TOTAL PHASE
USB, I²C, SPI & CAN
Development Tools
RAPID PROTOTYPING
FIRMWARE DEVELOPMENT
MIZATION
TEST FIXTURE
FLASH PROGRAMMING
CROSS-PLATFORM
SENSORS
DECODING
PRODUCTION
EMBEDDED SYSTEMS
VALIDATION
DEVELOPMENT
DEBUGGING
EMULATOR
EEPROM PROG
INNOVA
CHARACTERIZ
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Industry-leading
embedded systems tools

Beagle USB 5000 v2 series

The Beagle™ USB 5000 v2 SuperSpeed Protocol Analyzer is a fast and powerful tool for complete USB 3.0 and USB 2.0 analysis. This comprehensive debugging tool allows users to quickly view, filter, and search USB 3.0 and USB 2.0 data. The Beagle USB 5000 v2 analyzer is the premier choice for any developer looking to debug and develop USB 3.0 and USB 2.0 systems easily and efficiently.

Test & Measurement World
BEST IN TEST
2012 AWARD WINNER

FAST • Save time with fast capture, upload, and filtering times on the most efficient USB 3.0 and USB 2.0 analysis platform and USB 3.0 downlink.

INTERACTIVE REAL-TIME CAPTURE • Interact with USB data in real time with state-of-the-art LiveDisplay™ technology.

INSTANT CLASS-LEVEL DECODING • Automatic decode and display of most popular classes.

ADVANCED TRIGGERING • Flexible state-based event triggers with up to 8 independent states and 6 conditions per state for USB 2.0 and 3.0.

USER-FRIENDLY • Start debugging quickly with the intuitive Data Center™ Software application.

Beagle™ USB 5000 v2 SuperSpeed Protocol Analyzer

- Fastest USB protocol analyzer available
- Flexible - meet your needs today, upgradeable to meet your needs tomorrow
- Intuitive - spend time debugging, not learning tools

Beagle USB 5000 v2 series Specifications

Key Features

- Real-time interactive capture and display
- 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, MTP, PTP and more
- Precise timing down to 2 ns resolution for USB 3.0 and 16.67 ns for USB 2.0
- Hardware-based packet suppression
- Automatic support for data scrambling, polarity detection, spread spectrum clocking, and receiver detection
- Multiple digital inputs and outputs for synchronizing with external devices
- Basic packet and event matching
- Complex, state-based matching for USB 3.0/2.0 available with upgrade
- Simultaneous USB 3.0/2.0 traffic capture available
- API included to create custom software applications
- Cross-platform support: Windows®, Linux®, Mac OS® X

	Beagle USB 480 Protocol Analyzer	**Beagle USB 5000 v2 Protocol Analyzer USB 2.0**	**Beagle USB 5000 v2 Protocol Analyzer Standard**	**Beagle USB 5000 v2 Protocol Analyzer Ultimate**
Monitoring Capability				
USB Capture Rate	Up to 480 Mbps	Up to 480 Mbps	Up to 5000 Mbps	Up to 5000 Mbps
USB 3.0 and 2.0 Simultaneous Monitoring	n/a	available[1]	available	✓
USB 2.0 Downlink	✓	✓	✓	✓
USB 3.0 Downlink	n/a	available[1]	available	✓
Real Time Data Display and Analysis	✓	✓	✓	✓
Real Time LTSSM Tracking	n/a	available[1]	✓	✓
Real Time Statistics	✓	✓	✓	✓
Standard On Board Memory	64 MB + Host PC	128 MB + Host PC	2 GB + Host PC	4 GB + Host PC
2 GB Additional Memory (total 4 GB)	n/a	available[1]	available	✓
External Triggers				
Availability of External Triggers	Input Monitor Output Trigger	✓	✓	✓
Advanced Triggers	No	USB 2.0 included USB 3.0 Available[1]	USB 2.0 included USB 3.0 Available	✓
Sync	Basic	Basic Advanced optional	Basic Advanced optional	Advanced
USB 3.0 Advanced State Machine	n/a	available[1]	available	✓

[1] requires analyzer configured for USB 3.0

Protocol Analyzers

Get powerful, real-time visibility into USB, I²C, and SPI data. Streamline your debugging and development process with Total Phase protocol analyzers. Easily and non-intrusively capture, display, search, and filter data in true real time.

