Example Front Panel
Cable Assembly

A/D Signal Capture on First 1553 Channel & First Two ARINC RX

Alta Data Technologies’ XMC-MA4 interface module is a multi-channel, multi-protocol 1553 and ARINC XMC 4 Lane PCI Express card supported by the latest software technologies. The XMC-MA4 card is based on the industry’s most advanced 32-bit FPGA protocol engine, AltaCore™, and by a feature-rich application programming interface, AltaAPI™, which is a multi-layer ANSI C and Windows .NET (MSVS 2005/08/10 C++, C#, VB .NET) architecture. This hardware and software package provides increased system performance and reduces integration time.

AltaCore-1553 is guaranteed 1553B Notice II & IV and ARINC compliant and all cards are manufactured to the highest IPC-610 Class 3 standards and ISO 9001:2008 processes. Cards are available in 1553 dual-function (BC/Mon or multi-RT/Mon) or full-function (BC, mRT and Mon) configurations. Playback and Signal Generation are part of BC operations and Waveform Capture is for Monitor only operation. Alta is committed to a risk free integration and will be glad to help with any level of your system development.

Key Features:

- One to Five Independent, Dual Redundant MIL-STD-1553 Channels
- Dual Function 1553 (BC/Mon or mRT/Mon) or Full Function (BC/mRT/Mon)
- 512 Kbyte RAM per 1553 Channel
- ARINC – 8 Channels Total:
  - 4 Shared TX/RX & 4 Dedicated RX
  - 512 Kbyte of RAM for all Channels
- **Capture 1553 & ARINC Waveforms**
  - First 1553 Channel & First Two ARINC RX Channels
  - 8-bit, 50 nSec for 1553 – 1 uSec for ARINC A/D for Voltage Measurements
- Channels May be Factory Configured to fix ARINC RX/TX or Monitor Only 1553.
- Commercial, Industrial (Extended) Temperature and Conduction Cooled
- Front or Rear Panel (P4/P6) I/O and XMC 2.0 Connectors
- Advanced BC & ARINC TX Frequency Controls: 1553 Framing/Subframing;
- RT/ARINC RX Full Buffering with 64-bit 20 nsec Time Tags
- Advanced, Multi-layer AltaAPI Provided at No Cost with Source Code
- Windows, Linux, RTOS, LabVIEW & RT
  - .NET Managed DLLs
  - Contact Factory for Latest RTOS Support
- True HW Playback (BC or TX)
- Industry First: 20/1000 ns Signal Generation
  - Bit Construction
  - Supports RT or ARINC Validation Testing
- IRIG-B RX PAM or RX/TX PPS Ext Clock
- Avionics/ RS-485 Discretes
- Advanced BIT Features and Dual Temperature Sensors
- Full HW Interrupt Features
- VITA 42 – Single Width XMC 4 Lane PCI Express Host Interface

AltaView & AltaRTVal
Multi-Protocol Analyzer & 1553 AS4111/4112 5.2 Validation
User’s Application with Modular, Portable AltaAPI

AltaAPI Architecture

Layer 2 – Windows Managed DLL
Object Oriented Code for .NET, C#, C++, VB, LabVIEW
Network Client/Server C#

Layer 1 – Portable ANSI C Application Program Interface (API)
(most applications tie-in here – includes native LabVIEW/LabWindows CVI DLL)

Layer 0 – OS Device Driver
Windows, Linux, Real-Time Operating Systems, LabVIEW-RT

Hardware – PCI, PCI Express, cPCI, PCCD, XMC, etc...

