Alta dt
data technologies

Innovation,
Quality & Service

MIL-STD-1553
ARINC-429/717
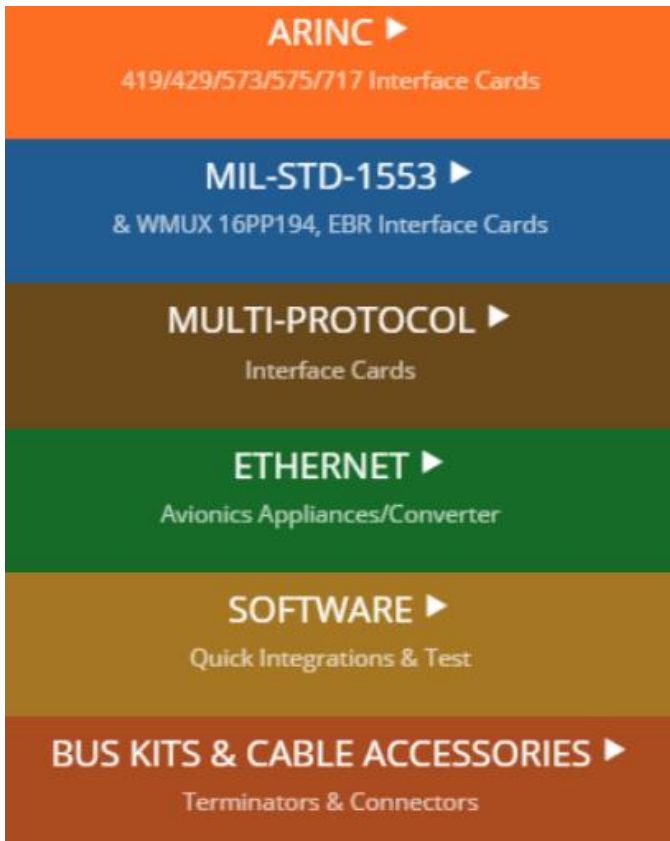
Interface Cards
Real-Time Ethernet Converters
USB & Thunderbolt[tm] Devices

Alta Data Technologies – Company Overview

ARINC ▶
419/429/573/575/717 Interface Cards

MIL-STD-1553 ▶
& WMUX 16PP194, EBR Interface Cards

MULTI-PROTOCOL ▶
Interface Cards

ETHERNET ▶
Avionics Appliances/Converter

SOFTWARE ▶
Quick Integrations & Test

BUS KITS & CABLE ACCESSORIES ▶
Terminators & Connectors

Founded in 2007, **Alta** is the **Market Leader** in Innovation and Quality of

MIL-STD-1553 & ARINC
COTS Interface Cards & Real-Time Appliances

100+ Years Combined Experience, 45,000+ Items Shipped and $125M+ Sales Across 100s of Aerospace and MIL Programs

Quality at Every Phase of Alta Operations

✓ **5 Year Limited Warranty** – Industry Leading!

✓ ISO 9001:2015 Certified

✓ ANSI ESD S.20.20 Certified

✓ IPC-A-610 Class 3 & J-STD-001

✓ Advanced JTAG Boundary Scan

✓ Only Tier One/OEM Parts Suppliers

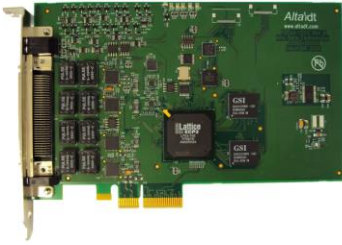✓ FPGA Based Designs to Reduce Parts Obsolescence Risks

✓ US Owned and Operated

Guaranteed Compliant - No Risk Avionics Integration

Alta 1553 and ARINC COTS Products
Interface Cards and Real-Time Appliances

For Test, Simulation or Rugged Embedded Applications, Alta Has an Interface Device for Your System

PCI, PCI Express (PCIe)
One Lane & Four Lane

PMC, XMC, VPX
cPCI, PXI/PXIe

PC104 PCI and
PC104 PCI Express

PCMCIA/PCCARD/
ExpressCard54

Mini PCI Express
COM Express

Industry Firsts!
USB 3.0 & Thunderbolt 3 (USB-C)
1553 and ARINC Appliances

Real-Time Ethernet Converters (ENETs)
for 1553 and ARINC Systems – Another Alta First!