BEAGLE™
PROTOCOL ANALYZER

TRUE REAL TIME • View data as it is captured on the bus in real time with LiveDisplay™ Technology.

EASY-TO-READ DATA • Quickly interpret data with intuitive hierarchical data grouping.

FAST DATA ANALYSIS • Instantly filter and search for data of interest.

EASE OF USE • Get up and running quickly with the Data Center™ software's straightforward interface.

COLLABORATION • Share data easily with colleagues around the world using the free Data Center software.

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

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

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

CAN to USB Interface

Actively transmit CAN data and non-intrusively monitor the CAN bus concurrently for fast and effective real-time analysis. The Komodo™ CAN Duo Interface is an all-in-one tool that provides a flexible and scalable solution for a variety of applications.

KOMODO CAN DUO

Test & Measurement World BEST IN TEST 2012 FINALIST

ALL-IN-ONE TOOL • Non-intrusively monitor and actively inject CAN data with this all-in-one device.

SEAMLESS INTEGRATION • Smoothly integrate the Komodo Interface into test or production environments.

REAL-TIME DATA ANALYSIS • Immediately see and analyze data as it is captured on the bus.

FLEXIBLE DESIGN • Configure each CAN channel independently for sending data or non-intrusive monitoring.

Komodo™ CAN Duo Interface

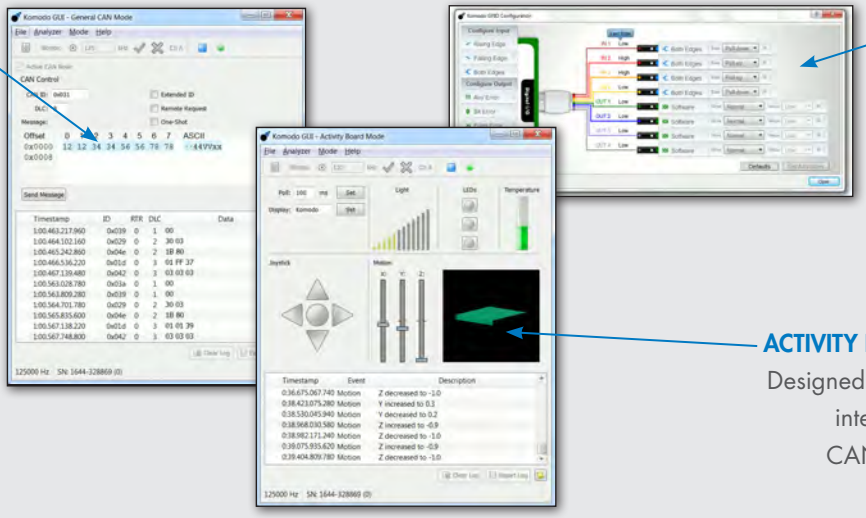
Multiple uses, numerous benefits

- Non-intrusively monitor CAN data and actively inject CAN messages on the bus
- Two CAN channels can be independently configured to simultaneously monitor and send CAN data

Komodo™ GUI Software

Access the features of the Komodo CAN Duo Interface with just a click of a button. Actively transmit and passively monitor CAN data with this easy-to-use graphical interface.

GENERAL CAN MODE
Monitor the CAN bus and view CAN packets, events, and errors in the transaction log



GPIO CONFIGURATION
Easy drag-and-drop interface to configure the Komodo interface's GPIO pins

ACTIVITY BOARD MODE
Designed specifically to interface with the CAN/I2C Activity Board Pro

Data Center™ Software

Data Center Software is a bus-monitoring platform that simplifies debugging and verification of USB, I²C, SPI, and CAN bus data through the Beagle™ line of hardware protocol analyzers and the Komodo™ CAN Duo Interface. With real-time display, filter, and analysis functions, this free software features the industry's only true real-time performance and cross-platform support for Windows®, Linux®, and Mac OS® X.

