TOTALPHASE

Beagle™ USB 5000 SuperSpeed Protocol Analyzer

The Value Leader in USB 3.0 Analysis

Industry-leading embedded systems tools

Beagle USB 5000 SuperSpeed Protocol Analyzer

The Beagle USB 5000 SuperSpeed Protocol Analyzer is an affordable tool for fast and complete USB 3.0 analysis. This innovative and powerful analyzer works with the industry-acclaimed Data Center™ Software to provide real-time interactive capture and analysis of USB 3.0 and USB 2.0 traffic and bus states.
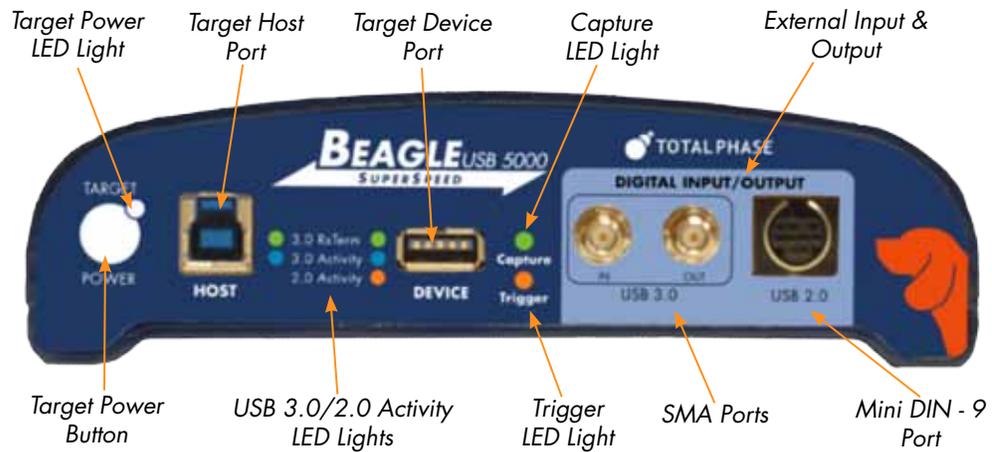
The Beagle USB 5000 analyzer is a comprehensive debugging tool, allowing users to quickly view, filter, and search USB 3.0 and USB 2.0 data. With Total Phase's state-of-the-art LiveDisplay™ technology, LiveSearch™ tool and LiveFilter™ tool, developers can interactively view, filter, and search streaming data in real time.

The Beagle USB 5000 analyzer is the premier choice for any developer looking to debug and develop USB 3.0 systems efficiently and easily.
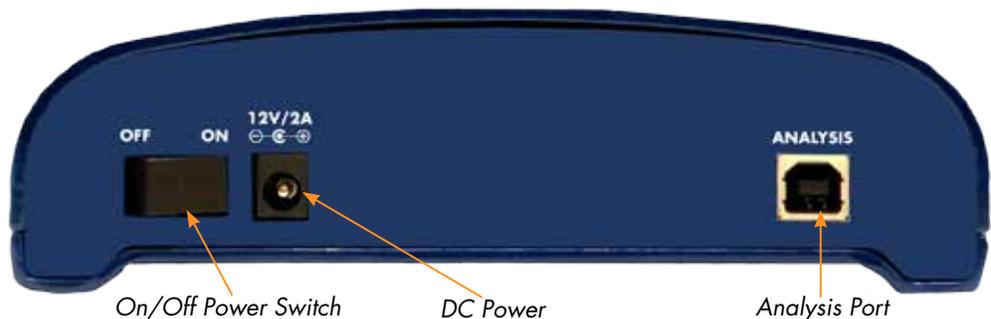
Affordable • The Beagle USB 5000 analyzer is the value leader for USB 3.0 analysis

User-Friendly • Start debugging quickly with the intuitive Data Center Software interface

Fast • Save time and obtain rapid results with the most efficient USB 3.0 analysis platform

True Real Time • Interact with USB data in real time with state-of-the-art LiveDisplay technology

Easy-to-Read Data • Quickly and easily analyze data with an information-rich interface

Front

Target Power LED Light • Target Host Port • Target Device Port • Capture LED Light • External Input & Output

Target Power Button • USB 3.0/2.0 Activity LED Lights • Trigger LED Light • SMA Ports • Mini DIN - 9 Port

Back

On/Off Power Switch • DC Power • Analysis Port

so **Advanced**...
it's actually **Simple**

Detailed information provided for each transaction in a convenient and configurable table view

