WE INNOVATE. WE DELIVER.
YOU SUCCEED.

Avionics

More experience, more expertise, more products.

abaco
SYSTEMS

Leadership

For more than three decades, Abaco Systems has been a leader in avionics products for military and commercial aerospace applications.

Abaco Systems' avionics products have been flying on a wide range of military and commercial aircraft platforms for over 30 years, and are widely used in the development, simulation, testing and maintenance of aircraft-, space-, weapons- and ground systems. Our extensive experience in creating truly rugged solutions – which extends well beyond avionics - means that our products are often deployed in the harshest, most challenging environments.

Technologies

Our product portfolio supports the main aircraft interface technologies (MIL-STD-1553B and ARINC 429) that have been the standard for the past 50 years in the industry, as well as more recent Ethernet-based technologies such as AFDX/ARINC 664 and a broad range of newer standards such as PCI Express, XMC, AMC, USB and ExpressCard. All our interface board

products have driver support for many operating systems provided with the board, including API source code examples so that users can tailor the code to suit their application.

Abaco Systems' MIL-STD-1553 interface hardware represents the latest generation of bus products to feature high-speed encoding and decoding along with large onboard memory capacity. Each of our boards is designed to accurately buffer and record bus traffic with no data loss, all while simultaneously scheduling 1553 messages. Our FPGA-based products provide a long-term migration path with in-field firmware updates. Product evolution is supported with replacement products that provide long-term sustainability.

In addition, we also offer a complete line of laboratory- and embedded products that support

a wide variety of commercial avionics protocols, including ARINC 429/575/582, ARINC 561, ARINC 573/717, ARINC 453/708, and CSDB.

Each of our ARINC 429 products supports maximum data throughput on all channels, and most provide on-board message scheduling, label filtering, multiple buffering options, time-tagging, error injection/detection and avionics-level I/O discretes.

Next-generation

Our line of AFDX/ARINC 664 Part 7 products is designed for data bus analysis of this next-generation, deterministic avionics protocol for real-time applications over Ethernet media. Data throughput is considerably increased with this 100Mbps technology and the design - explicitly for test applications - allows unconstrained data capture capability, pushing straight to the host computer memory. Data analysis can be via the Microsoft® Windows®-based BusTools application, or user-developed interfaces on Windows or Linux®. This technology is currently being used, for example, on the Airbus A380 and the Boeing 787 Dreamliner programs.

Perhaps more important than our fully-featured, cost-effective, high performance product range is the support for which Abaco Systems is renowned. Experienced and highly responsive engineer-to-engineer, field application and on-site technical support – together with a highly-developed customization capability - enables our customers to minimize risk, cost and time-to-deployment. This is backed by the industry's leading programs designed to minimize long term cost of ownership and maximize return on investment over the multi-year lifetime of the typical avionics program.

Products

Recognizing the critical importance of subsystems communications in aircraft, Abaco Systems has developed a range of products that deliver the required reliability, speed, and richness of features. Whether the system requires MIL-STD-1553, 10Mbps EBR/MMSI, ARINC 429 or AFDX/ARINC 664, Abaco Systems has a highly appropriate technology solution. Abaco Systems avionics interface boards are compatible with PCI, PCI Express®, CompactPCI®, PXI, PC/104™, PC/104-Plus, AMC, USB, PCMCIA, ExpressCard, VME, VXI, PMC and XMC platforms.

Our MIL-STD-1553 interface hardware provides high-speed host interfaces, large onboard memory capacity, intelligent protocol processing and advanced board-level functionality. Bus traffic is accurately buffered and recorded with no data loss while simultaneously scheduling 1553 messages without host intervention.

Flexible
Flexible APIs supporting many operating systems allow test and simulation users to maximize operational test envelopes. AS4111 protocol-validated operating modes provide assurance for embedded applications. For stores management applications, our 10 Mbps EBR/MMSI interface boards and FlightCORE products enable a cost-effective capability to boost data throughput by a factor of ten.

