GE
Intelligent Platforms

# BTP-AFDX: AFDX Portable Analyzer

## Complete Turnkey Analyzer System for Lab and Flight Line Test and Maintenance

### Features

- Easy-to-use, intuitive, multi-window displays
- Traffic sorter view with Auto-Discovery
- Simultaneous real-time monitoring and logging
- Create Message Structures via XML importing or drag-and-drop
- Apply Message Structures to End System, Virtual Link (VL) and Port views
- Display message data in Engineering Units
- Flexible AFDX Frame Analysis with statistics
- High-resolution Timestamping
- Advanced, multi-level triggering and filtering
- Log data simultaneously at Port, VL or All Traffic levels
- Replay (or loop) previously captured files and apply message structures to view data
- Advanced widget displays (charts, gauges, etc) for real-time data monitoring
- Packet generator and End System generator for traffic simulation
- IRIG support for accurate data analysis
- RoHS/EPEAT compliant

BTP-AFDX is a complete turnkey analyzer comprised of an integrated package with BT-AFDX, and AFDX avionics interface card, semi-rugged portable computer host, and cables for immediate use with no user hassles around interrupts, driver conflicts, and other integration issues.

### Analysis, Test and Simulation Software

BusTools/AFDX is a Windows® XP/2000-based GUI application solution that establishes new levels of power, flexibility and ease-of-use for AFDX (Avionics Full Duplex Switched Ethernet) traffic monitoring, analysis and simulation. Available for use with GE Intelligent Platforms' powerful ExpressCard, BusTools/AFDX offers an intuitive interface to view, log, analyze and generate AFDX network traffic at the Adapter, End System, Virtual Link (VL) and Port levels.

### Auto-Discovery

Starting from the Network Discovery window, GE Intelligent Platforms' exclusive, high-level Auto-Discovery feature provides the user with an immediate overview of all network traffic. Utilizing a familiar "Tree" view, you can instantly drill-down thru Adapters, End Systems, VLs and Ports to quickly survey your network configuration. Simply select the level you wish to view, then right-click, and BusTools/AFDX gives you immediate context menu access to packet summaries, dissected packets (MAC/IP/UDP headers, message structures, etc.) and raw hex data. Each layer of data is presented in resizable windows that can be easily organized to meet individual user requirements.

### Simultaneous Real-Time Monitoring and Logging

Coupling BusTools/AFDX with GE Intelligent Platforms' two-channel ExpressCard interface gives you the power of our exclusive pipelined DMA architecture. BusTools/AFDX simultaneously supports real-time monitoring while logging fully loaded traffic to disk storage.

Apply Message Structure definitions, and then monitor Data Elements in real-time with engineering unit displays. View real-time statistics – packet count, byte count and bandwidth. Capture, view and dissect data from multiple levels simultaneously in engineering units or hex. Received packets are time-tagged with 20 nanosecond resolution for analysis or playback. Logged data can be replayed or looped with accurate timing.

### Filters and Triggers

BusTools/AFDX provides advanced filtering and triggering functionality that is supported by a simple and intuitive user interface. As with many other BusTools/AFDX features, Filters and Triggers are structured in a hierarchical fashion in the form of "Trees."
Filters can be used to screen the packets according to complex Boolean rules and can be used during network traffic capture, both at the protocol level and at the Data Element level. Triggers associate a condition with an action. Triggers utilize Filters for activation and for data reduction, and are easily used to detect irregular conditions or to automate recurrent tasks.

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## Visual Displays

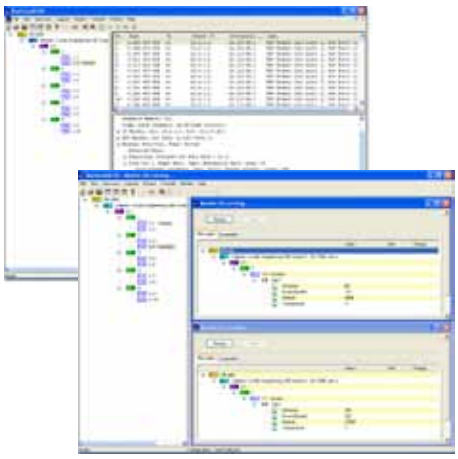
BusTools/AFDX also offers advanced and flexible visual displays to efficiently monitor data trends on you're AFDX network in real-time. Different widgets are available (strip charts, LED indicators, etc.) for you to build your own display windows. These widgets can then be simply associated with UDP ports from the Network Discovery window to either monitor the bandwidth or data for the selected ports. The widget architecture is based on a simple and intuitive "drag and drop" user interface, making it very easy to implement display panels.