SYNCHRONIZED DATA

When a packet is selected, all panes are updated, allowing users to instantly see the data of interest
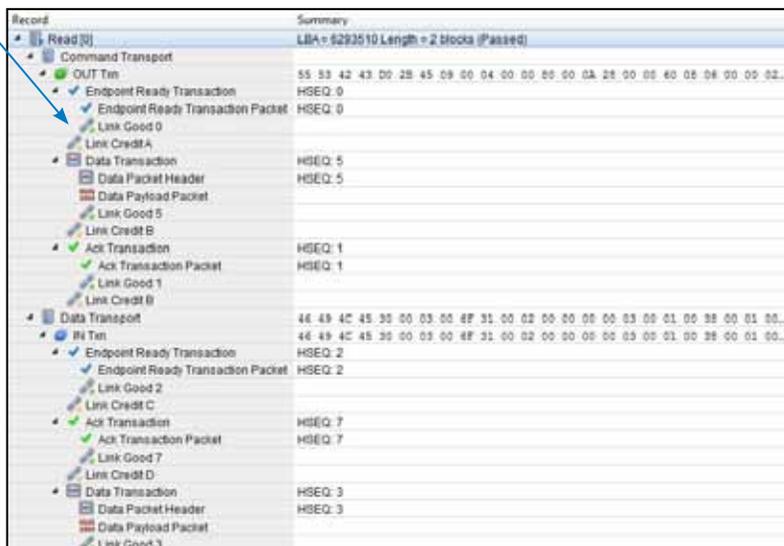

USB analysis just got easier

Data Center Software's interface is incredibly powerful yet simple – there are features to meet the demands of the most advanced engineer, yet bus traffic can easily be captured by a developer who is new to USB.

This user-friendly design allows engineers to quickly monitor and filter USB 3.0 data. With synchronized information panes, different aspects of the same data can be viewed all at once. The versatile and straightforward interface allows engineers to gain the visibility they need to easily debug and develop their USB 3.0 systems.

BUS TREE

See all USB devices in a convenient tree hierarchy with configuration information and traffic statistics

EXPANDED DATA

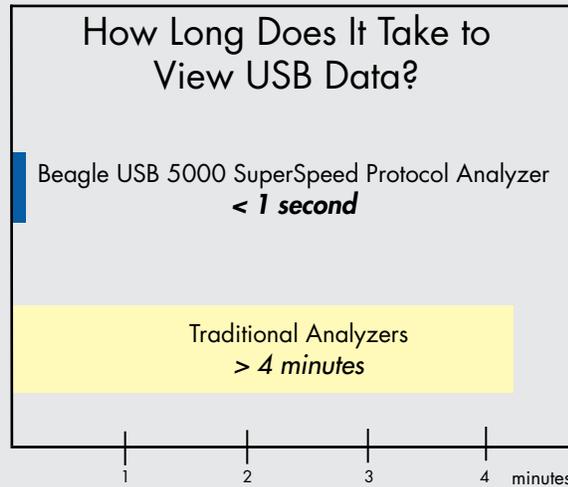Instantly drill down from class-level decoded data to low-level link commands by simply expanding transactions

2

See Results Immediately

How Long Does It Take to View USB Data?

Beagle USB 5000 SuperSpeed Protocol Analyzer
< 1 second

Traditional Analyzers
> 4 minutes

| 1 | 2 | 3 | 4 | minutes |

Based on capturing, uploading, and displaying 128 MB of USB data.

The Beagle USB 5000 analyzer streams captured USB data to the Data Center Software, which instantly decodes the USB data and presents it to the user in real time.

In contrast, other analyzers cause "Developer Lag." First, the memory buffer must be filled and downloaded over a slow uplink. Then, the data is processed by inefficient software. Much time is lost before any USB data is available.

Save time with the Beagle USB 5000 analyzer and start debugging immediately.

Modern problems require modern solutions

To maximize efficiency, the high-speed USB downlink of the Beagle USB 5000 analyzer has been highly optimized to deliver sustained throughput of over 40 MB/s. In side-by-side comparisons, the Beagle USB 5000 analyzer's download speed is up to 10x faster than competing analyzers.

Software should not hold you back. The Data Center Software takes advantage of the latest technologies to provide a fast and responsive user experience. Its modern and platform-independent software architecture has been engineered from the ground up to make large USB 3.0 captures easy to manage. 4GB captures of 20 million records can be navigated with ease, searched nearly instantly, and filtered in less than a minute.

Modern Software Architecture

Multi-Core Support • Data Center can take advantage of multiple processor cores to download and process data faster.