Abaco Systems ARINC interface board products, traffic analysis software packages and data loader products offer a high degree of functionality and performance for test and simulation or embedded environments. The user-friendly application programming interfaces, supporting many host operating systems, provide onboard management of -transmit, receive, and data logging execution. Many of our ARINC 429 boards provide options for other commercial avionics protocols, such as ARINC 708 and 717.

High-speed
Our ARINC 615 Data Loader provides Microsoft Windows®-based ARINC 615-3/603 data loading via single- or multi-session interface software.

AFDX is the new standard for redundancy-managed assured message traffic technology on Ethernet media. Our high-speed deterministic interface products allow unconstrained bandwidth testing of these buses on engines, flight controls and navigation systems.

With a proven track record in rugged products for military and commercial applications, Abaco Systems can provide rugged avionics interfaces to meet virtually any type of harsh environment requirement.
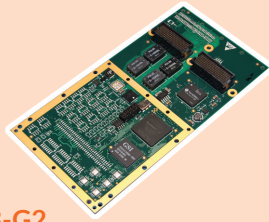
RXMC1553-G2 and RXMC2-1553-G2

XMC.3 mezzanine card for MIL-STD-1553A/B Notice II

> One or two rear I/O dual-redundant channels - RXMC1553-G2

> Four front I/O dual-redundant channels - RXMC2-1553-G2

> P14 or P16 conductive cooled rear I/O or front I/O

> Optional general purpose discrete I/O's and separate avionics discretes

> Fixed voltage and transformer coupled

> Standard with IRIG-B signal receiver (AM or DC/TTL) / generator (DC/TTL)

> 1 MB of RAM per channel
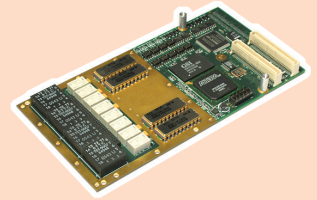
QPM-1553-G2

MIL-STD-1553A/B PMC module

> One, two or four dual-redundant channels

> P14 rear I/O or front I/O

> 18 bi-directional avionics discretes

> Fixed or variable volt

> Optional IRIG-B receiver/generator

> Available in ruggedized, extended temp and conductive cooling configurations

> Available on PCI, PCI Express and CompactPCI carrier cards

R15-USB

Rugged MIL-STD-1553 module

> One or two dual-redundant channels

> Fixed voltage

> Standard with IRIG-B signal receiver (AM or DC/TTL) / generator (DC/TTL)

> Software selectable transformer or direct coupling

> 8 bi-directional avionics level discretes

> Conformal coating optional

> Can be bundled with the BusTools 1553 GUI
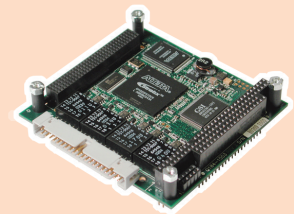
Q104-1553-G2

MIL-STD-1553A/B PC-104 Plus board

> 1, 2 or 4 dual-redundant channels

> Available without ISA connectors

> Optional IRIG-B receiver/generator

> Transformer or direct coupling

> 10 bi-directional avionics discretes

> Available in ruggedized, conformal coated and extended temp configurations
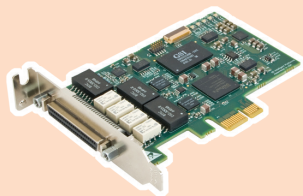
R15-LPCIE-G2

Low-profile PCI Express card

> One or two dual-redundant channels

> Variable voltage

> 12 bi-directional avionics level discretes and two differential I/O

> Software selectable transformer or direct coupling

> Standard with IRIG-B signal receiver/generator with GPS synchronization

> Dedicated input and output triggers for each 1553 channel

> Full height face plate available
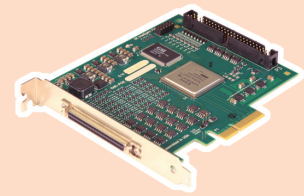
RPCIE-1553-G2