Commercial, Lab and Deployed Appliances

MIL-810G/461F/704F/DO-160 Test Reports

Only 200 grams
13.5 x 3.7 x 4 cm

Very Small, No Processor or OS IP Stacks – Real-Time

Interface with Almost Any Client System – UDP Sockets

ENETX – Multi Protocol
Full Rugged – Ready to Deploy!

ENET Models for:
MIL-STD-1553
Enhanced Bit Rate 1553 - EBR
ARINC-429/717
Multi-Protocol

Path Delay: The Computer's IP Software Stack. Typical 50-150 uSec Delay for Round-Trip Packet RX/TX.

Direct or Switched Ethernet

Recommend VLAN and QoS Settings for Switches

ENET-1553/A429
Real-Time Ethernet

~200 nSec Word Access Memory Buffers

FPGA Protocol Engine Thin-Server UDP Engine

To 1553/ARINC Busses/Channels

AltaAPI – Software Development Kit
Proper OSI Layered-Abstraction Model

Alta's Hardware is 2nd to None, and the **AltaAPI** SDK
Simplifies Software Integration and Maintenance

AltaAPI Software Architecture
Layered, Modular, Portable

Layer 3
Your OOP (.Net, C#) Application
AltaView, AltaRTVal

Layer 2
Your Application (most applications here)
C, C++, VB, Java, LabVIEW/Windows, DLLs, SOs, etc...
(.Net, C# OOP Layer)

Layer 1
API Module (ANSI C)
1553 and ARINC Operations and Device Management

Layer 0
OS-Specific (ANSI C)
Abstracts Operating System (makes applications portable)

OS-Specific Device Driver (if needed)

Backplane Hardware (PCI, PCIe, Ethernet etc.)

Alta Interface Card/Device

✓ No Cost Updates
✓ Windows 32 & 64-Bit
    XP/2003/7/8/10
✓ Linux x86 32 & 64-Bit
✓ VxWorks 5.X, 6.X, 7.X
✓ NI LabVIEW™ , RT,
    LabWindows™ Support
✓ Small, Fast Design
✓ Layer 1 Source Code
✓ Portable to most RTOS
✓ 100+ Examples!
✓ No Maintenance Fees

What Makes *AltaAPI* Different Than All Other
1553 and ARINC SDKs?

The OSI Layered Model Provides Maximum Portability
 The same executable program can run on any alike Alta channel or device

Abstraction: The Layer 0 and Layer 1 Simplify and Protect Memory Objects
 AltaAPI abstracts low-level hardware pointers and registers for safer code
 AltaAPI provides memory management and object boundary protection

