

Voyager M3™ Bus and Protocol Analyzer & Exerciser Quick Start

Before Starting

Use this document for quick installation and setup. If you experience problems or need more information, see the **Voyager M3 User Manual** on the Installation CD or at the LeCroy web site. For details about the latest software version, see the **USBProtocolSuite_Readme.html** file on the Installation CD.

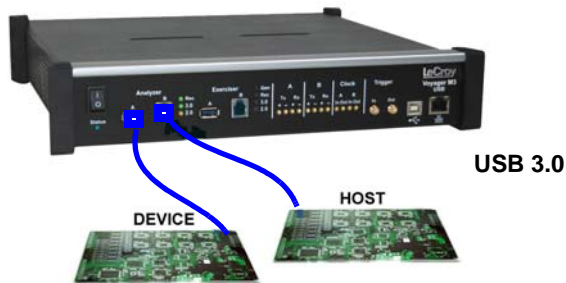
1 Introduction

The LeCroy Voyager M3™ Bus and Protocol Analyzer and Exerciser is a multifunction verification system for USB 2.0 and USB 3.0 development and testing. It is designed to record traffic and graphically present the logical USB transactions and events. It can also generate USB traffic. The system is connected to a laptop or desktop via its USB or Gigabit Ethernet port.

Please see the Readme file on the installation CD for the latest information on PC requirements and supported operating systems.

The system can monitor traffic between USB 2.0 links using standard high-speed compliant cables.

If configured for USB 3.0 testing, the system supports monitoring between SuperSpeed links using USB 3.0 cables or through direct connection via MMCx-to-SMA coaxial cables.



The models available are:

	Voyager M3 Advanced USB 2.0 Analyzer	Voyager M3 Advanced USB 2.0 Analyzer with Exerciser	Voyager M3 Pro USB 3.0 Analyzer	Voyager M3 Pro USB 3.0 Analyzer with Exerciser
Model	USB-T0A2-V01-X	USB-TZA2-V01-X	USB-T0P3-V01-X	USB-TZP3-V01-X
USB 2.0 / USB 1.1 Recording	✓	✓	✓	✓
USB 2.0 OTG Recording	✓	✓	✓	✓
USB 3.0 / SuperSpeed Recording			✓	✓
USB 2.0 Traffic Generation				✓
USB 3.0 Traffic Generation				✓
Standard Recording Memory	1GB	1GB	4GB	4GB
Slow-clock & External Clock Option	✓ (\$)	✓ (\$)	✓ (\$)	✓ (\$)
SMA Differential Tap Option			✓ (\$)	✓ (\$)

(\$ additional cost)

2 Components

The Voyager M3 basic components are:

- Voyager M3 Analyzer Exerciser System
- AC power cable
- USB cables (five)
- Installation CD-ROM, including documentation
- Micro to Standard USB adapter
- Mini to Standard USB adapter
- Quick Start Guide

Please see the *Voyager M3 User Manual* on the installation CD for component specifications.



3 Description



The Analyzer has the following indicators and connectors:

Power Switch (0/1)

Status LED (blue if system successfully initializes)
(red if hardware failure)
(green while initializing)

Analyzer Ports A (downstream) and B (upstream)

Analyzer LEDs

Rec - Recording (red if recording enabled)
3.0 - USB 3.0 (green if traffic detected)
2.0 - USB 2.0 (yellow for Low and Full Speed)
(green for Hi Speed)

Exerciser Ports A (downstream) and B (upstream)

Exerciser LEDs

Gen - Generating (green if generating enabled)
Rec - Recording (red if recording enabled)
3.0 - USB 3.0 (green if traffic detected)
2.0 - USB 2.0 (yellow for Low and Full Speed)
(green for Hi Speed)

4 Installing the Software

Note: You must install the software before connecting the Analyzer to the host machine for the first time.

