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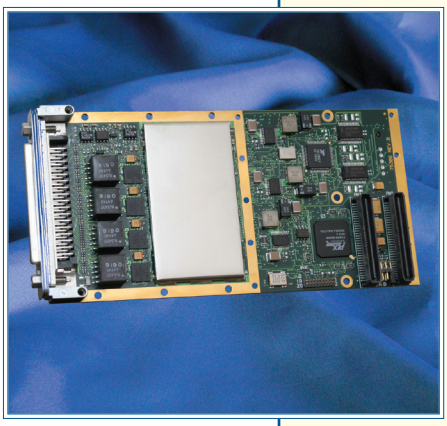
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Find the *DDC BU-65590F0-3L0* at our website: *Click HERE*

MULTI-I/O AVIONICS PMC CARD Data Sheet

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www.ddc-web.com

MODEL: BU-65590F/M



Features

- Conduction or Air Cooled
- 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 Monitor Format
- DMA Engine for Low CPU and PCI Utilization
- Shock and Vibration Tested
- Front or Rear I/O
- E²MA BC/RT/MT Architecture
  - API Compatible with DDC's Enhanced Mini-ACE® BU-69090S Library
- 1 MB Memory w/parity per 1553 Channel
- Built In Self Test
- VxWorks, Linux & Windows 2000/XP Support
- Applications
  - Displays
  - Flight Data Recorders
  - Embedded Systems
  - Mission Computers
  - Communication Links
  - Munitions

DESCRIPTION

The BU-65590F/M is a multi-protocol PMC card providing new levels of performance and flexibility for systems interfacing to a MIL-STD-1553 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. Sixteen ARINC 429 receive channels and six ARINC 429 transmit channels operate in high/low speed 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 up to 2 RS-232 Serial I/O Channels. The combination of multiple I/O on one card saves valuable PMC sites on host computers.

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

APPLICATIONS

The card's rugged construction and ability to operate from -40°C to +85°C at the thermal rail make it ideal for use in mission computers, flight data recorders, ground vehicles, and other embedded systems that require a military grade card. The card can be ordered with front or rear I/O and can be used in conduction or air cooled applications.

Make Sure the next Card you purchase has...

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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
CURRENT DRAIN				
BU-65590F/M0				
MIL-STD-1553 & Serial I/O (+5V)				
0% Transmitter Duty Cycle		0.63	0.69	A
75% Transmitter Duty Cycle		2.0	2.2	A
ARINC 429 & IRIG (+12V)				
Idle		44	54	mA
100% Transmitter Duty Cycle		78	86	mA
ARINC 429 & IRIG (-12V)				
Idle		45	55	mA
100% Transmitter Duty Cycle		80	88	mA
BU-65590F/M1				
MIL-STD-1553 & Serial I/O (+5V)				
0% Transmitter Duty Cycle		0.53	0.58	A
75% Transmitter Duty Cycle		1.2	1.38	A
ARINC 429 & IRIG (+12V)				
Idle		44	54	mA
100% Transmitter Duty Cycle		78	86	mA
ARINC 429 & IRIG (-12V)				
Idle		45	55	mA
100% Transmitter Duty Cycle		80	88	mA
BU-65590F/M2				
ARINC 429 & IRIG (+12V)				
Idle		44	54	mA
100% Transmitter Duty Cycle		140	86	mA
ARINC 429 & IRIG (-12V)				
Idle		45	55	mA
100% Transmitter Duty Cycle		80	88	mA

PARAMETER	MIN	TYP	MAX	UNITS
Serial I/O (+5V)				
Idle		633	636	mA
100% Transmitter Duty Cycle		1.35	1.36	A
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-65590F/MX-3L0 (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

MECHANICAL DESIGN

Shock:
Three pulses, half sine on six (6) axes — 40g's, 11 mSec/axes

Vibration:
Random input, one hour each axis
40g's 11 mSec/axes, three hours total, 15 to 2000 Hz — 14g's rms

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 ***Hardware Manual for the BU-65590F-M Multi-I/O PMC Card*** (#MN-65590FX-001), 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).