64-bit Support • Work with large USB 3.0 captures of more than 4 GB at a time.

Cross-Platform • Data Center works on Windows®, Linux®, and Mac OS® X allows engineers to work on their platform of choice.
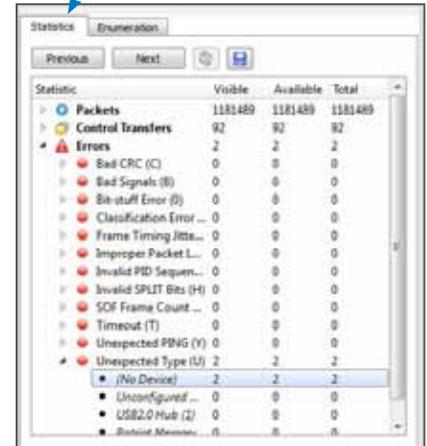
Find the Problem Faster

STATISTICS PANE
Packets and errors can be found with the click of a button
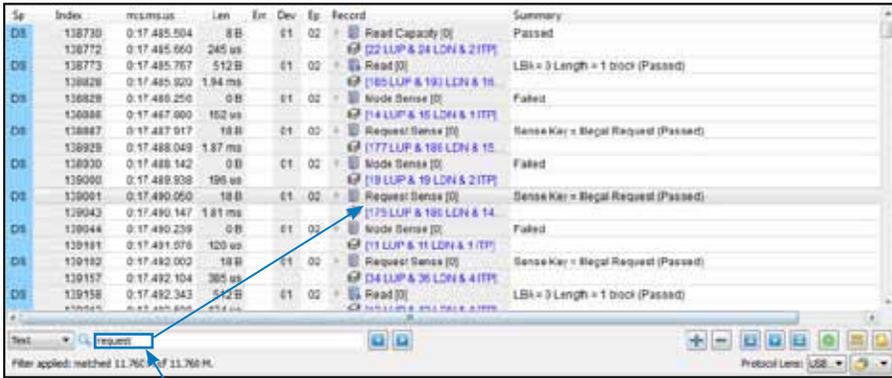
LIVESEARCH TOOL
Instantly locate specific data patterns while a capture is in progress

Get to the core of the matter in real time

The Data Center Software is capable of true real-time analysis. Avoid missing key events by seeing data as it is generated on the bus with state-of-the-art LiveDisplay technology. Use the LiveFilter tool to quickly find bugs by filtering live traffic against any number of parameters. Developers can also use the LiveSearch tool to instantly locate hex or ASCII data patterns. With multiple features that can be used during a live USB 3.0 capture, engineers can immediately see results.
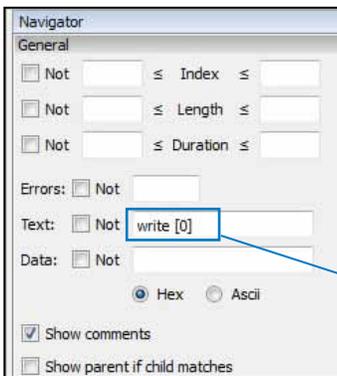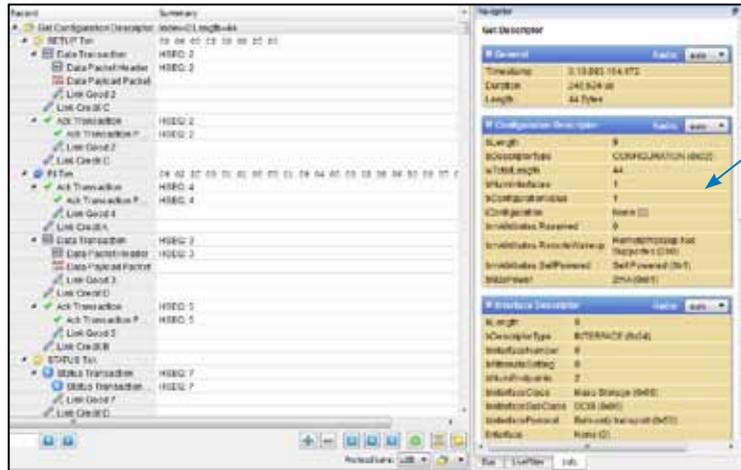