1. Insert the Installation CD into the CD drive on the host PC.
2. Select **Install Software** from the Installation CD and follow the on-screen installation instructions to install the application on the PC hard disk.

5 Setting Up the Analyzer

To set up the Analyzer:

1. Connect the AC power cable to the rear of the Analyzer and to a 100-volt to 240-volt, 50-Hz to 60-Hz, 100-W power outlet.
2. Connect the USB port to a USB port on the PC using the LONG (6-foot/2-meter) USB cable.
3. Insert the Installation CD.
4. Turn on the power switch.
At power-on, the Analyzer initializes itself in approximately ten seconds and performs an exhaustive self-diagnostic that lasts about five seconds.
5. Click **Next** after you see the Add New Hardware Wizard window.

A (downstream) - MMCx plug connectors for interfacing
B (upstream) with USB 3.0 signals

Tx +- (Transmit pair)
Rx +- (Receive pair)

Clock A (downstream) - MMCx plug connectors for interfacing
Clock B (upstream) with external clock source or sink

In - Connects to an external reference clock.

Out - Provides reference clock output.

Trigger

In - SMA external trigger input.

Out - SMA external trigger output.

USB - Type B connector for connection to host computer

ETHERNET - Gigabit Ethernet for connection to host computer

Note: The rear panel has only a power connector.

Warning: Do not open the Voyager M3 enclosure. No operator serviceable parts are inside. Refer servicing to LeCroy customer care.



6 Starting the Application

To start the application, launch the LeCroy USB Protocol Suite program from the Start Menu:
Start > Programs > LeCroy > USB Protocol Suite > USB Protocol Suite
to open the main window.

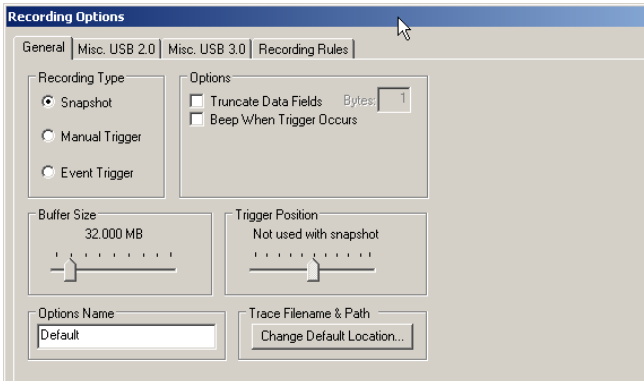
You can use the software with or without the system connected to the host. Without the Analyzer, the program functions as a trace viewer to view, analyze, and print trace files.

The first time you open the USB Protocol Suite application, confirm proper installation by selecting **About** from the Help menu to view the Software Version, Firmware Version, BusEngine™ Version, and Unit Serial Number.

7 First USB Recording

After installing and launching the software, you can test the system by performing the following steps:

1. Connect a USB cable to each of the two connectors on the Analyzer module, then connect the other ends to the USB device under test and USB host system.
2. Select **Recording Options** under **Setup** on the Menu Bar.
3. Select the **General** tab to display the following dialog box showing factory default settings such as Snapshot and 4 MB buffer size. For the first recording, you can leave these settings unchanged



4. Click **OK** to activate the recording options you selected.
5. Turn on the USB devices that are to be tested and cause them to generate USB traffic.

6. Click **Record** on the Tool Bar.

The system starts to record the USB traffic immediately. After 4 MB of traffic are recorded, the Analyzer uploads the data and displays the packets in the trace window.

7. To terminate recording before the snapshot automatically

completes, click **Stop** on the Tool Bar.

When the recording session is finished, the traffic is uploaded from the Analyzer to the hard drive on your PC as a file named **data.usb** or the name you assigned as the default filename. While the file is being uploaded, you should see a brown progress bar at the bottom of the screen. When the bar disappears, it indicates that the data has been uploaded to disk.

8. To save a current recording for future reference, select **Save As** under **File** on the Menu Bar
OR



Click **Save As** on the Tool Bar to display the standard **Save As** screen.

