AVIONICS INTERFACES

From development and test to deployment, we’re with you all the way.

abaco.com/avionics
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 Thunderbolt 3.

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.

Deterministic avionics protocols
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.

Leadership
For more than three decades, Abaco Systems has been a leader in avionics products for military and commercial aerospace applications.
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 ARINC 615-3/603, Abaco Systems has a highly appropriate technology solution. Abaco Systems avionics interface boards are compatible with PCI, PCI Express®, CompactPCI®, PXI, Mini PCIe, PC/104-Plus, AMC, USB, PCMCIA, ExpressCard, Thunderbolt 3, VME, VXI, PMC and XMC platforms.

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

Flexible APIs supporting many operating systems allow test and simulation users to maximize operational test and evaluation capacity. Abaco Systems ARINC, avionics, and 1553A/B interface board products, traffic analysis software packages and data logger 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. ARINC 615 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 mezzanine card for MIL-STD-1553A/B Notice II
- One or two rear I/O dual-redundant channels
- Four front I/O dual-redundant channels
- P14 or P16 conductive cooled rear I/O or front I/O
- Optional general purpose discrete I/O’s and separate avionics discrete
- Fixed voltage and transformer coupled
- Standard with IRIG-B signal receiver (AM or DC/TTL) / generator (DC/TTL)
- 1 MB of RAM per channel

R15-MPCIE
MIL-STD-1553 Mini PCI Express interface card
- One or two dual-redundant channels
- Simultaneous bus controller, 31 Remote Terminals and Bus Monitor
- Dual/multi-function versions.
- Two bi-directional avionics discretes
- Complete message programmability
- Flexible message status/interrupt generation

R15-LPCIE-G2
Low-profile PCI Express card
- One or two dual-redundant channels
- Variable voltage
- 12 bi-directional avionics level discrete and two different 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

OPM-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
- Available in a portable, rugged Thunderbolt 3-based enclosure

BT3-USB-MON
MIL-STD-1553 Bus monitor bunc with differential scope probe
- One dual-redundant 1553A/B notice II channel
- Trigger input and output
- IRIG-B/GPS synchronization
- Single-ended buffered scope outputs of A and B bus signal (10:1 input to output ratio)
- High speed USB
- Built-in test generator

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
Optional conformal coating available

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

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

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

RAR15X and RARXF
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
- Available in a portable, rugged Thunderbolt 3 based enclosure

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
- Available in a portable, rugged Thunderbolt 3 based enclosure

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.

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.
We offer a wide range of intelligent MIL-STD-1553 interface hardware to meet demanding application requirements. 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.

Supports MIL-STD-1553A/B Notice II
• 1 MB shared RAM per channel
• Single-function – Bus Controller or 31 Remote Terminals
• Dual-function – simultaneous Bus Controller and Bus Monitor operational modes
• Supports ARINC 615 Data Loader
• Supports Microsoft Windows GUI bus analyzer

10MBit 1553
This advanced solution is for store 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, re-AP required, 1Mbps 1553, 10Mbps multi-drop EIB, and 10Mbps point-to-point MMS, and can be operated in single or full function modes.

COMMON FEATURES
• Dedicated, fully independent, receive and transmit channels
• High performance processing and large, shared memory buffers
• Support all ARINC 615 IO analyzers
• High-level API libraries included for operating environments including Microsoft Windows 7, 8, 8.1, 10, Server 2012 R2/2016, Solaris®, LynxOS®, Solaris, Linux®, VxWorks®, LabWindows/CV, LabWindows, LabVIEW, LabWindows/CV, LabVIEW, LabWindows/CV
• Supports maximum data throughput
• Available in a variety of Rx/Tx and environmental configurations
• Multiple protocols available on same board
• 32-bit bit time logging and optional RIR
• Multiple receive buffering modes and on-board transmit message scheduling
• I/O decoders that support avionics level voltages

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

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.

**COMMON FEATURES**
- AFDX/ARINC 664 dual port interface (two independent 10/100 Mbps 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 software support
- Advanced transmission features
- Advanced reception features
- Four bi-directional avionics discretes
- Two input and output triggers
- Four bi-directional avionics discretes
- 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 AFDX 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.

**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, CompactPCI, 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.

The BT3-USB-MON is available as an easy to use, powerful and cost effective MIL-STD-1553 monitor-only device. Bundled with the versatile analyzer BusTools and with a built in scope output, the BT3-USB-MON makes monitoring and troubleshooting bus traffic in the lab or on the flightline as simple as possible.

Abaco’s avionics databus 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**

<table>
<thead>
<tr>
<th>Product</th>
<th>Software support only available for Goleta-based cards. Contact factory for listing of supported products</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT-ARINC</td>
<td>Software support only available for Goleta-based cards. Contact factory for listing of supported products</td>
</tr>
<tr>
<td>BT-AFDX</td>
<td>Software support only available for Goleta-based cards. Contact factory for listing of supported products</td>
</tr>
</tbody>
</table>
WE INNOVATE. WE DELIVER.
YOU SUCCEED.

GLOBAL COVERAGE

Americas:
866-OK-ABACO or +1-866-652-2226

Asia & Oceania:
+81-3-5544-3973

Europe, Africa, & Middle East:
+44 (0) 1327-359444

Locate an Abaco Systems Sales Representative visit: abaco.com/products/sales

abaco.com | @AbacoSys

©2019 Abaco Systems. All Rights Reserved. All brands, names or trademarks are property of their respective owners. Specifications are subject to change without notice.