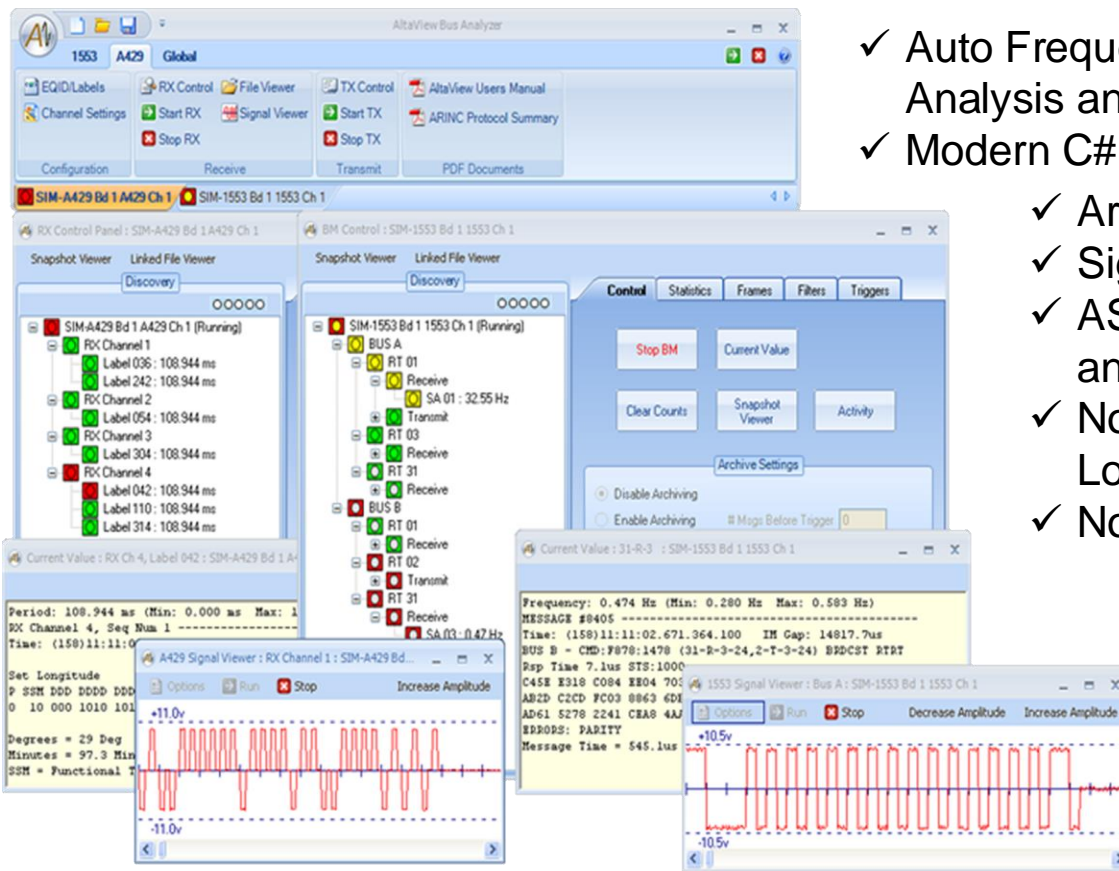**Excellent Documentation and Example Program Templates**
 Significant Reduction in Development Time and Future Maintenance

/* Single Function Call for 1553 Bus Monitor or ARINC RX! */
status = ADT_L1_1553_BM_ReadNewMsgs(DEVID, 1000, &numMsgs, bmMessages);

# AltaView – The Industry's Most Advanced Windows Analyzer Software for 1553 and ARINC

✓ Auto Frequency, Loading, Activity Analysis and Data Displays
✓ Modern C#, XML Interface

✓ Archiving and Playback
✓ Signal Capture!!
✓ ASCII & CSV Conversion and EU Processing!
✓ No Seat License Load on any Machine
✓ No Annual License Fees

Free Updates.
XP/2003/7/8/10
32 & 64 Bit. VMware with ENETs.

Run on Any Enabled Alta Product

AltaRTVal Software Provides Automated MIL-STD-1553 Protocol Validation for Remote Terminals Per the SAE AS4111/4112 Standard

✓ Test RTs to Industry Standard Protocol Tests
✓ Generates Test Records
✓ Detailed Failure Analysis
✓ Online Reference to MIL-HDBK-1553A
✓ Easy to Setup & Execute Nearly 100% Automatic
✓ Requires Two Channel Full Function 1553 Card
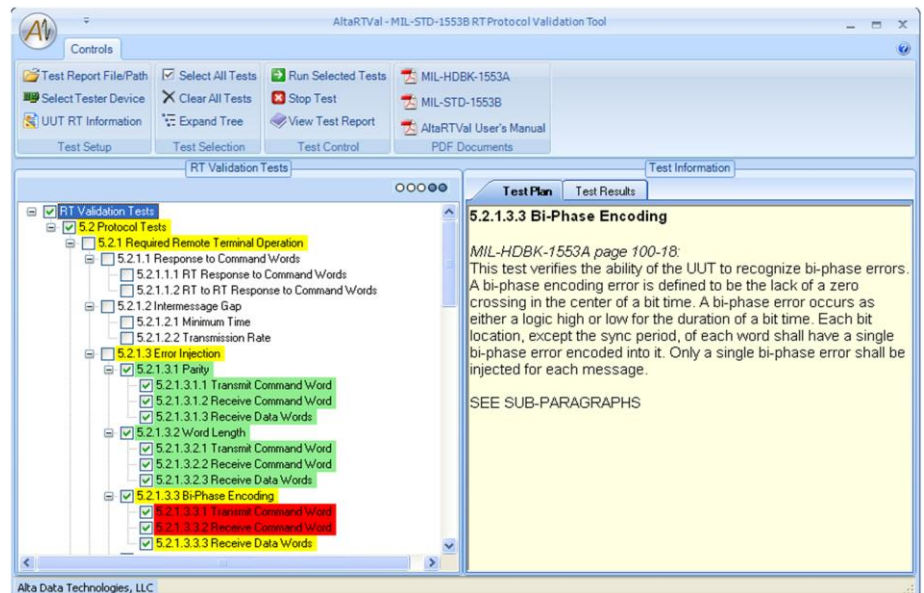
Alta 1553 Advantages

