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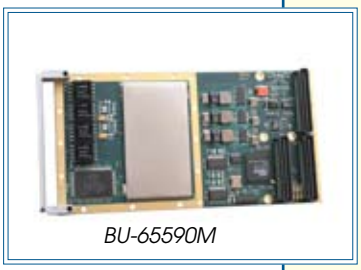
Multi-I/O Avionics PMC & PCI Cards Product Brief

DDC® Data Device Corporation
www.ddc-web.com

MODEL: BU-65590F/M/I



BU-65590I



BU-65590M

Features

- Conduction or Air Cooled with Front or Rear I/O
- Multiple Configuration Options:
  - 4 Dual Redundant 1553 Channels
  - 16 Receive 429 Channels
  - 6 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 1553 Monitor
- DMA Engine for Low CPU and PCI Utilization
- 1 MB Memory w/parity per 1553 Channel
- Included Software:
  - High-Level C SDK and Drivers for Linux, VxWorks, and Windows 2000/XP
  - Common Test/Embedded API
- Optional Software:
  - BusTrACEr™ MIL-STD-1553 Graphical Monitor/Generator
  - MIL-STD-1553 LabVIEW® Package
  - *dataMARS* Real-Time Avionics Bus Analysis Software

DESCRIPTION

DDC's Multi-I/O BU-65590F/M/I Series provides new levels of performance and flexibility for systems interfacing to a MIL-STD-1553 or ARINC 429 avionics data bus. Up to four dual-redundant MIL-STD-1553 channels that operate in BC, RT, MT, or RT/MT modes are available. Sixteen ARINC 429 receive channels and six ARINC 429 transmit channels operate in high/low speed with automatic slew rate adjustment. The cards also contain six digital discrete I/Os, an IRIG-B time synchronization input, two RS-422/485 serial I/O channels, and up to two RS-232 serial I/O channels. The combination of multiple I/O on one card saves valuable PMC sites or PCI slots on host computers.

The cards include MIL-STD-1553 and ARINC 429 C Software Development Kits (SDKs). Optional software packages include the BusTrACEr 1553 Graphical Analyzer/Simulator, *dataMARS* Real-Time Avionics Bus Analysis Software, and a full featured LabVIEW package.

APPLICATIONS

The BU-65590F/M PMC cards are rugged and can operate from -40°C to +85°C at the thermal rail, making them ideal for use in mission computers, flight data recorders, ground vehicles, and other embedded systems that require military grade cards. Cards can be ordered with front or rear I/O and can be used in conduction or air cooled applications. The cards are also available in a PCI form factor to provide an ideal solution for ground testing, flight testing, automated test equipment, simulators, and debugging applications.

Make Sure the next Card you purchase has... DDC on Board®

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MIL-STD-1553

- One to Four Dual Redundant MIL-STD-1553 Channels
- 1 MB RAM with Parity per 1553 Channel
- 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 Messaging
- Modify Messages or Data while BC is running

1553 Remote Terminal

- Multiple Buffering Techniques
- Programmable Command Illegalization
- Programmable Busy by Sub-address
- Hardware or Software Programmable RT Address
- Option for RT AUTO-BOOT with BUSY Bit Set

1553 Bus Monitor

- IRIG-106 Chapter 10 Compatibility
- DMA Engine for Low PCI and CPU Utilization
- Filter Based on RT Address, T/R bit, Sub-Address

ARINC 429

- High / Low Speed Operation with ARINC 575 Support
- 16 Receive Channels, Up to 6 Transmit Channels
- Mulitple Reception and Transmission Methods
- 48-bit Message Time Tagging 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

Built In Self-Test Capability

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

Included Software

- 1553 & 429 C Software Development Kits (SDKs)
- Windows 2000, Windows XP, Linux, and VxWorks support

Optional Software

- BusTrACEr 1553 Graphical Analyzer/Simulator
  - Provides an easy to use Graphical User Interface (GUI) for MIL-STD-1553 cards
  - Simulate any operating mode (BC, RT, Monitor, RT/Monitor) of card
  - Provide 'C' Source Code Generation for custom stand-alone applications
- 1553/429 *dataMARS* Interface Software
  - Locate Data Anomalies and Trends Using Real-Time Graphics
  - Store all or selected Real-Time Data of Multiple MIL-STD-1553 and ARINC-429 Channels
  - Trigger Storage based on Parameter Values, Timing, Bus Errors and Complex Expressions
  - Define a Complete User Database (ICD), with Message/ Label and Parameter Definitions
- 1553/429 LabVIEW Interface Software
  - High Level VIs to easily program the card
  - Detailed Sample Application VIs
  - Conforms to National Instrument's Driver Model