PCI Express card

> One, two or four dual-redundant channels

> Native 4-lane PCI Express interface (no bridge)

> 18 bi-directional avionics level discretes

> Transformer coupling

> Optional IRIG-B receiver/generator

> Conformal coating optional
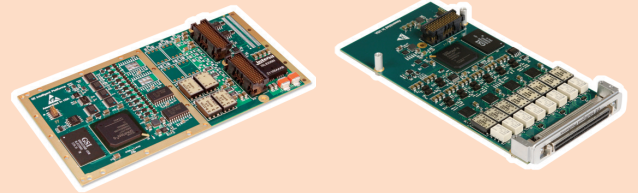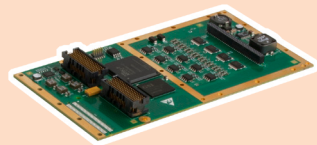
RAR-USB

ARINC 429 USB adapter

- > Available with up to 16 Rx and five Tx channels
- > Eight bi-directional I/O discretes
- > Standard with IRIG-B signal receiver (AM or DC/TTL) / generator (DC/TTL)
- > Optional support for one Rx and one Tx ARINC 717, ARINC 573 channels
- > Bundled with the BusTools ARINC GUI
- > Optional conformal coating available
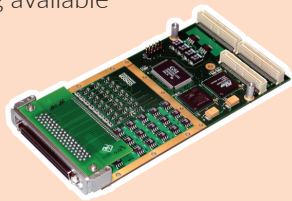
RCEI-830A

High density ARINC interface for PMC

- > Available with up to 16 Rx and 16 Tx channels
- > P14 rear I/O or front I/O
- > Optional support for one Rx and one Tx ARINC 717, ARINC 573 channels
- > Optional IRIG-B receiver/generator
- > Bi-directional discretes available
- > Available in ruggedized, conformal coated, extended temp and conductive cooling configurations
- > Available on PCI, PCI Express and CompactPCI carrier cards


RAR-XMC

High density ARINC interface for XMC

- > Available with up to 16 Rx and 16 Tx channels
- > Optional with 16 fixed Rx and 16 programmable channels on P16 or 15 fixed Rx and 15 programmable on P14
- > P14 or P16 conduction cooled rear I/O or front I/O
- > Rear I/O applications have four input and four output avionics discretes and front I/O has two input and two output avionics discretes
- > Optional support for 1 Rx and 1 Tx ARINC 717, ARINC 573
- > Standard with IRIG-B signal receiver (AM or DC/TTL) / generator (DC/TTL)
- > Available in conformal coated and extended temp configurations

RAR15-XMC-IT and RAR15-XMC-FIO

ARINC 429 XMC and MIL-STD-1553 rear and front I/O module

- > Two or four dual-redundant MIL-STD-1553A/B Notice II -channels
- > 10 fixed ARINC 429 receive channels
- > Eight fixed ARINC 429 transmit channels or can be programmable receive/transmit channels
- > P14 or P16 conductive cooled rear I/O or front I/O
- > Front I/O available in conformal coated and ruggedized configurations
- > Fixed volt
- > Up to 12 bi-directional avionics level discretes individually configurable as 1553 output or input triggers
- > Hardware RT addressing
- > Available on 4-lane PCI Express carrier card
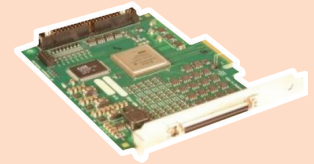
RAR-PCIE

4-lane PCI Express board

- > Available with up to 16 Rx and 16 Tx channels
- > 16 input and 16 output avionics discretes
- > Optional support for 1 Rx and 1 Tx ARINC 717, ARINC 573 channels
- > Optional IRIG-B receiver/generator
- > Optional conformal coating available

Support

We help our customers reduce program risk from design to decommissioning while also reducing costs both in development and deployment with our unique, flexible and proven Product Lifecycle Management (PLM) and Program Management (PM) services.