✓ Wide Selection of COTS
  Interface Cards and Real-Time Appliances

✓ Packetizing Engine – 3rd Gen Design
  Common Data Packet (CDP) Architecture

✓ Portable FPGA **AltaCore** Design – Reduced Parts Obsolescence Risk

✓ Independent Channels – Separate Application Threads Per Channel

✓ Full SAE RT Protocol Validation – **No Risk**

✓ Most Advanced Error Injection and Detection Available

✓ Layered, Modular and Portable **AltaAPI** – **Simplified Integration**

✓ Lab, Rugged and Conduction Cooled Configurations

✓ Highly Accurate/Flexible BC Controls

✓ IRIG/PPS, External Clock Controls

✓ Signal Capture and Generator Standard
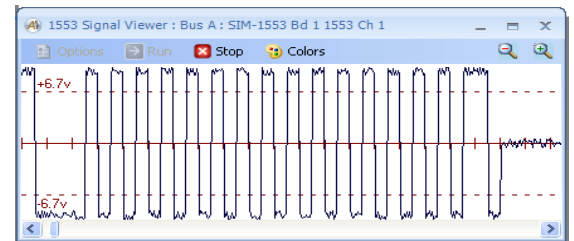
Advanced Software
The Alta Difference

✓ **AltaAPI** – SDK for all Products
    Drivers, 100+ Example Templates
    NI LabVIEW/TestBench/Windows™

✓ **AltaView** Windows Bus Analyzer
    Many Free Features for All Customers

✓ **AltaRTVal** – RT Protocol Validation
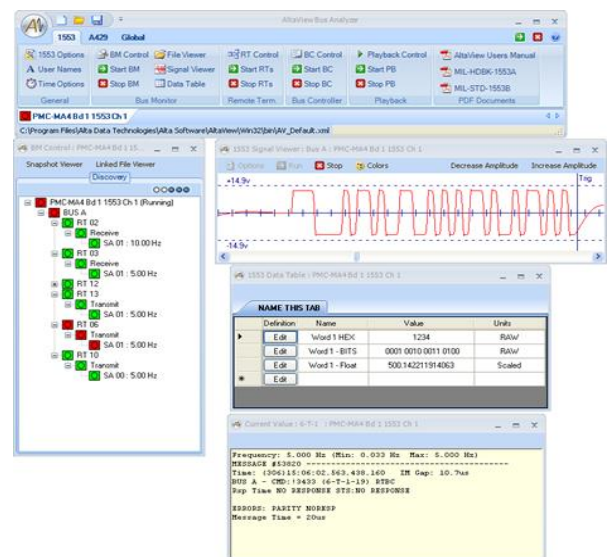
1553 COTS Product Listing

Interface	Model Name	Channels	AV Disc	Diff Disc
PCI	PCI-1553	1-4	14	2
PCI Express – 4 Lane	PCIE4L-1553	1-4	14	2
(Full Height – Most Popular)				
PCI Express – 1 Lane	PCIE1L-1553	1-2	8	2
(Half Height – Ideal for 1U)				
PMC & PXIe: 1553,WMUX	PMC-1553/WMUX	1-4	14	2
PMC & PXIe: 1553 & 429	PMC-MA4	1-5/8	6	1
XMC: 1553	XMC-1553	1-10	12	2
XMC: 1553 & 429	XMC-MA4	1-5/8	6	1
USB & Thunderbolt 3	USB/TBOLT-MA4	1-2/8	6	1
PCMCIA/ExpressCard	PCCD/ECD54-1553	1-2	0	2
cPCI/PXI	CPCIC-1553	1-5	14	2
PC104-*Plus*	PC104P-1553	1-4	8	1
PC104-*Plus*/*Express*	PC104P/E-MA4	1-2/8	8	1
Mini PCI Express	MPCIE/2-1553	1-2	0/2	2/1
Ethernet	ENET2/X-1553	1-4	6/7	2/1
Ethernet	ENET-1553-EBR	8	0	2
Ethernet: 1553 & 429	ENET-MA4	1-2/8	2	0
Ethernet: **Flight Qual**	ENETX-MA4	1-2/4	7	1

Model Names in **GOLD** are **1553/ARINC** Combo, Multi-Protocol Models

Models Include Triggers, IRIG-B RX, Clock PPS, AV or Diff Discretes.
Various 1553 Jack Cable Assemblies Available. See Hardware Manuals for Details.

