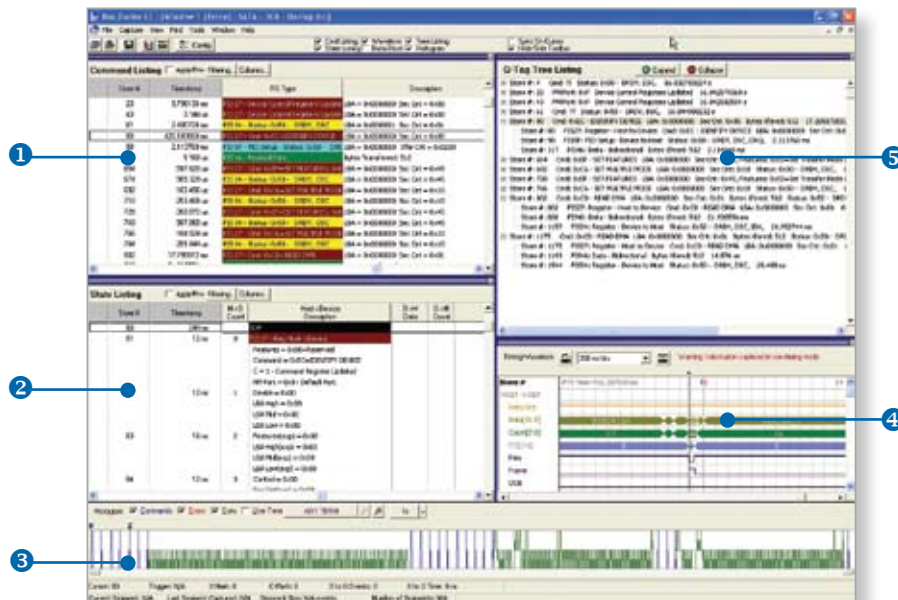


Figure 4: Powerful Bus Doctor Software

Real-Time Display: This window shows up to six terms as they change in real-time whenever there is activity on the bus (see Figure 5). Using counters and bar graphs, terms may be viewed as total occurrences, occurrences-per-second, or occurrences based on another frame of reference.

5 Tree View (SATA, SD, SDIO, MMC and PCI Express*): All of the traffic associated with a command can be significantly dispersed throughout the trace buffer, making it difficult to locate and follow responses. Organized by tag field, tree view shows commands in the order in which they occurred, allowing users to expand particular commands to show command responses, status, data, and other information. *PCI Express support in 5.2

Traffic Summary View (PCI Express): To further accelerate product development and troubleshooting, JDSU has introduced the Traffic Summary View, enabling users to expertly navigate large PCI Express trace buffers (see Figure 6). Traffic Summary View shows different summary statistics using a tree view showing the type of traffic captured on the left side of the screen while the right side displays summary statistics for the selected type of traffic.

Clicking TLP in the tree view, for example, will show TLP summary statistics in the right pane while clicking Link Transactions will show link transaction summary statistics. With Traffic Summary View, users can organize and cycle through all instances of a particular command type with relevant trace data automatically adjusting, enabling fast pinpointing of relevant packets directly rather than sorting through long lists of exchanges for a specific packet.

In addition to the different views and listings, the Bus Doctor provides powerful features organizing trace data to simplify and highlight relevant events:

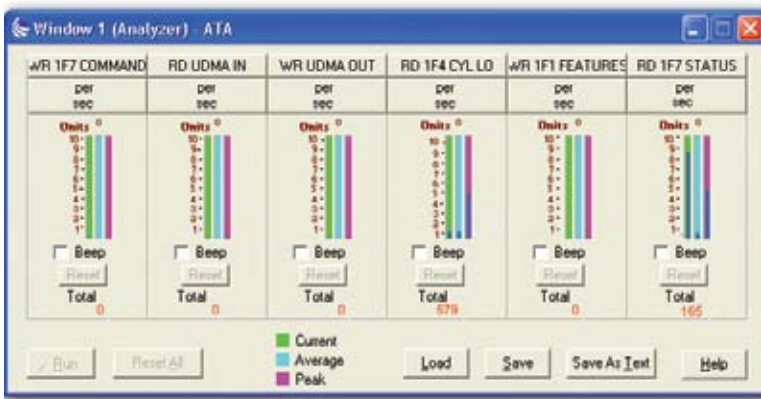


Figure 5: Real Time Statistic Display

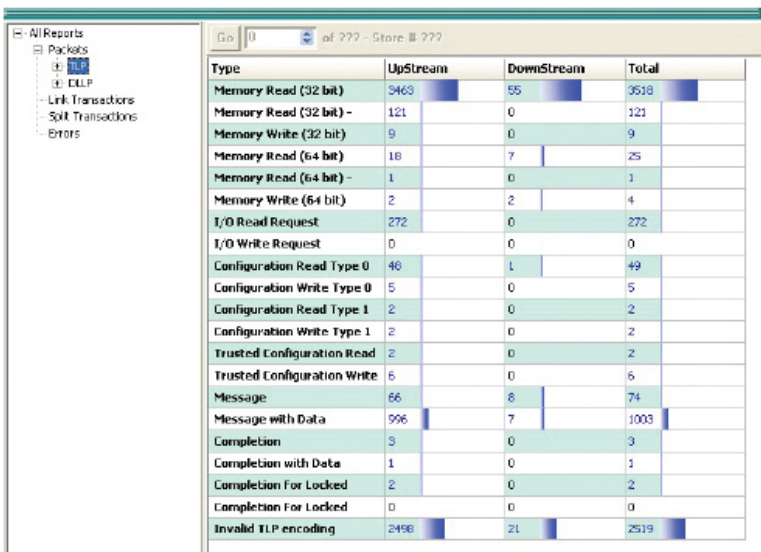


Figure 6: Traffic Summary View

Sync on Cursor: An option in the Command and State listings, Sync on Cursor forces these views to be synchronized to any selected event. All displays can be synchronized by double-clicking in the Histogram, Data Blocking, or Timing Waveform windows as well. Additionally, if the Command Listing is the currently active window, users can cycle through the trace using the arrow keys with the State Listing continuing to be synchronized with the Command Listing.

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Show/Hide Filters: This feature serves to filter various events to show/hide them in the current view. The predefined Show Filter can be used to find every instance of a specific event. Similarly, the Hide Filter is an easy and effective way to simplify the trace display so that only information of interest is showing (see Figure 7). Users can specify filtering criteria to match their current troubleshooting needs.

X and O Markers: Markers enable users to quickly measure the number of captures or time between events, as well as specify a range to save to file or print. To set markers, users right-click on the appropriate trace display and choose whether to place an X or O marker.

Ease of Use

While the Bus Doctor can analyze even the most complex bus transactions, most details are taken care of for users so they can focus of what the data means rather than how to acquire and analyze it. JDSU has designed simplicity into the entire troubleshooting process, from plug-and-play setup of the Bus Doctor without the need to manage DHCP or IP addressing when connecting to a PC, all the way through to the automated organization of captured trace information to present

users with only the information relevant to resolving the problem at hand. Since the same tool supports 13 different protocols, users have to learn only one GUI for all their serial and parallel bus debugging. JDSU also accelerates everyday troubleshooting operations through:

High-level Dialogs: Well-thought out dialogs enable developers to quickly define powerful triggers and pre- and post-capture filters. The Bus Doctor comes with several easy-to-use, pre-defined triggers that allow users to set up complex sequences with only a few mouse clicks and filters that enable engineers to capture and analyze only those events and sequences of interest.

Off-line Analysis: Results can be exported to the standard Excel file format, facilitating further off-line analysis using external software applications.

Formatted Reports: Developers often need to be able to use trace data, analysis results, and statistics in reports for customers, certification, documentation, and other purposes. Rather than require users to use time-consuming, manual screen-capture techniques, analysis results can be exported to multiple text formats. Reports are saved in HTML with multi-page formatting and built-in links to help users locate the data they need quickly and to easily cut-and-paste the appropriate results into their own reports as required.

Tips Window: The Bus Doctor Tips Window introduces both novice and experienced users to important core and new features of the RX family of which they may not be aware.