The PLM program recognizes the typical multi-year – multi-decade, even – nature of many avionics programs, and provides our customers with a range of options that can mitigate the impact of obsolescence, with the ability to ensure that parts are available throughout the program's lifetime.

Long-established

Our long-established PLM team maintains close contact with component suppliers and industry groups such as the Component Obsolescence Group to constantly monitor technology developments and component obsolescence issues. At the heart of the program is a dedication to providing both progressive and defensive long term support.

Progressive support begins on the design table, with embedded products being designed for maximum compatibility or upgradeability even before they are qualified for a system. The list of critical components will include only those elements for which vendors have committed to a long-term production run. After a product is launched, defensive PLM provides the technical support and service

to keep the product running, as well as ensuring that sufficient supplies of spare parts are available to avoid the premature obsolescence of a system or even an entire platform. When technology obsolescence occurs, Abaco Systems' Health Check program is designed to alert customers and provide possible solutions such as a last-time buy of the components, an appropriate replacement component, a redesign of the original product for form-, fit-, and function compatibility, or technology insertion earlier than planned.

Risk elimination

Our Program Management process is designed to eliminate the many potential risks in program development. From development of product requirements and program schedule to product qualification and release for production, we work closely with our customers to demonstrate our design and manufacturing progress as measured against the program baselines and forecasts.

Abaco Systems products leverage proven commercial technologies, as this represents less risk for our customers and greater assurance of long term program success than in-house developed or custom technologies. Price change risk is eliminated because our initial quote remains the price until delivery. In addition, our contract change management service ensures that every change has been formally approved by our customer and that a separate purchase order has been executed to reflect that change.

MIL-STD-1553

We offer a wide range of intelligent MIL-STD-1553 interface hardware to meet demanding application needs. Our 1553 product line combines high-speed encoding/decoding, large onboard memory, intelligent protocol processing and advanced board-level functionality. This enables accurate buffering and recording of bus traffic with no data loss while simultaneously scheduling 1553 messages without host intervention.

	Form Factor	Operating Mode	Analyzer	Temp Range	# Channels	
R15-USB	USB	Dual/Multi-Function	BusTools	Com	1, 2	
QPM-1553-G2	PMC	Dual/Multi-Function	BusTools	Com XT CC	1 to 4	
EPMC-1553	PMC	Single/Multi-Function		Com XT CC	8	
QPCX-1553-G2	PCI, PXI	Dual/Multi-Function	BusTools	Com XT	1 to 4	
RPCIE-1553-G2	PCI Express	Dual/Multi-Function	BusTools	Com	1 to 4	
R15-LPCIE-G2	PCI Express, Low Profile	Dual/Multi-Function	BusTools	Com XT	1 or 2	
RXMC1553-G2	XMC	Dual/Multi-Function	BusTools	CC and Extended	1, 2	
RXMC2-1553-G2	XMC	Dual/Multi-Function	BusTools	Com XT	2 or 4	
Q104-1553-G2	PC/104, PC/104-Plus	Dual/Multi-Function	BusTools	Com XT	1 to 4	
RPCC-D1553	PCMCIA	Single/Multi-Function	BusTools	Com XT	1 to 2	
R15-EC-G2	Express Card	Dual/Multi-Function	BusTools	Com XT	1 or 2	
RQVME2-1553	VME 6U	Single/Multi-Function	BusTools	Com XT	1 to 4	
QCP-1553-G2	CPCI 3U, PXI	Dual/Multi-Function	BusTools	Com XT	1 to 4	
R15-AMC	AMC	Single/Multi-Function	BusTools	Com XT CC	1, 2 or 4	