Quick Specifications

PARAMETER	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS				
Supply Voltage				
+5V	0		6.0	V
+12V	0		18.0	V
-12V	0		-18.0	V
POWER SUPPLY REQUIREMENTS				
Voltages/Tolerance				
+5V	4.75	5	5.25	V
+12V	11.40	12.0	12.60	V
-12V	-11.40	-12.0	-12.60	V
THERMAL				
Operating Temperature				
BU-65590F/MX-2A0 (measured at component case)	-40		+85	°C
BU-65590F/MX-2C0 (measured on thermal rail)	-40		+85	°C
BU-65590IX-JL0 (ambient)	-0		+55	°C
Storage Temperature				
BU-65590F/MX-20/30 (without LED's contact factory)	-55		+125	°C
BU-65590F/MX-20/30 (with LED's)	-55		+85	°C
BU-65590IX-JL0 (with LED's)	-55		+85	°C
PHYSICAL CHARACTERISTICS				
Size				
		5.863 x 2.913 (148.9 x 74)		in. (mm)
Weight				
BU-65590F0		5.1 (145)		oz. (g)
BU-65590F1		5.0 (141)		oz. (g)
BU-65590F2		4.75 (135)		oz. (g)

Note: For full specifications and additional information refer to the ***BU-65590F/M/I Multi-I/O PMC/PCI Card datasheet***, the ***Software User's Manual for ARINC 429 Multi-IO Cards*** (#MN-42992SX-001) and the ***BU-69092SX EMACE PLUS C SDK Software manual*** (#MN-69092SX-001).

MIL-STD-1553 CHANNELS

Each 1553 channel can emulate a Bus Controller (BC), a Remote Terminal (RT), a Bus Monitor (MT), or an RT/MT. Standard features include 1MB of RAM per 1553 channel, 48-bit message time tagging, IRIG-B time stamp input, triggers, extensive BC & RT frame structures, error detection, RT Status Bit and Mode Code responses, along with advanced BC functionality. The advanced BC architecture provides a high degree of flexibility and autonomy by providing message schedule control, minimizing host overhead for asynchronous message insertion, facilitating bulk data transfers, double buffering, message retry, bus switching strategies, data logging, and fault reporting. The RT architecture provides flexibility in meeting all common MIL-STD-1553B protocols. The choices of RT buffering and interrupt options provide robust support for synchronous and asynchronous messaging, while ensuring data sample consistency and supporting bulk data transfers. The interface includes a message monitor mode and a combined RT/MT mode where the MT will monitor all 1553 communications on the bus including the 1553 channel's assigned RT addresses. The Bus Monitor mode provides complete error detection on 100% fully loaded buses.

ARINC 429 CHANNELS

Each ARINC 429 channel supports maximum data throughput on all channels while providing message scheduling, label filtering, and full error detection. Received data can be stored in either FIFO buffers or system address label mailboxes. The ARINC 429 channels feature independent selection of data rate and parity, and automatic transmit channel slew rate adjustment. Transmitted data can be sent in FIFO mode, FIFO Block mode, or scheduled rate mode on each transmit channel independently.