LIVEFILTER TOOL
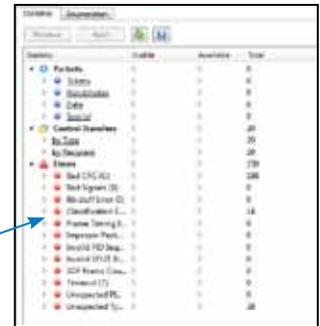Instantly apply parametric filters to an active capture
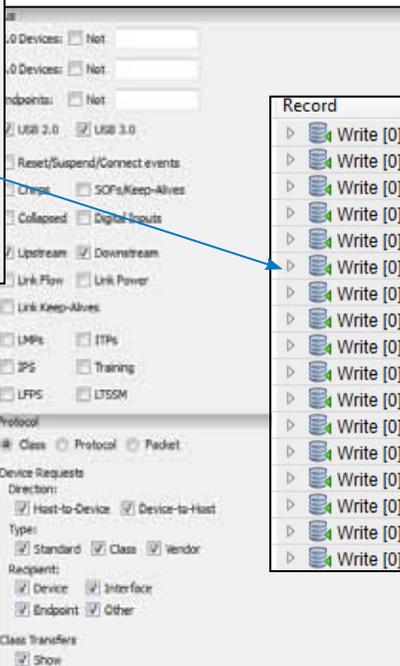
USB 3.0 Debugging Made Easy

ENUMERATION
Device information available immediately in the Info Pane

STATISTICS PANE
View error counts, packet information, and data transfers

Information-rich interface

Multiple representations of data can be viewed on a single screen for quick and effective USB 3.0 analysis. The Block View format provides developers with the option of seeing data packet and transaction details in a hierarchical format. The Details pane is instantly configurable to show data in 8b/10b, hex, and ASCII mode.

The view of the USB data can be easily switched between class-level, transaction-level, and packet-level with a click of a button, while maintaining your position in the capture. For detailed analysis, users can see an exact time-ordered sequence of packets on the bus by capturing in Sequential Capture Mode.
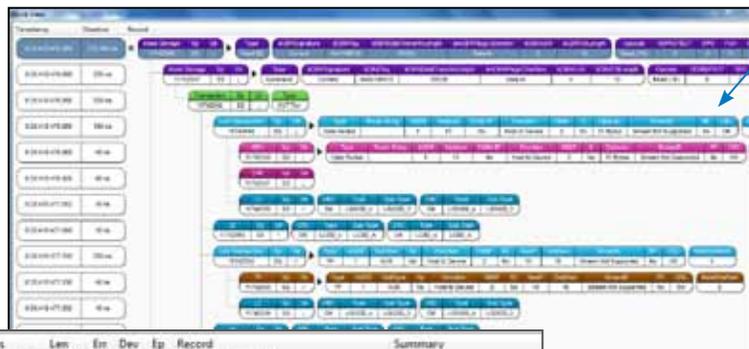
BLOCK VIEW
Data represented in a hierarchical graphical format

USER-FRIENDLY
Indexed records and timestamps

CONFIGURABLE VIEWS
View data in 8b/10b, ASCII, hex, binary, decimal, and/or octal format

Product Specifications

	Beagle™ USB 5000 SuperSpeed Protocol Analyzer	
	Standard	Advanced (available early 2011)
Monitoring Capability		
USB 3.0 Monitoring	Yes	Yes
USB 2.0 (Low-/Full-/High-speed) Monitoring	Yes	Yes
USB 3.0 and 2.0 Simultaneous Monitoring	No[†]	Yes
Current and Voltage Monitoring	No[†]	Yes
Real-Time Class-Level Decoding	Yes	Yes
USB 3.0 and 2.0 Real-Time Statistics Counter	Yes	Yes
LTSSM Tracking	Yes	Yes
Error Detection	Yes	Yes
Recording Capability		
On-Board Memory Buffer	2 GB[†]	4 GB
Total Recording Capacity	Limited by PC Memory	Limited by PC Memory
Spool to Disk Recording	Free Future Upgrade	Free Future Upgrade
USB 3.0 Match/Action Capability		
Packet-Based Simple Matching	Yes	Yes
Error-Based Simple Matching	Yes	Yes
Complex State-Based Matching	1 state[†]	8 states
Data Pattern Matching	2 per state[†]	6 per state
USB 2.0 Match/Action Capability		
Packet-Based Simple Matching	Yes	Yes
Data Pattern Matching	Yes	Yes
Other Features		
Cross-Platform Support for Windows®, Linux®, Mac OS® X	Yes	Yes
Native 64-Bit Operating System Support	Yes	Yes
Warranty	2 Years	2 Years

[†]Upgrade options available (refer to page 8)