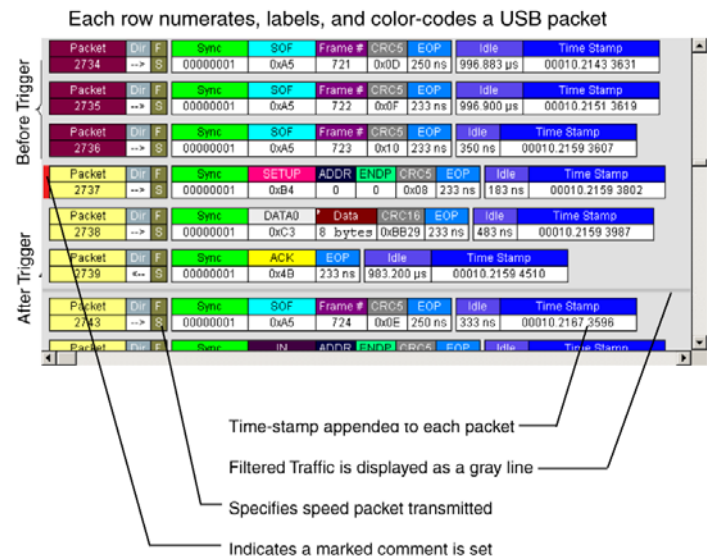
Give the recording a unique name and save it to the appropriate directory.

Trace View Features

After a moment, the recording terminates and the results display.

- The packet view display makes extensive use of color and graphics to fully document the captured traffic.
- Packets are shown on separate rows, with their individual fields both labeled and color coded.
- Packets are numbered (sequentially, as recorded), time-stamped (with a resolution of 2 ns on 3.0 signalling), and highlighted to show the transmitted speed (low-speed, full-speed, high-speed, or superspeed).
- Display formats can be named and saved for later use.
- Data fields can be collapsed to occupy minimal space in the display.

The display software can operate independently of the hardware and so can function as a stand-alone Trace Viewer that may be freely distributed



8 Recording Traffic Generation with Analyzer

Recording Options

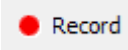
After installation, the system defaults to Snapshot recording. To change the default settings, refer to the "Recording Options" chapter of the *Voyager M3 User Manual*.

Traffic Generation


Systems configured with the Voyager exerciser option can generate USB traffic and record the real response from the DUT. Traffic Generation can also transmit known bad packets, providing an opportunity for engineers to observe how a device handles specific adverse conditions.

To use Traffic Generation, refer to the "Traffic Generation" chapter of the *Voyager M3 User Manual*.


Start Recording

Click the **Start Recording** button  on the Toolbar or select the **Record > Start** command.

Start Generation

Click the **Run** button  on the Toolbar, select the **Generation > Run** command, or open a sample file. After 16 MB of traffic has been recorded, the trace automatically uploads from the analyzer to the PC, and the software displays the frames.

Stop Recording

You may also choose to stop the recording by pressing the **Stop** button  on the Tool bar or selecting the **Record > Stop** command. The trace automatically uploads from the analyzer to the PC.

Interrupting the Upload Process: During upload, you can interrupt the upload process by pressing the **Stop** button to display the Abort or Continue Uploading dialog box with the following options: Stop upload but keep the data that has been uploaded already, Stop upload and discard (Flush) any data that has been uploaded, Continue upload, or Reupload part (Partial) of the recorded buffer.

Save the Trace

After upload finishes, the software saves the recorded traffic data in the **LeCroy\USB Protocol Suite** directory in a file named **data.usb**. You can change the default directory and file name by clicking the **Change Default Location** button in the Trace Filename & Path section of the General tab.

LeCroy Customer Support

Online Download

Periodically check the LeCroy Protocol Solutions Group web site for software updates and other support related to this product. Software updates are available to users with a current Maintenance Agreement.

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