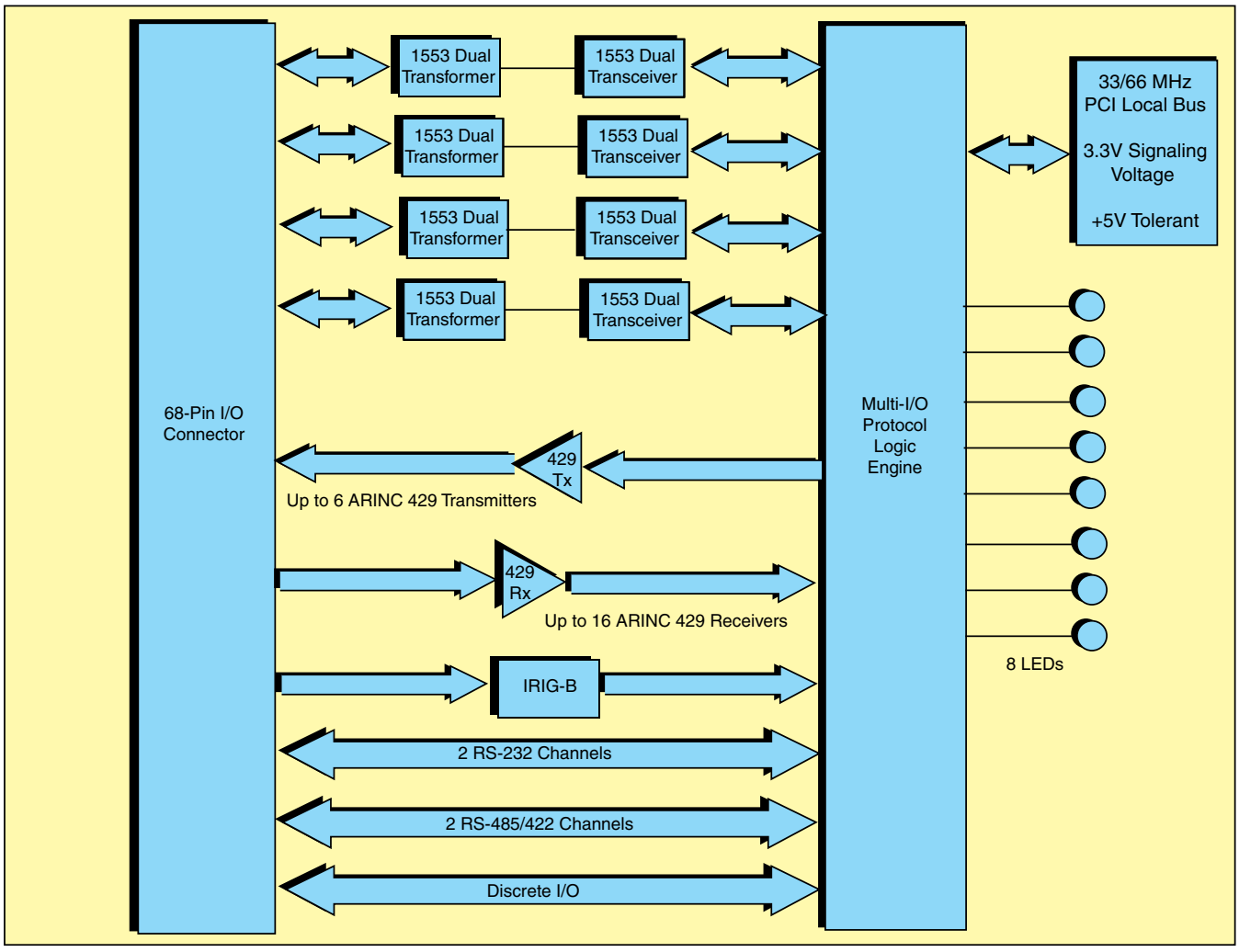


Figure 1. BU-65590F/M/I Block Diagram

PLEASE CHECK WEBSITE FOR LATEST ORDERING OPTIONS

ORDERING INFORMATION

PMC: BU-65590XX-XXXX

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

Test Criteria:
0 = none

Environmental & Operating Temperature Options:
2A = Rugged Air-Cooled Card with Bezel; Temp Range: -40°C to +85°C (at component case)
2C = Rugged Conduction-Cooled Card; Temp Range: -40°C to +85°C (only available with the "Mx" Rear I/O model, measured at thermal rail)
3L = Non-Rugged Air-Cooled Card with Bezel; Temperature Range: 0°C to +55°C (ambient)

OPTION #	I/O OPTIONS						
	1553	ARINC 429 Rx	ARINC 429 Tx	RS-232	RS-422/485	Discrete I/O	IRIG-B Input
0 =	4	8	4	2 (note 2)	2	6	Yes
1 =	2	8	6 (note 3)	2	2	6	Yes
2 =	-	16	6 (note 3)	-	2	6	Yes

Card Type:
F = Front Panel I/O PMC
M = Rear I/O PMC (Pn4 connector)

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

PCI: BU-65590IX-JL0

0°C to +55°C (I/O Options same as "F" version)

Notes: 1. These products contain tin-lead solder.
2. The BU-65590M0 contains one RS-232 channel.
3. The BU-65590FX & BU-65590IX contains a maximum of 4 ARINC 429 Tx Channels

OPTIONAL SOFTWARE (refer to applicable datasheet for availability and full ordering options):

Graphical Analyzer/Simulator



BusTRACER™

PN: BU-69066S0-XX0

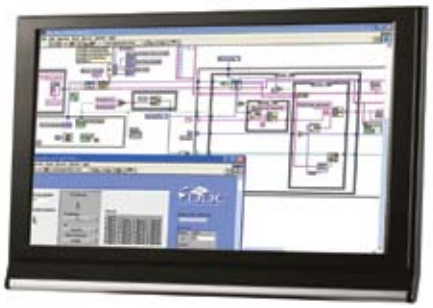
Avionics Bus Analyzer/Simulator



dataMARS/dataSIMS

PN: BU-69414DM-64VM

LabVIEW Support Package



LabVIEW

PN: BU-69093S0-XX0

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