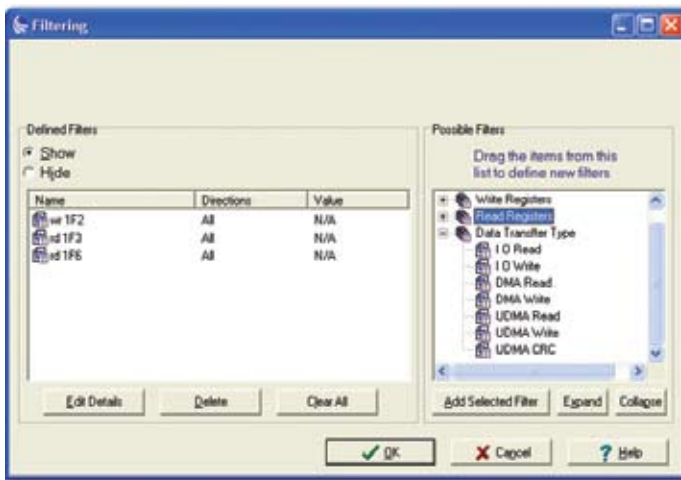


Figure 7: Command and State Filtering

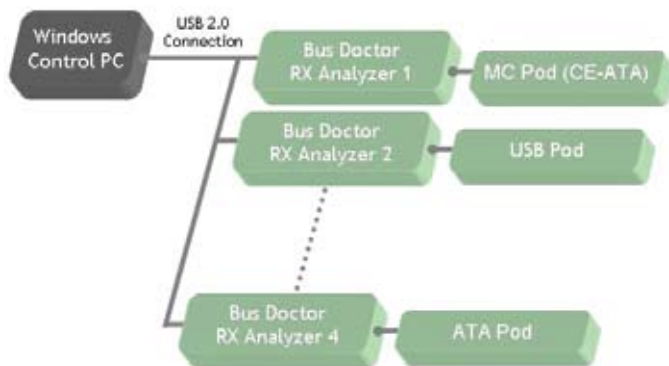


Figure 8: Multi-Analysis Feature is Unique to JDSU Analyzers

Capture Memory Buffer

The Bus Doctor RX Capture Memory Buffer can be divided into up to 1024 smaller segments (see Figure 9). This feature serves to keep traces to a manageable size when occasion requires, as well as keeping different traces in different segments for comparison and when using the Stop On Trigger option.

The Bus Doctor RX may be configured to move from memory segment to memory segment when a trigger condition is encountered, causing the analyzer to automatically take and save multiple traces in one analyzer buffer.

Example: This feature is especially useful in capturing multiple examples of a rare event without constant interaction from the user, such as overnight or on a weekend. Each segment may contain a different example of a common trigger condition, allowing the analyzer to display multiple scenarios that cause a specific event.

The Bus Doctor RX is available in three Capture Memory Buffer configurations:

- SLIM: Capture buffers of 16 million events
- FIT: Capture buffers of 64 million events
- BUFF: Capture buffers of 256 million events

A 256-million-event Capture Memory Buffer translates to over 4 GB of physical memory on a RX-108P-BUFF or 8 GB on a RX-252P-BUFF