COMMON FEATURES

- 1 MB shared RAM per channel
- Supports MIL-STD-1553A/B Notice II
- Multi-function – simultaneous Bus Controller, 31 Remote Terminals and Bus Monitor operational modes
- Dual-function – simultaneous Bus Controller and Bus Monitor or simultaneous 31 Remote Terminals and Bus Monitor operational modes
- Single-function – Bus Controller or 31 Remote Terminals or Bus Monitor operational modes

- Supports Microsoft Windows GUI bus analyzer
- High-level API libraries for Microsoft Windows 7, 8, 8.1, 10, Server 2012 R1/R2,XP™, Vista®, Linux®, LynxOS®, Solaris®, VxWorks®, LabVIEW™, LabVIEW-RT, LabWindows™/CVI, Visual Basic and in source code with example programs
- IRIG-B Receiver (AM or DC/TTL)/Generator (DC/TTL) capability
- Real-time bus playback with RT edit mode
- I/O triggering, real-time scope triggering and synchronized BC to external triggers

- 64-bit, 25 nanosecond message timetagging; 45-bit microsecond timetags; IRIG/GPS synchronization capability also available (contact sales for further information)
- Conditional BC branching on real-time message data or status
- Error injection/detection; BIT; RT map monitoring; two levels of aperiodic message insertion
- I/O discretes that support avionics-level voltages
- Supports MIL-STD-1760 start up timing
- SAE AS4111 5.2 Protocol Validation

10MBIT 1553

This advanced solution is typical for stores management, while providing up to 10 times the data throughput. This interface is an excellent choice for flight controls, actuators, electro-pneumatic controllers or similar applications of standard 1553 requiring higher data rates.

AVIONICS CORE

Our FlightCORE 1553 (FC-SMF) and FlightCORE 1553 (FC-GSK) leverage the capacity, performance and cost-effectiveness of programmable logic devices to provide a wide range of protocol communications options such as System on a Chip and integrated I/O. The rugged FlightCORE products afford a variety of configurations of IP Core, including lightweight, no-API-required,1Mbps 1553, 10Mbps multi-drop EBR, and 10Mbps point-to-point MMSI, and can be operated in single or full-function modes.

ARINC 429

Our ARINC solutions provide feature-rich functionality, ease of use and exceptional performance for embedded-, test- and simulation applications. Most interfaces offer individual channel programmability for source or sink, and an optional IRIG B receive time stamp. The PCI and PMC interfaces offer on-board transmit channel listen feature. They provide a user-friendly design to the host system with on-board management of transmit, receive, and data logging -execution.

	Form Factor	# Channels	Temp Range	IRIG Time Code Option	Protocol	
RAR-USB	USB	4 to 21	Com	•	ARINC 429, 573, 717	
RCEI-530	PCI	2 to 16	Com XT	•	ARINC 429, 573, 575, 582, 717	
RAR-PCIE	PCI Express	2 to 16	Extended	•	ARINC 429, ARINC 573, ARINC 717	
CEI-430	PC/104-Plus	2 to 12	Com XT		ARINC 429, 573, 575, 582, 717	
RCEI-715A	PCMCIA	2 to 8	Com		ARINC 429, 561, 568 6-wire, 573, 575, 582, 717, CSDB	
RAR-EC	Express Card	2 to 7	Com	•	ARINC 429, 573, 575, 582, 717	
RAR-cPCI	CPCI 3U, CPCI 6U	2 to 16	Com XT	•	ARINC 429, 573, 575, 582, 717	
RCEI-830A	PMC	2 to 16	Com XT CC	•	ARINC 429, 575, 582	
MAC2-VXI	VXI	2 to 32	Com		Modular ARINC 419, 429, 453, 573, 575, 708, 717, RS-232, RS-422, RS-485	
VME/VXI-MIO	VME/VXI	2 to 32	Com		Modular ARINC 419, 429, 453, 561, 568 6-wire, 573, 575, 582, 708, 717, CSDB, MIL-STD-1553, RS-232, RS-422, RS-485	
RMAC - VME	VME	2 to 32	Com		Modular ARINC 419, 429, 453, 573, 575, 708, 717, RS-232, RS-422, RS-485	
R830RX-32	PMC	32	Com XT CC	•	ARINC 429, 575, 582	
RP-708	PMC	1 to 2	Com XT		ARINC 708	