AltaCore-1553 **Protocol Engine – Most Advanced in The Industry**

1553 Configurations

Bus Controller (BC), Multi-RT (mRT), Bus Monitor (BM)

Channel = Dual Redundant A/B Bus Pair

**Dual Function** = BC & BM or mRT & BM
Full Function = BC, mRT & BM

Alta ARINC Advantages

✓ One of the Widest Selections of COTS Interface Cards and Real-Time Ethernet Converters

✓ 4-48 Shared and Dedicated, Independent RX/TX Channels

✓ Portable FPGA **AltaCore** Design – Reduced Parts Obsolescence Risk

✓ Most Advanced Error Detection and Injection Available Parametrics Variable Voltage on ENET-A429P

✓ Layered, Modular and Portable **AltaAPI** – **Simplified Integration**

✓ Lab, Rugged and Conduction Cooled Configurations

✓ Highly Accurate TX Scheduling

✓ 3 Simultaneous RX Options per Channel!

✓ IRIG/PPS, External Clock Controls

✓ Signal Capture & Generator Standard!
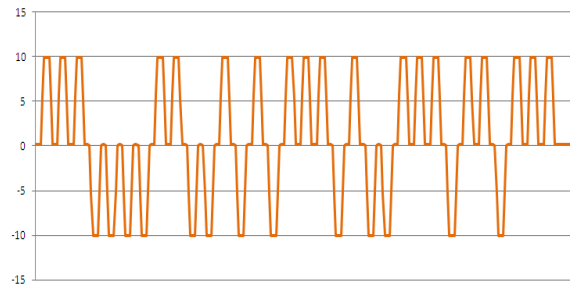
Advanced Software
The Alta Difference

✓ **AltaAPI** – Most Advanced Development Kit Included
   Drivers, 100+ Example Templates
   NI LabVIEW/TestBench/Windows™

✓ **AltaView** Windows Analyzer
   TX/RX Controls, Archive, Signal Capture
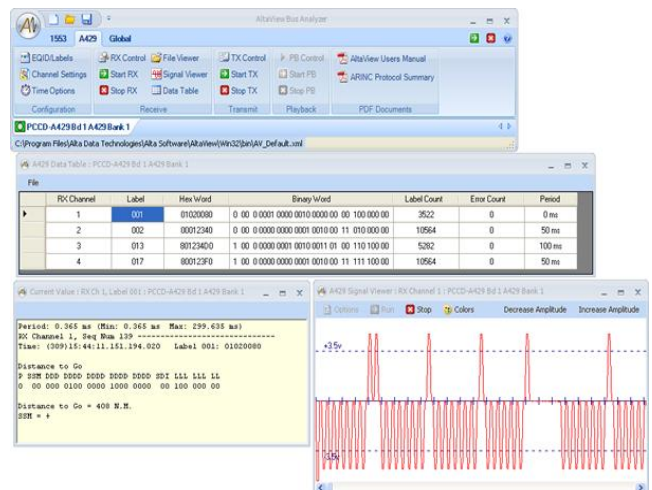
ARINC COTS Product Listing