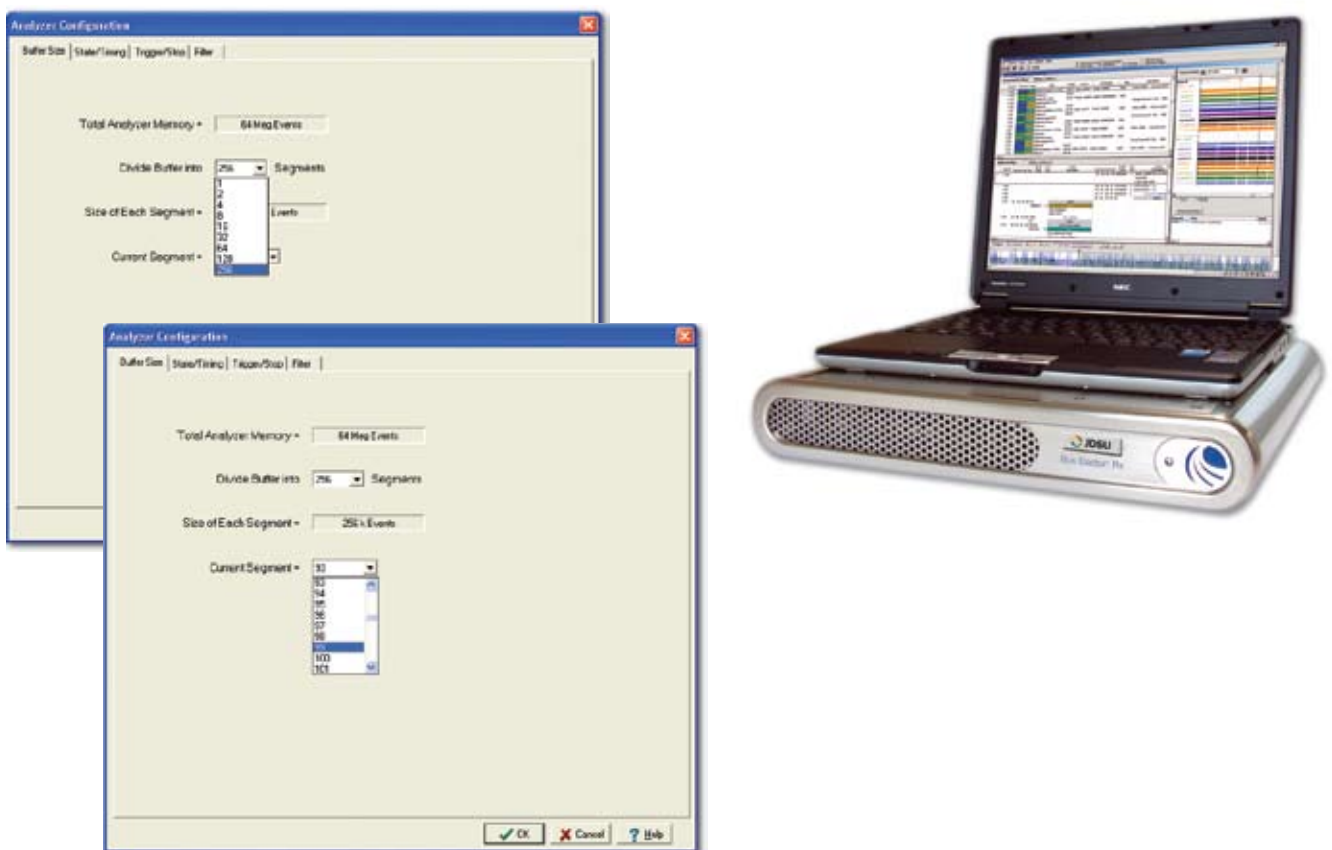


Figure 9: Segmenting the Trace Buffer

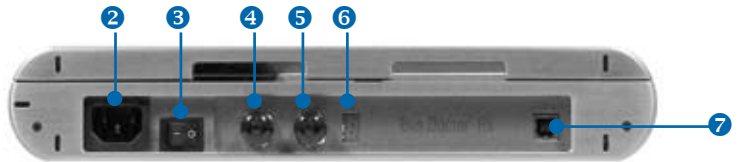
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Bus Doctor RX-36 and RX-108P Analyzers

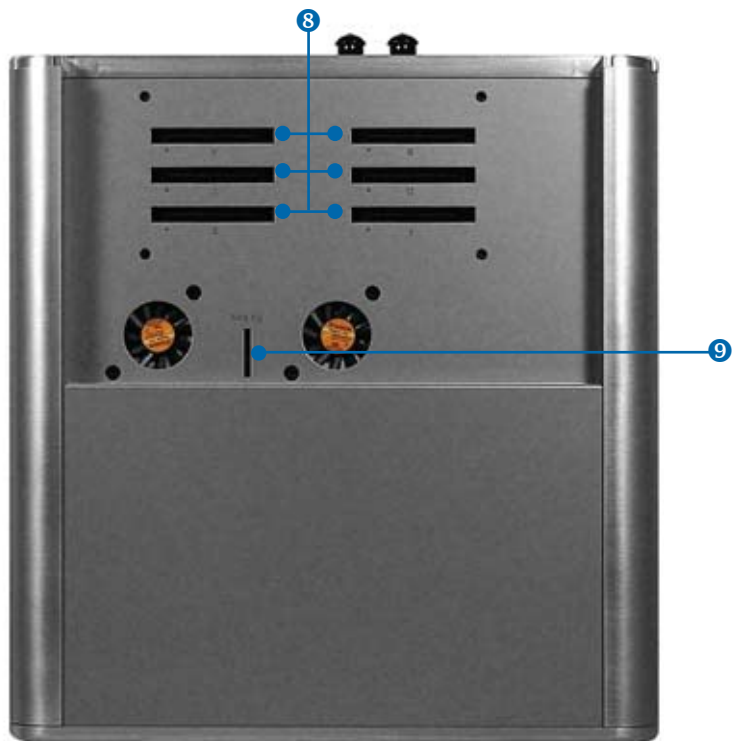
- ① Power LED Indicator
- ② AC Power Connector
- ③ Power Switch
- ④ BNC Trigger In
- ⑤ BNC Trigger Out
- ⑥ Analyzer ID
- ⑦ USB 2.0 Connector out to control PC
- ⑧ Robinson-Nugent 68-Pin Connectors to Bus Doctor Pods
RX-108P: 6 connectors; RX-36: 2 connectors
- ⑨ RX KeySlot used to synchronize reference clock among stacked RXs