Key Features

- Real-time interactive capture and display
- Powerful and user-friendly Data Center™ Software
- LiveDisplay™ technology eliminates wait times as data is streamed immediately to the software
- LiveFilter™ tool quickly finds bugs by filtering live traffic with multiple parameters
- LiveSearch™ tool instantly locates hex and ASCII patterns
- Real-time USB class-level decoding for Audio, CDC, DFU, HID, Hub, Mass Storage, UAS, Video, and more
- Precise timing down to 2 ns resolution
- Automatic support for data scrambling, polarity detection, spread spectrum clocking, and receiver detection
- Hardware-based packet suppression
- Multiple digital inputs and outputs for synchronizing with external devices
- Basic packet and event matching
- Complex, state-based matching
- Simultaneous USB 3.0/2.0 traffic capture

Technical Specifications

Analyzer Characteristics
- Supported specifications: USB 3.0, USB 2.0 and USB 1.x
- Supported link speeds: 5 Gb/s, 480 Mb/s, 12 Mb/s, and 1.5 Mb/s
- 2 GB memory, upgradeable to 4 GB
- Data is continuously streamed directly to analysis PC
- Timestamp accuracy: 2 ns timing resolution for USB 3.0 and 16.7 ns for USB 2.0
- Low-level error detection: invalid PID, bad CRC, timeout, frame sequence errors, state transition errors, and more
- Bus states: detection of USB 3.0 link operating states and all USB 2.0/1.x bus states
- Cross-platform support: Windows®, Linux®, Mac OS® X

Product Warranty
- Two years

Front-Panel Indicators
- Analyzer Power
- Target Power
- USB 3.0 RxTerm Host and Device
- USB 3.0 Activity Host and Device
- USB 2.0 Activity
- Capture
- Trigger

Rear-Panel Connectors
- On/Off Power Switch
- Analysis PC high-speed USB Port
- DC Power

Power Requirements
- 100-240 V, 50/60 Hz

Enclosure
- 16.0 x 15.4 x 4.7 cm (6.3" x 6.1" x 1.8")
- 800 g (1.75 lbs)

Upgrade Options

	Option A	Option B
Availability	December 2010	early 2011
Features		
Advanced State-Based Matching	✓	-
USB 3.0/2.0 simultaneous capture	✓	-
4 GB on-board memory	-	✓
Power and Current Measurement	-	✓

Ordering Information

Product Description	Part Number
Beagle USB 5000 SuperSpeed Protocol Analyzer - Standard includes hardware analyzer, software CD, 2 USB 3.0 cables, 1 USB 2.0 cable, 1 Mini-DIN-9 cable, AC adapter, power cord, and convenient carrying case	TP320910
Upgrade Option A includes advanced state-based matching and USB 3.0/2.0 simultaneous capture	TP321210
Upgrade Option B includes 4 GB memory upgrade and voltage/current measurement functionality	TP321310

Other Total Phase Products

Host Adapters

Aardvark™ I2C/SPI Host Adapter

One tool, limitless applications

- Seamlessly communicate over I²C or SPI in master or slave mode
- Reconfigure I²C or SPI lines with six GPIOs to suit any application

$250 USD

Cheetah™ SPI Host Adapter

Get in the fast lane

- High-speed 40+ MHz SPI master for fast programming
- Precise timing and delays for accurate testing of SPI slave device tolerances during characterization
- Pipelined architecture for gapless shifting

$350 USD

Protocol Analyzers

Beagle™ USB 480 Protocol Analyzer

An engineer's best friend

- Non-intrusively monitor high-, full- and low-speed USB data
- Automatically decode USB class data as it is captured on the bus

$1200 USD

Beagle™ USB 12 Protocol Analyzer

Sniff out bugs

- Non-intrusively monitor full- and low-speed USB data
- Accelerate your debugging by viewing decoded descriptor parsing in real time

$400 USD

Beagle™ I2C/SPI Protocol Analyzer

Always reliable, always helpful

- Non-intrusively monitor I²C or SPI data
- See bit-level timing down to 20 ns resolution

$300 USD

TOTAL PHASE

Total Phase is an industry-leading provider of embedded systems development tools for engineers all over the world. Total Phase's mission is to create powerful, high-quality, and affordable solutions for the embedded engineer. Over the years, Total Phase products have become tools of choice for Fortune 500 companies, small businesses, and research institutions alike.

The simplicity and ease of integration of Total Phase products have led to many unique engineering solutions. As customers use Total Phase products with their systems, Total Phase actively incorporates their feedback, building the solutions that engineers find most valuable. Customers are able to leverage these solutions to build higher-quality products for their own markets.