COMMON FEATURES

- Dedicated, fully independent, receive and transmit channels
- High performance processing and large, shared memory buffers
- Supports GUI bus analyzers
- High-level API libraries included for operating

environments including Microsoft Windows 7, 8, 8.1, 10, Server 2012 R1/R2, XP, Vista, Linux, VxWorks, Solaris, LabVIEW, LabVIEW-RT, LabWindows/CVI and in source code with example programs
- Available in a variety of Rx/Tx and environmental configurations
- Supports maximum data throughput

- 32/64-bit time tagging and optional IRIG
- Multiple receive buffering modes and on-board transmit message scheduling
- I/O discretes that support avionics-level voltages
- Multiple protocols available on same board

DATALOADING ARINC615

Our ARINC 615 Data Loader provides Microsoft Windows-based ARINC 615-3/603 data loading via single- or multi-session interface software.

AFDX ARINC 664

AFDX is a deterministic protocol for real time application on Ethernet media, also known as ARINC 664 Part 7. AFDX is intended for aircraft flight critical interfaces, including Engines, Flight Controls, Navigation Systems. With both hardware-based and software loadable AFDX, we support AFDX across evolving platforms to protect your avionics investment.

	Form Factor	# Channels	Ruggedization	Options/ Notes	
RCNIC-A2PA	PMC	2	Convection Cooled, Extended temperature	IRIG Support. BusTools/AFDX analyzer available.	
RCNIC-A2PAX	PCI	2	Convection Cooled, Extended temperature	IRIG Support. BusTools/AFDX analyzer available.	
RCNIC-A2PA3	CPCI 3U	2	Convection Cooled, Extended temperature	IRIG Support. BusTools/AFDX analyzer available.	
RAF-EC-2P	Express Card	2		IRIG comes standard, BusTools AFDX and AIL compatible	
RCNIC-A2PAU4	PCI Express	2	Convection Cooled, Extended temperature	IRIG Support. BusTools/AFDX analyzer available.	

COMMON FEATURES

- AFDX/ARINC 664 dual port interface (two independent 10/100 MHz duplex ports)
- Includes high-level API libraries for operating environments including Microsoft Windows 7/ XP/2000, Linux, LabVIEW and in source code with example programs.

- Includes AFDX and low-level software. Developer's Kit at no additional charge
- Advanced reception features
- Advanced transmission features
- Advanced software support

- Four bi-directional avionics discretes
- Two input and output triggers
- Built-in test features
- Microsoft Windows GUI Analyzer with ARINC 429 option

LABVIEW SUPPORT AND PXI COMPATIBLE PRODUCTS

Abaco Systems offers an integrated link between National Instruments LabVIEW System Design Software and our avionics product offerings for MIL-STD-1553, ARINC 429 and ARINC 664 data buses. Users can rapidly build custom applications and complete VIs (Virtual Instruments) that can be used in the LabVIEW environment to provide graphical access to Abaco Systems' extensive API (Application Programming Interface). Support for LabVIEW Real-Time Software is also available.

Databus Analyzers

Abaco Systems has developed a powerful set of avionics databus analyzer application software that allow users to monitor and control receive, transmit, logging and analysis functions of avionics systems. Included in our BusTools software applications is a suite of tools for laboratory, in-flight, flight line or any other situation that requires real-time data acquisition and analysis.

BT-1553 provides a Microsoft Windows-based application for testing, analysis and simulation against the MIL-STD-1553 standard. BT-1553 also harnesses the power of Abaco Systems' hardware interfaces on the PCI, PCI Express, PMC, XMC, AMC, CompactPCI, PCMCIA, ExpressCard, PC/104, PC/104-Plus, PC/AT, VME and VXI platforms for simplified control over simulation, display, data logging, playback, and protocol analysis of MIL-STD-1553/1760 A and B networks. In addition, BusTools-1553 provides backward compatibility for reading and analysis of PASS3200 and PASS1000 log files.