Front View



Back View



Top View (rear cover removed)



Robinson-Nugent Connector Cables

Storage Buses Supported



ATA/ATAPI



SCSI/U320



Serial ATA
(1.5 & 3.0 Gb/s)



CE-ATA, MMC and SD/
SDIO

Computing Buses Supported



CardBus



Compact Flash



Logic Analysis



PCMCIA



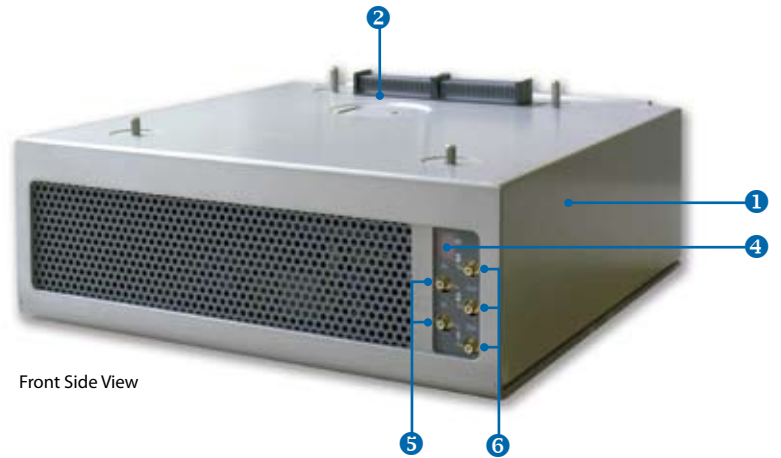
USB (1.1 & 2.0)



PCI/X

Bus Doctor RX-252P Analyzers

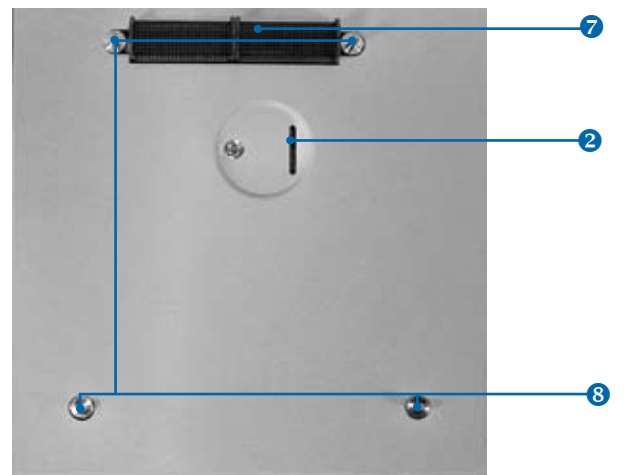
- ① Bus Doctor RX-252P Analyzer
- ② RX KeySlot used to synchronize reference clock among stacked RXs
- ③ 4x SATA POD (SATA Connectors)
- ④ Analyzer ID
- ⑤ 2 SMB Trigger Outs
- ⑥ 3 SMB Trigger Ins



Front Side View

- AC Power Connector (rear - not shown)
- Power Switch (rear - not shown)
- USB 2.0 Connector out to control PC (rear - not shown)

- ⑦ 600-pin Teradyne Connector to Bus Doctor Pods
- ⑧ 4 POD Guide Pins



Top View (with POD removed)

Computing Buses Supported



PCI Express (1.0, 1.0a, 1.1, 2.0)

Storage Buses Supported



4x SATA (1.5 & 3.0 Gb/s) (SATA Connectors)

Protocol, Timing and Statistical Analysis for Consumer Electronics and Computing Design and Test

Pods and Taps

DR-MC-1000 Pod	
Enclosure	Width: 6.0" (15.2 cm) Length: 8.0" (20.3 cm) Height: 1.6" (cm) Weight: 2.20 lbs (1 kgs)
LED Indicators	Activity Lights when a data transfer is detected Error Lights when a CRC error is detected x1 Lights when x1 mode is detected x4 Lights when x4 mode is detected x8 Lights when x8 mode is detected Power Lights when power is supplied to Pod
Power supply	12 VDC
Channels	72 Channel Bus Doctor Pod
Hardware Upgrade	Firmware on pod is updated by Bus Doctor application
Connectors	4 Robertson-Nugent connectors (attached to Bus Doctor) 50 pin, .050 pitch connector (attach to Tap)
Protocol Support	SD 2.0, SDIO 2.0, MMC 4.2 and CE-ATA 1.1