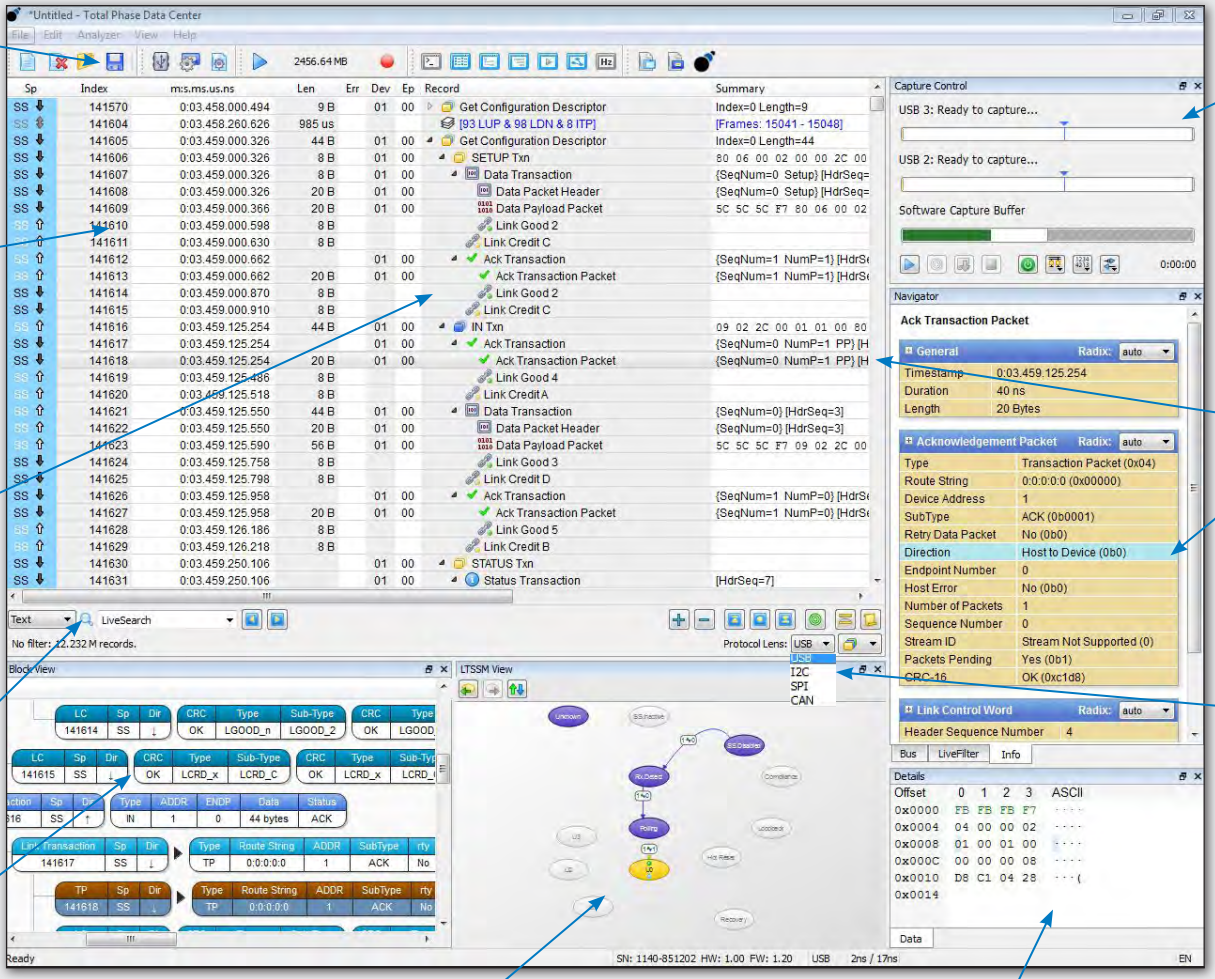
SAVE DATA
Export data for post processing or save it for future analysis

LIVEDISPLAY™ TECHNOLOGY
View USB, I²C, or SPI data as it occurs on the bus

CLASS-LEVEL DECODING
See class-level transactions parsed from raw USB packets in real time

