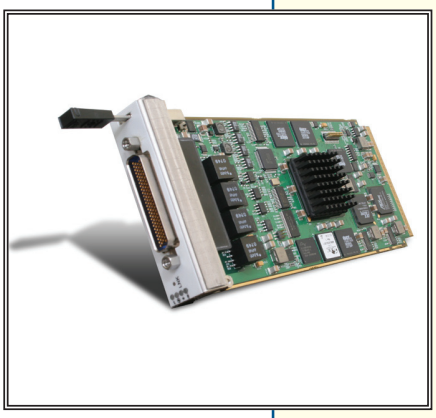
MULTI-I/O 1553/429 Advanced Mezzanine Card (AMC) DATA SHEET

MODEL: BU-65590A



Features

- Multi-IO card with 1553, 429, Serial I/O, and Discrete I/O
- AMC.1 Four Lane PCI-Express
- Single Width, Mid-Height
- Front Panel I/O (100 pin Micro Miniature D)
- Air Cooled
- Multiple Configuration Options with up to:
  - 4 Dual Redundant 1553 Channels
  - 8 Receive 429 Channels
  - 4 Transmit 429 Channels
  - 2 RS-232 Serial IO Channels
  - 2 RS-422/485 Serial IO Channels
  - 6 User-Programmable Digital I/O's
- IRIG-B Time Code Input
- 48-bit / 1µs Time Stamp
- IRIG 106 Chapter 10 Monitor
- DMA Engine for Low CPU and PCI-E Utilization
- E²MA BC/RT/MT Architecture - API Compatible with Enhanced Mini-ACE® Library
- 1 MB Memory w/parity per 1553 Channel
- Built In Self Test
- Windows® 2000/XP VxWorks®, & Linux® Support

DESCRIPTION

The BU-65590A is a multi-protocol AMC card providing new levels of performance and flexibility for systems interfacing to a MIL-STD-1553 and/or ARINC 429 data bus. There are up to four dual redundant MIL-STD-1553 channels operating in BC, RT, MT, or RT/MT modes. Eight ARINC 429 receive channels and four ARINC 429 transmit channels operate in high/low speed operation with automatic slew rate adjustment. The card also contains six digital discrete I/Os, an IRIG-B time synchronization input, 2 RS-422/485 Serial I/O channels, and 2 RS-232 Serial I/O Channels (with handshaking). The combination of multiple I/O on one card saves valuable AMC sites on host computers, saving valuable space and weight in a micro-TCA or ATCA system.

The 1553 interface used on this card is DDC's Extended Enhanced Mini-ACE (E²MA) architecture which is API compatible with the field proven Enhanced Mini-ACE software. The card includes the BU-69092SX MIL-STD-1553 Enhanced Mini-ACE PLUS C Software Development Kit (SDK), and the DD-42992SX ARINC 429 Multi-IO C SDK, along with samples and detailed documentation.

APPLICATIONS

The card's rugged construction and ability to operate at +65°C inlet air temperature makes it ideal for use in naval applications, flight data recorders, ground vehicles, and other embedded systems that require an AMC card. The card has front panel I/O using a rugged micro-miniature D connector. The card is a valuable addition to design and test teams involved with both MIL-STD-1553 and/or ARINC 429 interfaces.

Quick Specifications

PARAMETER	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATING				
Supply Voltage				
+3.3V (management)	-0.3	3.3	3.60	V
+12V	-0.3	12.0	14.0	V
POWER SUPPLY REQUIREMENT				
Voltages/Tolerances				
+3.3V (management)	3.0	3.3	3.6	V
+12V	10.0	12.0	14.0	V
CURRENT DRAIN (+12V)				
BU-65590A0-QA0				
(All Channels)				
IDLE		0.55		A
75% duty cycle		1.22		A
BU-65590A1-QA0				
(2 Channels)				
IDLE		0.50		A
75% duty cycle		0.88		A

PARAMETER	MIN	TYP	MAX	UNITS
THERMAL				
Operating Temperature				
BU-65590Ax-QA0	0		+65	°C
Inlet air temperature with 15 CFM of airflow				
Storage Temperature				
BU-65590Ax-QA0	-55		+85	°C

PHYSICAL CHARACTERISTICS

Form factor	PICMG AMC.0 R2.0, Single, Mid-size PICMG AMC.1 x4	
Weight (Maximum)	5.6	oz.
	159	g.