MMC/SD/SDIO Tap	
Physical Specifications	Length: 3.50" (8.89 cm) Width: 1.25" (3.18 cm) Weight: less than 30 grams
Connectors	Host side: x4 SD/MMC Type Device side: x4 SD/MMC Type Connector 50 pin, .050 pitch connector (attach to DR-MC-1000)
Mode Support	x1, x4, x8 (MMC only)
Bus Speeds	0 to 52MHz
Hardware Upgrade	Firmware on pod is updated by Bus Doctor application
Connectors	4 Robertson-Nugent connectors (attached to Bus Doctor) 50 pin, .050 pitch connector (attach to Tap)
Pod Support	DR-MC-1000

CE-ATA Tap	
Physical Specifications	Length: 1.56" (3.96 cm) Width: 1.56" (3.96 cm) Weight: less than 25 grams
Connectors	Host side: 0.50mm ZIF FPC/FFC Socket Device side: 0.50mm ZIF FPC/FFC Socket 50 pin, .050 pitch connector (attach to DR-MC-1000)
Mode Support	x4, x8
Bus Speeds	0 to 52MHz
Pod Support	DR-MC-1000

PCI EXPRESS GEN 2	
Enclosure	Width: 10.25" (26.0 cm) Length: 10.0" (25.4 cm) Height: 5.25" (13.3 cm) Weight: 3.0 lbs (1.36 kg)
LED Indicators	ID Lights when power on VFD Vacuum fluorescent display shows configuration information, DLLP/TLP packet transmission and errors (counter); this display is user-configurable
Power supply	Powered by RX-252P analyzer
Channels	252 Channel Bus Doctor Pod
Hardware Upgrade	Firmware on pod is updated by Bus Doctor application
Connectors	2 SMB Trigger Outs 3 SMB Trigger Ins 2 Connectors to Taps
Protocol Support	PCI Express 2.0

PCI Express Gen 2 X1, X4, X8 Interposer Taps	
Physical Specifications	Width: TBA Length: TBA Weight: TBA
Connectors	(to) Host side: x1, x4 or x8 Connector (to) Device side: x16 Connectors
Line Rates	2.5 and 5.0 Gb/s
LED indicators	Active Lanes
Pod Support	PCI Express Gen 2

PCI Express Midbus Adapter	
Physical Specifications	Width: 6 inches Length: 6.25 inches Height: 1.6 inches
Connectors	26 Pins Midbus (x4) 54 Pin Midbus (x8) Flying lead (x8)
Line Rates	2.5 Gbps
LED indicators	Active Lanes
Pod Support	PCI Express Gen 2

PCI Express ExpressCard Adapter	
Physical Specifications	TBD
Connector	ExpressCard/34 form factor (x1)
Protocol Support	PCIe x1, USB over ExpressCard Connector
Line Rates	2.5 Gbps
LED indicators	Active Lanes
Pod Support	PCI Express Gen 2

Interposer and Taps



PCI ExpressCard



Midbus 26 Pin



PCI Express Flying Lead



PCI Express Midbus



SD MMC x8 TAP



Midbus Connector



Midbus Adapter

Protocol, Timing and Statistical Analysis for Consumer Electronics and Computing Design and Test

Bus Doctor Features:

Accelerated Troubleshooting and Simplified Development

The Bus Doctor RX family is a powerful modular bus analyzer platform providing the widest range of advanced troubleshooting capabilities for accelerating design and test on the market.