LIVESEARCH™ TOOL
Instantly locate specific data patterns in the capture

BLOCK VIEW
Data is represented in a hierarchical graphical format

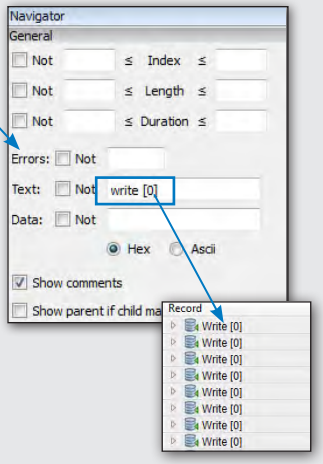


LTSSM VIEW
Monitor the transitions between different USB 3.0 link states

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

LIVEFILTER™ TOOL

Instantly apply parametric filters to an active capture

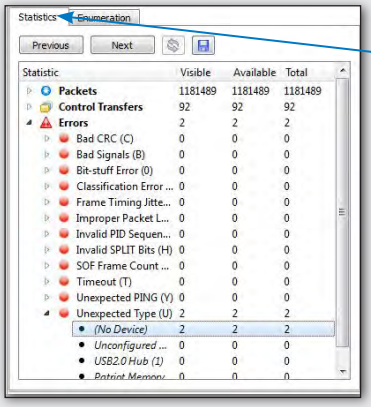


CAPTURE CONTROL

Start and stop a capture while viewing real-time statistics for the capture in progress

STATISTICS PANE

Packets and errors can be found with the click of a button

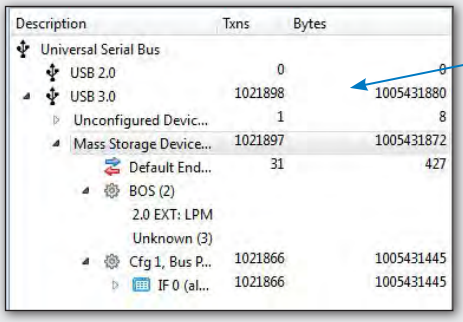


SYNCHRONIZED DATA

See data of interest in multiple formats simultaneously

BUS TREE

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

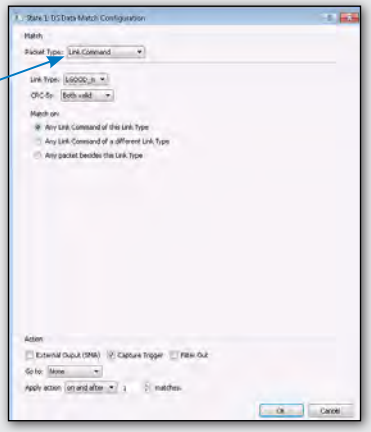


MULTI-PROTOCOL SUPPORT

Analyze USB, I²C, SPI, or CAN traffic

COMPLEX USB 2.0/3.0 MATCHING

Create multi-state matches for USB 2.0 and 3.0 captures



Host Adapters

Quickly and easily interface your computer via USB to any downstream embedded I²C or SPI environment with the industry's leading tools. Total Phase host adapters provide an intuitive user experience when developing, programming, or debugging your specific application.

AARDVARK™
EMBEDDED SYSTEMS INTERFACE

CHEETAH™
EMBEDDED SYSTEMS INTERFACE

EFFICIENT PROTOTYPING • Gain insight into your system through simulation of master or slave devices.

RAPID PROGRAMMING • Quickly program I²C/SPI EEPROMs and Flash memory, in-system or stand-alone.

SEAMLESS INTEGRATION • Smoothly integrate host adapters into test or production environments.

POWERFUL DEMOS • Create compelling, hands-on demonstrations.

FIELD-TESTED RELIABILITY • Tens of thousands of installations used in various industries from consumer products to industrial automation.