Interface	Model Name	Channels	AV Disc	Diff Disc
PCI	**PCI-A429**	4-30	8	2
PCI Express – 4 Lane	**PCIE4L-A429**	4-30	8	2
(Full Height – Most Popular)				
PCI Express – 1 Lane	**PCIE1L-A429**	4-8	8	2
(Half Height – Ideal for 1U)				
PMC & PXIe	**PMC-A429/HD**	**4-48**	0	1
PMC & PXIe:1553 & 429	**PMC-MA4**	1-5/8	6	1
XMC	**XMC-A429**	4-30	0	1
XMC: 1553 & 429	**XMC-MA4**	1-5/8	6	1
USB & Thunderbolt 3	**USB/TBOLT-MA4**	1-2/8	6	1
PCMCIA/ExpressCard	**PCCD/ECD54-A429**	4-8	2	2
cPCI/PXI	**CPCIC-A429**	4-30	0	1
PC104-*Plus*	**PC104P-A429**	4-24	6	1
PC104-*Plus*/*Express*	**PC104P/E-MA4**	1-2/8	8	1
Mini PCI Express	**MPCIE-A429**	6	8	0
Ethernet	**ENET-A429/P**	4-8	2	2
Ethernet: 1553 & 429	**ENET-MA4**	1-2/8	2	0
Ethernet: **Flight Qual**	**ENETX-MA4**	1-2/4	7	1

Model Names in **GOLD** are **1553/ARINC** Combo, Multi-Protocol Models

Models Include Triggers, IRIG-B RX, Clock PPS, AV (SE) or Diff (DE) Discretes.
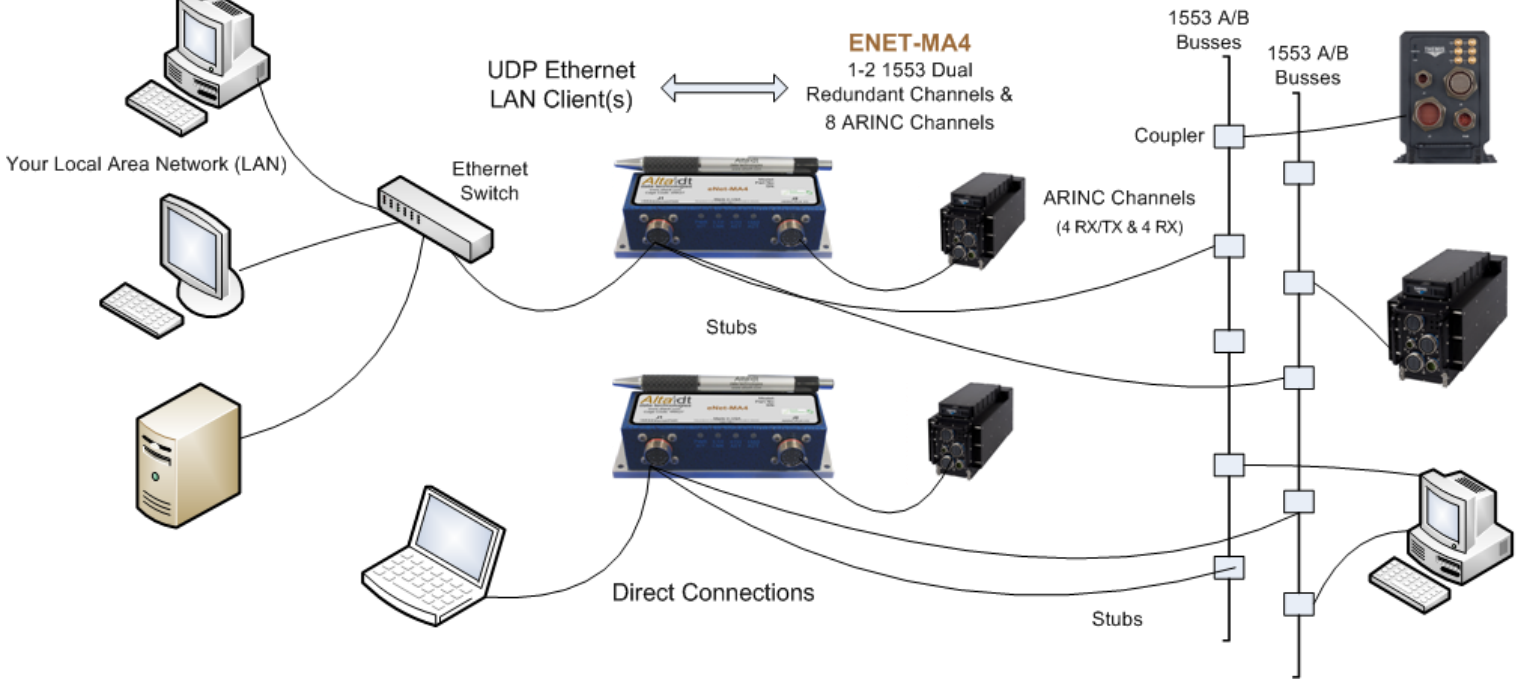Flying Lead Cables Provided with Most Cards. See Hardware Manuals for Details.