Industry's Largest Trace Buffer	With trace buffers up to 16 GBs – twice the size of competing analyzers – the Bus Doctor is capable of capturing more than 256 million events
4 Nanosecond Capture Resolution	High resolution guarantees 100% capture and accuracy of results
Simultaneous Logic and Protocol Analysis	Performs analysis from the physical layer all the way up through the protocol stack for complete visibility
Fast Searches	Patented hardware-based search technology locates specific bus events in trace buffers as large as 16 GBs in just seconds
Memory Segmentation	With up to 1024 segments, users can 1) manage trace capture size, 2) capture multiple traces based on the same trigger condition for overnight and weekend tests, 3) assign different trigger conditions to each segment to compare multiple scenarios that cause the same event
Efficient Trace Filtering	Conserves buffer memory by only capturing samples of interest
Timing Mode	Captures only samples that differ from previous samples
State Mode	Captures only samples that match specific terms or patterns
External Trigger Abilities	External trigger-in and trigger-out capabilities allow users to connect to other equipment such as an oscilloscope

Complete System Visibility and Access to Data

In addition to different views and listings, the Bus Doctor offers powerful features that provide complete visibility into bus transactions, organize trace data to simplify and highlight relevant events, and help users quickly identify, locate, analysis, and resolve issues.

Bi-directional Capture	View bus transactions from both directions to correlate requests and responses
Non-Intrusive Signal Tapping	TAPs and pods minimize signal losses through passive in-line capture to ensure users are working with the most accurate signaling information available
Development Cycle-specific TAPs	Interposer TAPs are available to address the specific constraints of prototype boards, motherboards, and add-on cards for unrestricted access into system buses during the various development cycles
Sync on Cursor	Simplified synchronization of different views
Hide/Show Filters	Filters specific events to ensure that only relevant information of interest is on display. Users can specify criteria to match their current troubleshooting needs
Measure Command Responsiveness	Markers simplify measurement of responsiveness to commands and other transaction latencies
Calculate Delta Times	Markers measure number of captures or time between events as well as specify a range to save or print.
Specialized Display Modes	Different display modes give users immediate and intuitive access to key data with unmatched flexibility and visibility
<i>Command Listing</i>	Summarizes command sequences at a high level
<i>State Listing</i>	List all captured events chronologically with complete decoding
<i>Histogram Listing</i>	An overall map of the entire trace for facilitating navigation
<i>Data Blocking</i>	Quick reference to data payloads
<i>Timing Waveforms</i>	Signal-level representation of trace
<i>Real-Time Display</i>	Tracks up to six terms in real-time whenever there is activity on the bus
<i>Tree View</i>	Organizes all trace data associated with a particular command (SATA, SD, SDIO and MMC/)
<i>Traffic Summary View</i>	For expertly navigating large traces (PCI Express)

Unparalleled Ease-of-Use and Flexibility

JDSU simplifies the design and debugging process to increase user efficiency by anticipating the features users will need as well as by making sure only relevant data is displayed.

Single Platform	One GUI supports all 13 protocols
Plug-and-Play Setup	Connect the Bus Doctor directly to a Windows-based PC via USB 2.0 without needing to manage DHCP or IP addressing
Protocol-Aware Trace Capture	TAPs and pods automatically configure themselves to an application's particular bus setup, such as using bus initial bus training sequences to autodetect lane polarity and reversals (PCI Express)
Predefined Triggers and Filters	Commonly used triggers and filters can be accessed with just a few mouse clicks to accelerate test configuration and execution
Customizable Triggers and Filters	Quickly define even the most complex trigger conditions with the Bus Doctor's powerful 12-level trigger sequencer with counters and timers
Intuitive GUI	Spend more time analyzing and less time learning the software interface
<i>High-Level Dialogs</i>	Well-thought dialogs enable users to quickly define powerful triggers and filters
<i>Off-Line Analysis</i>	Results can be exported to the standard Excel file format for further off-line analysis using external software applications
<i>Formatted Reports</i>	Saves results in HTML with multi-page formatting and built-in links to help users locate the data they need quickly and to allow easy cut-and-paste of results into their own reports
<i>Tips Window</i>	Introduces both novices and experts to core and new features

Industry's Only Single-Platform Multi-Protocol Analyzer

The Bus Doctor is recognized as the industry's most comprehensive serial and parallel bus development and design tool with its unique ability to analyze and time-correlate across multiple protocols simultaneously. No other analyzer can achieve this level of multi-protocol visibility and level of advanced functionality on a single platform

Multi-Protocol Support	Modular architecture supports a variety of different protocols: ATA/ATAPI, Cardbus, CE-ATA, Compact Flash, MMC, PCI Express (1.0, 1.0a, 1.1, 2.0), PCI/X, PCMCIA, SCSI/U320, SD/SDIO, Serial ATA, USB (1.0 and 2.0),
Single GUI	One GUI supports analysis and time-correlation of all protocols
Time-Correlated Analysis	Synchronized reference clock shared among connected analyzers provides time-correlated analysis across protocol domains
Ensure Interoperability	Verify interoperability between devices using the same bus protocol or as transactions cross protocol domains
Scalability	Connect up to 4 Bus Doctor RX Analyzers for complete end-to-end visibility

Leverage Test Equipment Investment

Test equipment is a significant investment, and the Bus Doctor platform enables users to get the most capabilities, performance, and flexibility for their money. Available in a number of configurations to meet every design need and budget, the Bus Doctor brings affordable real-time capture, decode, and analysis capabilities to a wide range of applications.