Analysis, simulation, maintenance

BT-ARINC provides bus analysis, simulation, maintenance and data logging of the ARINC 429, 575, 561/6-wire, 717 and CSDB databus protocols. With comprehensive monitoring, data logging and simulation of all bus loading activity, the user is able to simultaneously control, log and display data from a single Windows-based program on PCI, PCI Express, PMC, CompactPCI, PC/104, ExpressCard and PCMCIA platforms.

For Windows XP- or 2000-based GUI applications, BT-AFDX provides traffic monitoring, analysis and simulation under the ARINC 664 Avionics Full Duplex Switched Ethernet (AFDX) protocol. This software enables the user to view, log, analyze and generate AFDX traffic at the adapter, end system, virtual link and port levels. BT-AFDX can be used with our robust PMC or ExpressCard interface boards.

BTP-1553, BTP-ARINC, and BTP-AFDX are complete turnkey analyzers in integrated packages that include an interface card, semi-rugged portable computer host and cables for immediate use, eliminating interrupt, driver conflict and other integration issues. These analyzers provide both an intuitive GUI interface for quick monitoring and analysis of bus traffic, and display of multiple real-time engineering unit values and user-formatted graphs.
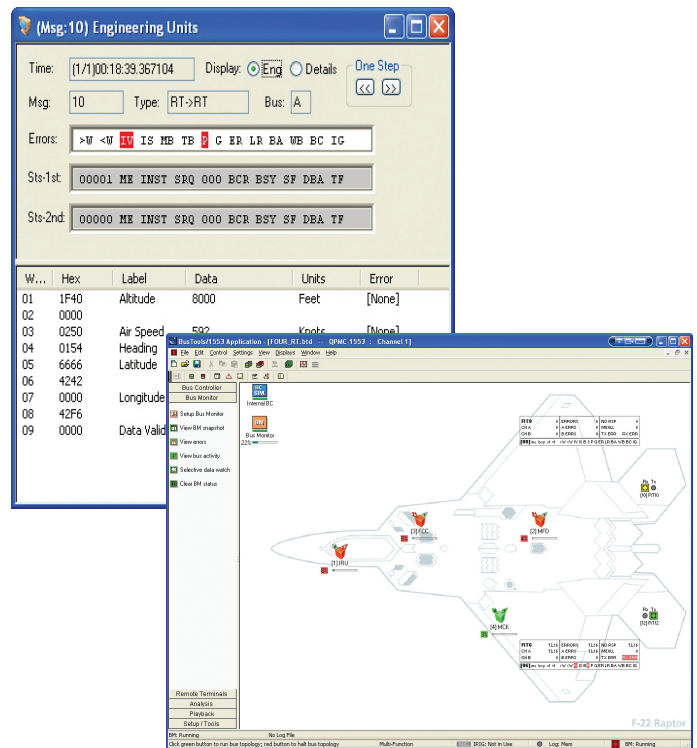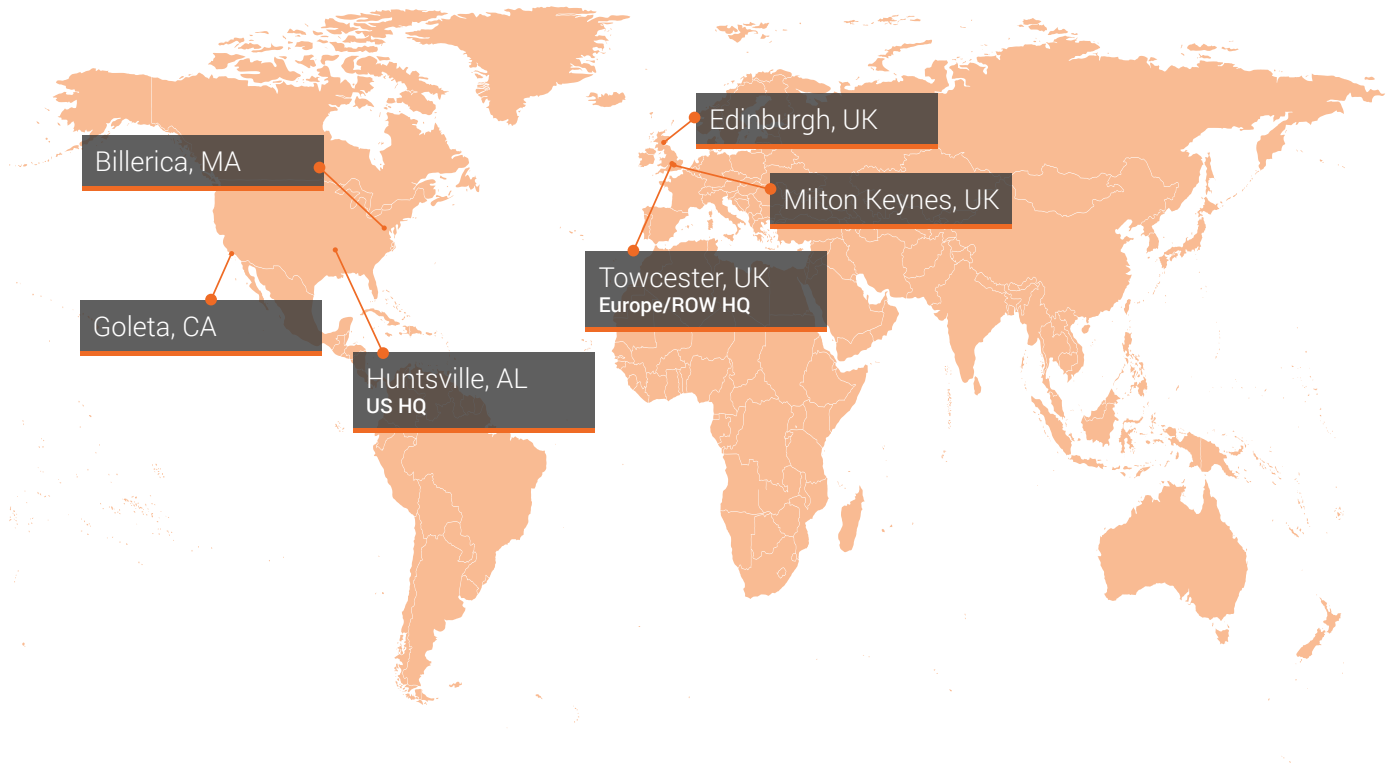

Data Bus Analyzers

Our powerful avionics databus analyzer application software gives you simplified control over receive, transmit, logging and analysis functions. You can analyze bus traffic, quickly generate or modify messages and view received data in engineering units. Our BusTools provide a full suite of advanced features for use in the laboratory, in flight, on the flight line, or in any application requiring real-time data acquisition and analysis.

	Description
BTP-AFDX	AFDX Portable Analyzer - complete turnkey analyzer system for lab and flight line test and maintenance
BTP-ARINC	ARINC Portable Analyzer – complete turnkey analyzer system for lab and flight line test and maintenance
BTP-1553	MIL-STD-1553 Portable Analyzer - complete turnkey analyzer for lab and flight line test and maintenance

	Description
BT-1553	Software support only available for Goleta-based cards. Contact factory for listing of supported products
BT-ARINC	Software support only available for Goleta-based cards. Contact factory for listing of supported products
BT-AFDX	Software support only available for Goleta-based cards. Contact factory for listing of supported products

Billerica, MA

Goleta, CA

Huntsville, AL
US HQ

Edinburgh, UK

Milton Keynes, UK

Towcester, UK
Europe/ROW HQ

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