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

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

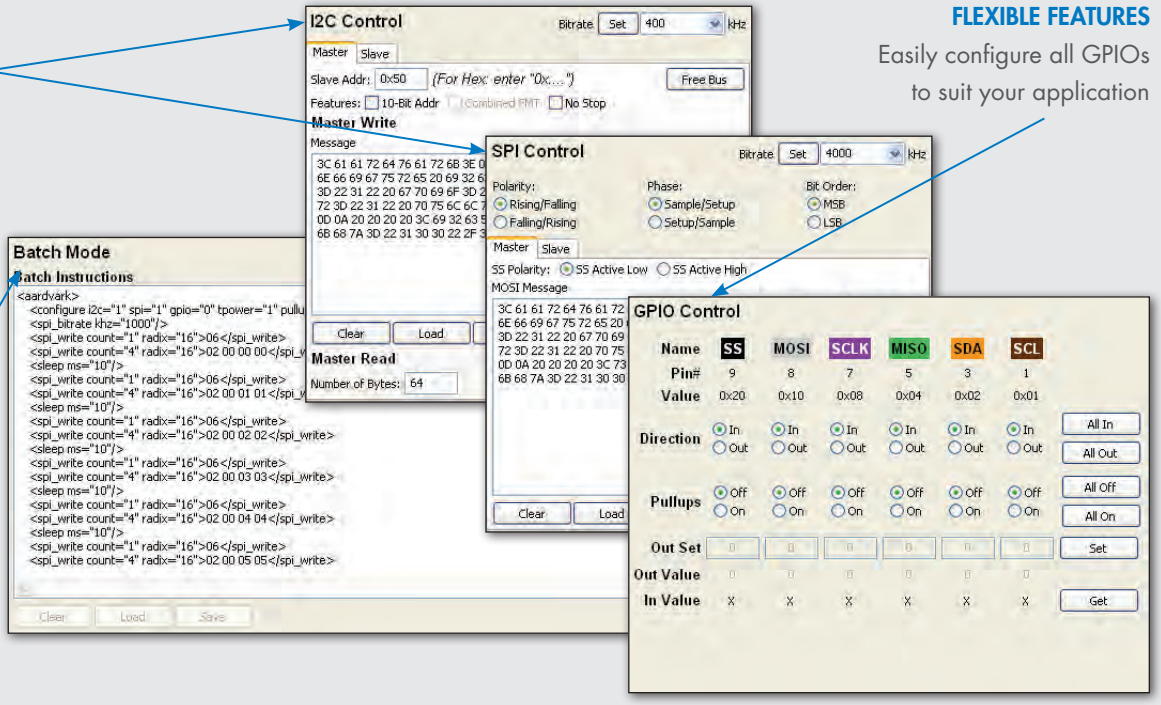
Control Center™ Software

Gain complete control of the Aardvark adapter's I²C, SPI, and GPIO functionality with the free Control Center Software. Easily write and read data, automate testing with batch scripts, and simplify your embedded development process.

EASY-TO-USE INTERFACE
Simplify your control of I²C or SPI master or slave capabilities

CUSTOM AUTOMATION
Quickly generate and execute custom XML batch scripts to automate tasks

FLEXIBLE FEATURES
Easily configure all GPIOs to suit your application

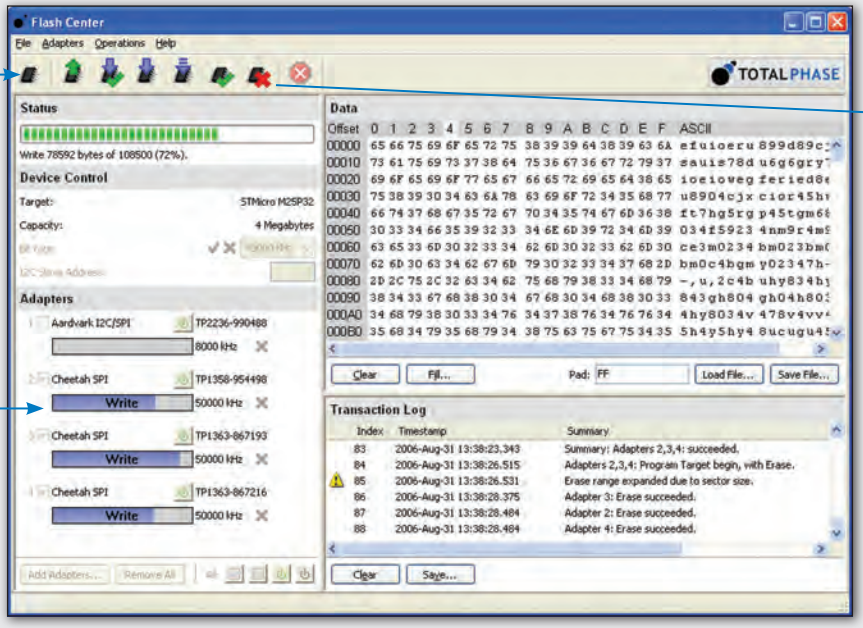


Flash Center™ Software

Maximize the programming speed of I²C- and SPI-based EEPROM and Flash memory chips with the free Flash Center Software and Total Phase's line of host adapters.