NOTE: For full specifications and additional information, refer to the **BU-65590A Hardware Manual** (MN-65590AX-001) and the **BU-69092 EMACE Plus SDK Software Manual** (MN-69092SX-001).

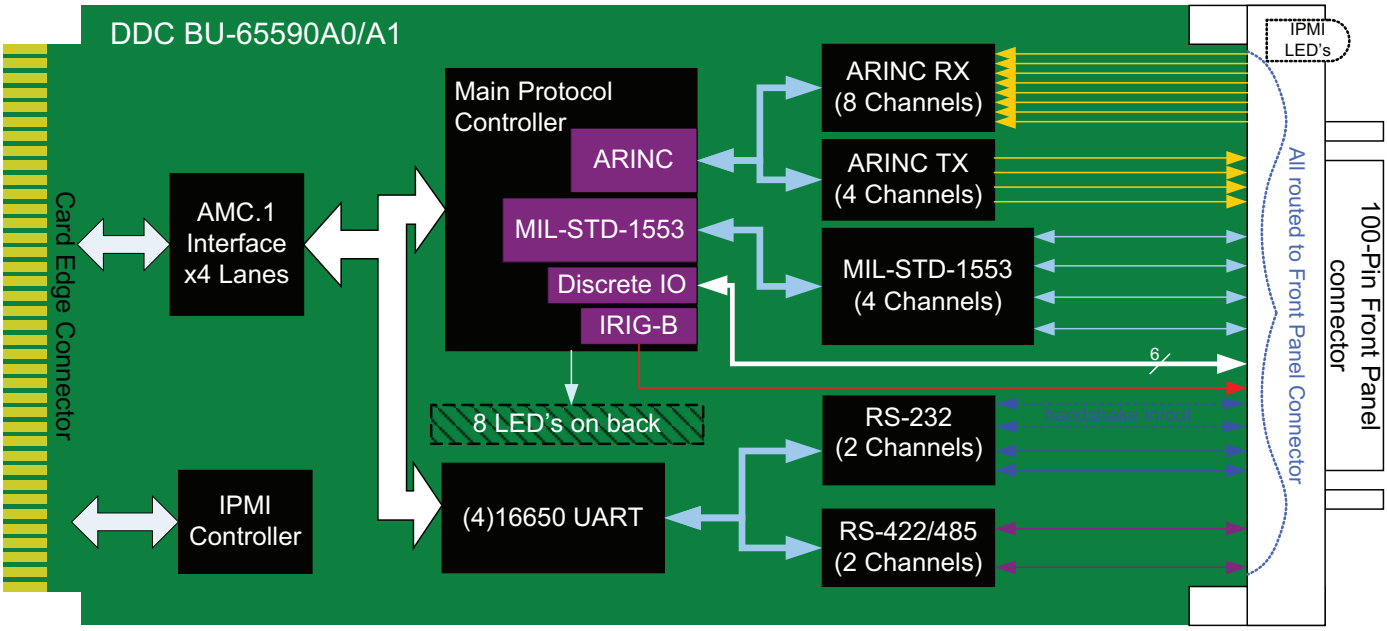


Figure 1. BU-65590A Block Diagram

COTS Solution for Avionics

- Air Cooled AMC.1 Card with Front I/O
- Rugged 100-pin Micro Miniature D Connector
- Four Lane PCI-Express Interface
- 48-bit, 1 µs resolution time tag
- 6 Digital Discrete I/O