Alta’s Advanced Software Architecture

4901 Rockaway Blvd., Building A Rio Rancho, NM 87124 USA
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Multi-Channel, Multi-Protocol Avionics

XMC-MA4 Specifications

General
- 4 Lane PCI Express 1.1 Compatible
- VITA 42 XMC Single Width
- 1-5 MIL-STD-1553B Notice II & IV Channels
- 4 Shared RX/TX & 4 RX ARINC Channels
  - Optional Rear Panel P4 or P6 Connector
  - Optional XMC 2.0 Connectors
  - Dual and Full Function 1553 Channels
  - Weight: 6oz/180grams
  - Power (Estimated @ Max Bandwidth) 8-10W
  - Parts Temp (C): -55 to +120 Storage, 0 to +70 Commercial, -40 to + 85 Extended
  - 6 Avionics, 1 RS-485 Discretes
  - Loop-Back & User BIT, Dual Temp Sensors
  - IRIG-B RX PAM, TTL/RS-485 PPS Time Sync
  - IPC Class 3 and ISO 9001:2008 Processes

BC & ARINC TX Features
- Variable Framing and Subframing
- Schedule Message Timing in Frames or Intermessage/Label Gap Spacing
- Low and High Priority Aperiodic Scheduling
- ARINC TX Has Complete Frequency Control Per Channel – No Framing/SubFraming
- Infinite Linked Data Buffers
- Interrupts, No-Ops, Ext Trigger
- 1553 Legal and Reserved Mode Codes
  - 1553A and 1553B Support
  - 64-Bit, 20 ns Time Tags
  - Full Error Injection/Detection

1553 RT Features
- Infinite Linked Data Buffers
- Legal and Reserved Mode Codes
  - 1553A and 1553B Support
  - Full Buffering of All Mode Codes
- 64-Bit, 20 ns Time Tags
- Full Error Injection/Detection

ARINC RX Features – 3 RX Modes
- Channel Level Label/Word Tables
- Multi Channel Data Tables for All Channels
- Channel Level Current Value Tables
- ARINC 717 Frame Support
- 64-Bit, 20 nsec Time Tags
- Full Error Detection

Playback/Signal Vector (BC or TX)
- Real Hardware Playback from Archive Files.
- Signal Vector Generation at 20/1000 (1553/ARINC) nsec **INDUSTRY FIRST**
- 20 nSec 1553 Vectors and 1 uSec ARINC Vectors

1553 Monitor
- Sequential and RT Mapped Monitoring with Infinite Linked CDP Data Buffers
  - Available with All Card Models
  - 64-Bit, 20 ns Time Tags, Interrupts, Triggers
  - Full Error Detection
- 8-bit, 50 nSec 1553 and 1 uSec A/D Waveform Signal Capture. 1st Channel 1553 and First 2 RX of ARINC
  - AltaView Software is Ideal for Signal Display

Software: AltaAPI, AltaView, AltaRTVal
- Multi-Layer AltaAPI Architecture to Support Windows, .NET and ANSI C Linux, VxWorks, Integrity, etc…
  - Contact Factory For RTOS Platforms
  - LabVIEW & RT No Cost
- Optional AltaView is Based on the Latest Windows MS Office User Interface Style with Ribbon-Bar
  - Full Analyzer Integration Tool
  - Multi Language Support
- Optional AltaRTVal provides full AS4111/4112 5.2 RT Validation GUI and Reports

Part Numbers
Add Suffix #D or #F for 1553 Dual or Full Function Channel Count (#). Add “8” for ARINC (0 for no ARINC).

Example: XMC-MA4-4D8-T

Contact Factory for Desired Channel Configuration.

Options: -E for Ext Temp Parts (-40 to +85C), -C for Ext Temp, Conduction Cooled/Conformal Coated/Rear Panel, -R for P4 PMC Rear Panel (add -6 for P6 XMC Rear Panel), -W XMC 2.0 Connectors, -A for AltaView and –B for AltaRTVal. Example: XMC-MA4-6AER, XMC-MA4-5F0-6CW.

5 Year Limited Warranty!

EU and China RoHS Compliant

Contact Alta for Special Lead Build Configurations

AltaAPI Software with ANSI C Source, .Net Managed DLLs and LabVIEW & LabVIEW-RT Provided at No Cost.

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