BUILT-IN SUPPORT
Start programming immediately with the built-in XML-based memory device library, or easily create your own part file

FAST PROGRAMMING
Instantly program one or more devices in-system or stand-alone



USER FRIENDLY
Program, erase, or verify target devices with a single click

Product Specifications

All Total Phase embedded systems tools combine best-of-breed features, Windows®, Linux®, and Mac OS® X support, royalty-free API, free software updates, and free lifetime support, making them perfect additions to any engineer's toolbox.

USB Product Specifications

	Beagle USB 5000 v2 Protocol Analyzer	Beagle USB 480 Protocol Analyzer	Beagle USB 12 Protocol Analyzer
USB Capture Rate	Up to 5000 Mbps	Up to 480 Mbps	Up to 12 Mbps
USB 3.0 and 2.0 Simultaneous Monitoring	Yes	No	No
Hardware filtering	Yes	Yes	No
Real-time display	Yes	Yes	Yes
Real-time class-level decoding	Yes	Yes	USB Descriptors
Real Time LTSSM Tracking	Yes	No	No
Real Time Statistics	Yes	Yes	Yes
Sync	Advanced	Basic	None
Advanced Triggers	Yes	No	No
USB 3.0 Advanced State Machine	Yes	No	No
Memory	Up to 4 GB + Host PC	64 MB + Host PC	Host PC
Time stamp precision	2.00 ns	16.67 ns	20.83 ns
High-speed chirp capture	Yes	Yes	No
# of digital inputs # of digital outputs	1 USB 3.0, 4 USB 2.0 1 USB 3.0, 4 USB 2.0	4 USB 2.0 4 USB 2.0	None
OTG support	Yes	Yes	No
Bus-powered	No	Yes	Yes
Dimensions	L : 6.3 in (160 mm) W : 6.1 in (155 mm) D : 1.8 in (46 mm)	L : 4.6 in (117 mm) W : 2.8 in (71 mm) D : 1.1 in (28 mm)	L : 3.5 in (89 mm) W : 1.6 in (41 mm) D : 0.9 in (22 mm)
Weight	800 g	96 g	65 g

I²C/SPI/CAN Product Specifications

	Aardvark I²C/SPI Host Adapter	Cheetah SPI Host Adapter	Beagle I²C/SPI Protocol Analyzer	Komodo CAN Duo Interface
Protocols	I²C, SPI	SPI	I²C, SPI, MDIO	CAN
Function	Master / Slave	Master	Real-time Bus Monitor	2-channel Adapter / Monitor
I²C Speeds	Up to 800 KHz	N/A	Up to 4 MHz	N/A
SPI Speeds	Up to 8 MHz Master / 4 MHz Slave	Up to 40+ MHz	Up to 24 MHz	N/A
CAN Speeds	N/A	N/A	N/A	Up to 1 Mbps
GPIO	Up to 6	None	None	8
Dimensions	L : 3.5 in (89 mm) W : 1.6 in (41 mm) D : 0.9 in (22 mm)	L : 3.5 in (89 mm) W : 1.6 in (41 mm) D : 0.9 in (22 mm)	L : 3.5 in (89 mm) W : 1.6 in (41 mm) D : 0.9 in (22 mm)	L : 3.8 in (96 mm) W : 2.7 in (69 mm) D : 0.8 in (20 mm)
Weight	65 g	65 g	65 g	110 g

Product Features

All Total Phase products come complete with the following standard features:

AARDVARK™ EMBEDDED SYSTEMS INTERFACE

CHEETAH™ EMBEDDED SYSTEMS INTERFACE

BEAGLE™ PROTOCOL ANALYZER

KOMODO™ CAN DUO

	All Total Phase Products
FREE software	Yes
FREE API: C, C++, C#, Python, VB6, VB.Net	Yes
FREE software and firmware upgrades	Yes
FREE support	Yes
Cross-platform: Windows®, Linux®, Mac OS® X	Yes
Portability: small and USB-powered	Yes†
RoHS compliant	Yes
Volume discounts available	Yes

†The Beagle USB 5000 v2 Protocol Analyzer requires a separate power source.

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.

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