MIL-STD-1553

- One to Four Dual Redundant MIL-STD-1553 Channels
- 1 MB RAM with Parity per 1553 Channel
- Transformer Coupled Channels
- High Level 1553 C Software Development Kit
- BC/RT/MT/RTMT Operating Modes
- User-Definable Interrupts

1553 Bus Controller

- Minor and Major Frame Scheduling to Control Timing of 1553 Messages
- High and Low Priority Asynchronous Message Insertion
- Modify Messages or Data while BC is running
- Conditional Messages or Subroutines based on User Defined Conditions
- Multiple BC retry programmable options
- Error Detection as per MIL-STD-1553 Standard

1553 Remote Terminal

- Choice of Sub-address Single Message, Double Buffering, Circular Buffering or Global Circular Buffering
- Message Status, Time Tag, Command Word, Data Words
- Programmable Command Illegalization
- Programmable Busy by Sub-address
- Programmable RT Address via Software

1553 Bus Monitor

- IRIG-106 Chapter 10 Compatibility
- DMA Engine for Low CPU Utilization
- Selective Message Monitor
- Filter Based on RT Address, T/R bit, Sub-Address
- Message Status, Time Tag, Command Word, Data Words
- Programmable Interrupt Conditions
- Simultaneous RT/Message Monitor Option

ARINC 429

- High / Low Speed Operation with automatic slew rate adjustment
- 8 Receive Channels, 4 Transmit Channels
- FIFO or Mailbox Reception Methods
- FIFO or Scheduled Transmission Methods Message
- Filtering based on Label/SDI combinations
- 48-bit Message Time Tagging
- Triggering and message filtering
- User Definable Interrupts

Serial I/O

- 2 channels of user selectable RS-422/485
- Up to 2 channels of RS-232
- Programmable baud rate up to 921.6 Kbps
- RS-232 RTS/CTS & DTR/DSR serial data flow control handshaking signals
- Autonomous RS-485 Half Duplex data transceiver direction control signal

Built In 1553 Self-Test Capability

- Ram Self Test
- Register Self Test
- Online Loopback Test
- Capability to Test Transmitter Timeout Function

Built In 429 Self-Test Capability

- Internal Loopback Test
- External Loopback Test

Supporting Software

- C Software Development Kits (SDK) for MIL-STD-1553 and ARINC 429
- Windows 2000, Windows XP, Linux and VxWorks support
- Abstracts all low level hardware
- High-Level Register/Memory Initialization Routines
- Creation of Consolidated Status and Data Structures
- Memory Allocation Performed Transparent to Application Program

VxWorks Driver

- Designed for Version 5.x and 6.x of Wind River's VxWorks
- Version for Power PC, and x86

Linux Driver

- Loadable Linux driver module for kernel version 2.6.x
- Version for Power PC, and x86

Windows Driver

- Plug and Play Windows Device Driver for Windows 2000 and Windows XP

ORDERING INFORMATION

BU-65590XX-X X X X

Conformal Coating:
N = Acrylic
U = Polyurethane
Blank = None

Test Criteria:
0 = none

Environmental & Operating Temperature Options:
QA = Rugged Air-Cooled Card (0°C to +65°C Inlet Air Temperature Range)

I/O Options:

OPTION #	CHANNEL NUMBER AND TYPE						
	1553	ARINC 429 Rx	ARINC 429 Tx	RS-232	RS-422/485	DISCRETE I/O	IRIG-B INPUT
0 =	4	8	4	2	2	6	Yes
1 =	2	8	4	2	2	6	Yes

Card Type:
A = AMC Card

Base Model Number:
BU-65590 = Multi-IO Avionics Card

Included Software:

BU-69092SX - MIL-STD-1553 EMACE Plus C Software Development Kit
Operating System:
0 = Windows 2000/XP
1 = Linux
2 = VxWorks

DD-42992SX - ARINC 429 Multi-IO C Software Development Kit
Operating System:
0 = Windows 2000/XP
1 = Linux
2 = VxWorks

DATA DEVICE CORPORATION
REGISTERED TO ISO 9001:2000
FILE NO. A5976

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