Multi-Protocol Support	One modular platform becomes 14 distinct analysis tools through optional pods and TAPs that extends test tools investment
Flexible Trace Capture Capacity	Three different capture memory buffer sizes are available: SLIM (16 million events), FIT (64 million events), and BUFF (256 million events)
Scalability	Purchase additional capacity only when it is needed

Protocol, Timing and Statistical Analysis for Consumer Electronics and Computing Design and Test

Hardware Specifications

Model Name



RX-36



RX-108P



RX-252P

Mechanical

Dimensions

Height: 2 inches (51 mm)
Length: 13 inches (330 mm)
Width: 12.1 inches (308 mm)
Weight: 8.8 lbs (3.8 kg)

Height: 2 inches (51 mm)
Length: 13 inches (330 mm)
Width: 12.1 inches (308 mm)
Weight: 8.8 lbs (3.8 kg)

Height: 3.375 inches (86 mm)
Length: 10 inches (254 mm) (w/o handle)
Width: 10 inches (254 mm)
Weight: 8.4 lbs (3.8 kg)
DR-SAS-3004 Pod Weight: 3.6 lbs (1.6 kg)

Indicators

Power LED Indicator
Analyzer ID Number

Power LED Indicator
Analyzer ID Number

Analyzer ID Number

Connectors

Power: Male IEC 320 Receptacle
USB: 2.0
Trigger Out: BNC
Trigger In: BNC
Clock Sync: RX Key
Bus Pod Communications:

RX-36P: 2 Ribbon Cables with Robinson-Nugent 68-Pin Connectors
RX-108P: 6 Ribbon Cables with Robinson-Nugent 68-Pin Connectors

Power: Male IEC 320 Receptacle
USB: 2.0
Trigger Out: SMB (2)
Trigger In: SMB (3)
Clock Sync: RX Key
Bus Pod Communications:
600-Pin Teradyne Connector

Environment

Indoor Operation
Operate and store Analyzer indoors at temperatures from 32o F to 104o F (0o C to 40o C)
Altitude up to 10,000 feet (3,937 meters)
Maximum relative humidity 5 to 95 percent relative at +40o C (non-condensing)

Power Specifications

Input Power

96-132V and 185-264V with an auto-range of 47-63Hz. Auto-switching support

Supported Bus Types

Storage Buses

ATA/ATAPI
SCSI I-320

ATA/ATAPI
Memory Card (CE-ATA, MMC, SD/SDIO)
SCSI I-320
Serial Attached SCSI (1.5 & 3.0 Gb/s)
Serial ATA (1.5 & 3.0 Gb/s)

4x SATA (1.5 & 3.0 Gb/s) - SATA Connectors

Computing Buses

Logic Analysis
USB 2.0

Logic Analysis
USB 2.0
PCI/X with 3.3V connector
PCI/X with 5V connector

PCI Express x1, x4, x8

Event Buffer Size

Slim Version

16 Million Events

Fit Version

64 Million Events

Buff Version

256 Million Events

Physical Memory Buffer Size

Slim Version

256 MBs

256 MBs

512 MBs

Fit Version

1 GBs

1 GBs

2 GBs

Buff Version

4 GBs

4 GBs

8 GBs

Other

Timing Source: Internal **Control Source:** Microsoft Windows PC **Max Number of Stacked RX Analyzers:** 4
Time Stamp Resolution: 4 nanoseconds **Trace Memory Segments supported:** 1024

Minimum System Requirements

- Supported Operating Systems: Vista Ultimate, Vista Enterprise, Windows XP Professional, Windows XP Professional (64-bit), Windows 2003 Server, Windows 2003 Server (64-bit)
- Intel® Pentium® 4, 1.7 GHz or faster processor recommended
- 512 MBs RAM
- Hard Drive Space for program files: 400 MB
- SVGA display that supports 1024 X 768 or greater resolution
- USB 2.0 is required



Test & Measurement Regional Sales

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