AltaCore-ARINC **Protocol Engine – Most Advanced in The Industry**

Alta's ENET-MA4 Provides Real-Time Ethernet Connectivity to Multiple MIL-STD-1553 Busses & ARINC-429 Channels
Incredibly Small, Rugged Ethernet Appliance for Multi Protocol Applications

Your Local Area Network (LAN)

Ethernet Switch

UDP Ethernet LAN Client(s)

ENET-MA4
1-2 1553 Dual Redundant Channels & 8 ARINC Channels

1553 A/B Busses

1553 A/B Busses

Coupler

ARINC Channels (4 RX/TX & 4 RX)

Stubs

Direct Connections

Stubs

ENET Dedicated and Combo Models for:
1-4 Channels 1553
4-8 Channels ARINC
8 Channels 1553-EBR
ENETX Deployable
  MIL-704F/461F/810G/DO160

Actual Size
ENETX Slightly Larger

Alta Real-Time Ethernet Advantages
- **No Processor or Operating System (OS) IP Stacks!**
    Real-Time UDP FPGA Engine
- **Control Mode for All Operations AND Auto Bridge 1553/429 » Ethernet Mode**
- **Nearly 100x Faster Than Polling USB!**
- **Works with Almost Any OS – Control From Your DO178 Certified OS!**

Alta – The Leading Avionics COTS Supplier! Innovation, Quality and Service

Highest Density Cards on the Market
**1-10 1553 Channels & 4-48 ARINC Channels**

Alta Advantages

✓ Widest Selection of COTS 1553 and ARINC Interface Cards, USB, Thunderbolt and Real-Time Ethernet Converters

✓ Packetizing Engine – Only 3rd Gen Design Common Data Packet (CDP) Architecture

✓ Portable FPGA **AltaCore** Design – Reduced Parts Obsolescence Risk

✓ Independent Channels – Alta Unique!

✓ Customer Service 2nd to None – Let us Help You!

✓ Advanced Development Software Windows Analyzer and Protocol Validation

✓ **5 Year Warranty – Best In The Industry**

Bus Kits and Cable Accessories Simplify Integration
(Most Alta Cards Includes 1553 Cables or ARINC Flying Lead Cables)

Bus Kits
Cables
Couplers
Terminators
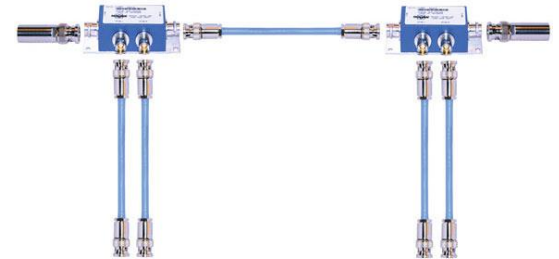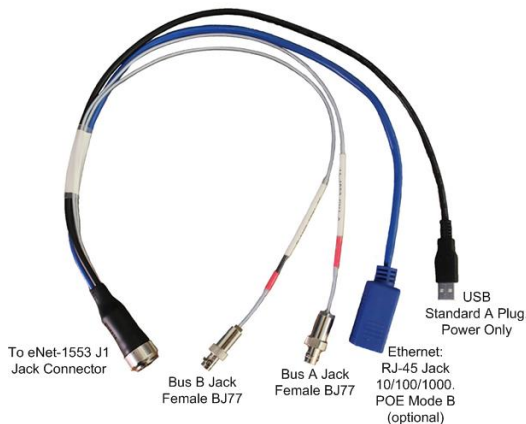
Industry Leader in
MIL-STD-1553 & ARINC
COTS Products

- ✓ The Industry's Most Advanced Protocol Engines and Software
- ✓ 5 Year Limited Warranty
- ✓ Expert Technical Sales and Support

Sales & Support Offices:
New York, Florida, Texas,
Colorado and California

Alta dt
data technologies

Headquarters/Factory:
Alta Data Technologies, LLC
4901 Rockaway Blvd., Bld A
Rio Rancho, NM 87124 USA
tel: 505-994-3111   fax: 805-504-8588
888-429-1553 toll free
www.altadt.com