## BusTools/AIL

BT-AIL expands *BusTools*/AFDX to add ARINC 429 analysis capability. The multiprotocol analyzer is purpose built for the avionics integrated lab applications where analysis of AFDX, ARINC 429, and ARINC 429 embedded in AFDX message traffic is desired.

## Data Centric Analyzer

BusTools/AFDX utilizes a Message Structure/Data-Set/DataType architecture for managing your ICD information by translating packet payload data into engineering unit information. Packet Headers, Payloads and Message Structures can be examined in the capture viewer while different Data Elements are simultaneously displayed in real-time monitor viewers. Advanced Boolean logic filtering tools can be applied to Message Structures, and intuitive, drag-and-drop techniques may be used to manually create AFDX Datasets, Message Structures and Port assignments. Captured/logged AFDX data is presented in a three-panel user-configurable viewer. The top panel provides a list view where each row summarizes corresponding identification for each packet. The middle panel contains a "dissection" of an individual packet selected in the top panel. Header and payload information (in engineering units, if message structures have been applied) are displayed in the middle panel. The bottom panel displays a hex dump of the packet selected in the top panel.



## AFDX Traffic Generation

BusTools/AFDX can accurately replay (or loop) previously captured log files. To quickly create new files, Filters can be easily applied while replaying a file and by logging again, a revised file is created for traffic generation.

## Additional Features

Users can analyze AFDX header protocol formats.Advanced Boolean logic filtering tools can be applied to reduce traffic while utilizing triggering applied to packet headers or message content.

## BusTools/AFDX Features

- View AFDX bus traffic at multiple levels
  - All Traffic
  - Virtual Link Traffic
  - By Port
  - All incoming packets are time-stamped
- Configure and View AFDX Message Structures
  - Define Message Structures composed of Data Sets
  - Define Data Sets composed of AFDX variable types
  - Assign Message Structures to AFDX Tx Port messages
  - View AFDX message data in engineering units
  - All frames can be viewed in hex
- Configure and View Virtual Link Traffic
  - AFDX Frame Analysis
  - MAC, IP, and UDP addressing formats
  - MAC, IP, and UDP AFDX Header
- Profile Analysis
  - AFDX Frame Statistics
- Logging
  - Log at Port, VL or All Traffic levels
  - Duration of capture: unlimited, max packets, max bytes or max time
  - Can apply filters or Start on trigger
  - Message structures may be applied to logged data.
- Triggering and Filtering
  - Multi-level triggering and filtering on Port, VLID or All Traffic message streams
  - Based on Berkeley Packet Filter (BPF)
  - Filters and triggers are implemented as BPF filter expressions
  - Uses trigger/filter Elements (relational expressions), trigger/filter equations (Boolean expressions) and trigger sequences
  - Trigger elements can be user-defined (message structures), or MAC, IP or UDP headers and addresses
- Traffic Simulation
  - Replay log files
  - Simulate traffic using the different traffic generators

## ExpressCard Features

- ARINC664/AFDX dual port interface (two independent 10/100 duplex ports)
- ExpressCard/54 extended module
- Transition cabling provided with mechanical retention
- Two IEEE 802.3 compliant Ethernet RJ-45 connectors
- High density 15-pin D-sub connector for In/Out triggers per port and four bi-directional avionics level discretes
- IRIG-B synchronization In/Out (AM or DC/TTL)

## Semi-rugged Computer Host Features

- Shock-mounted, removable hard drive
- Drop and spill-resistant
- Operation environment temp: 5°C to 35°C
- Storage environment temp: -20°C to 60°C
- Lithium ion battery pack
- AC adapter: AC 100V-240V 50/60Hz, auto sensing/switching worldwide power supply
- Battery status reporting

## Ordering Information

| | |
|---|---|
| **BTP-AFDX-A2P** | Semi-rugged Portable Analyzer, AFDX/ARINC 664/F, dual port 10/100 full duplex, with IRIG RX and TX |
| **BTP-AFDX-B2P** | Semi-rugged Portable Analyzer, Boeing controlled AFDX/ARINC 664/F, dual port 10/100 full duplex, with IRIG RX and TX |
| **BTP-AILA1-244-W** | Semi-rugged Portable Analyzer, AFDX/ARINC 664/F, dual port 10/100 full duplex, with IRIG RX and TX, ARINC 429 PCMCIA card with 4 RX, 4 TX channels and 4 bi-directional discretes (IRIG Timing not supported on ARINC 429 PCMCIA card.) |

## Related Products

| | |
|---|---|
| **RAF-EC-2P** | RoHS Dual Port ARINC 664 ExpressCard Interface |
| **BT-AFDX** | AFDX Bus Analysis & Data Logging software for Windows (multi-function boards only) |

## GE Intelligent Platforms Contact Information

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Global regional phone numbers are listed by location on our web site at **www.ge-ip.com/contact**

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