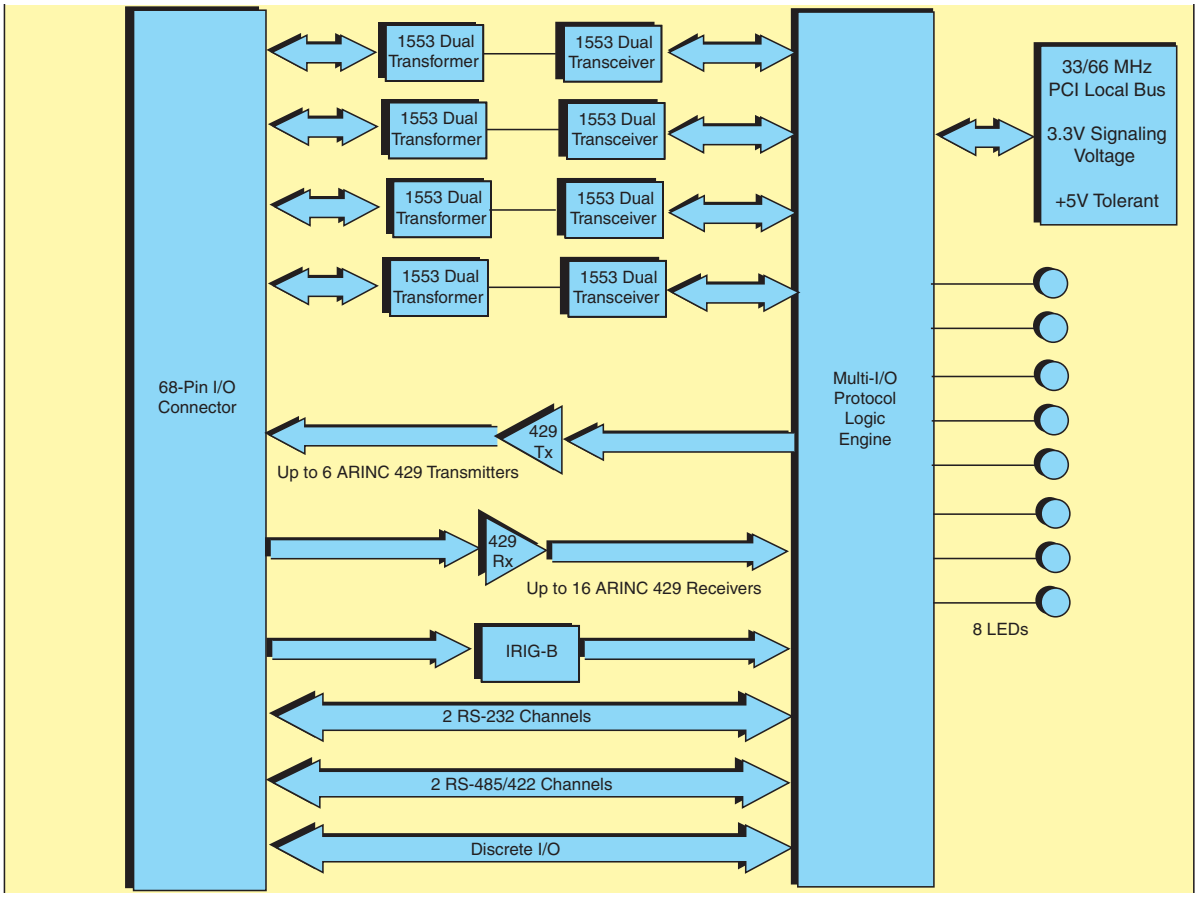


Figure 1. BU-65590F/M Block Diagram

COTS Solution for Avionics

- Conduction or Air Cooled PMC Card with Front or Rear I/O
- 32-bit, 33/66 MHz PCI Local Bus Spec Rev 3.0 compliant
- 48-bits, 1 µs resolution, distributed among all channels
- 6 Digital Discrete I/O

Two Operating Temperature Ranges

- Industrial Operating Temperature Range: -40 to +85° C
- Commercial Operating Temperature Range: 0 to +55° C

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 connector Hardware or Software
- Option for RT AUTO-BOOT with BUSY Bit Set

1553 Bus Monitor

- IRIG-106 Chapter 10 Compatibility
- DMA Engine for Super Low PCI and 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
- 16 Receive Channels, 6 Transmit Channels
- FIFO or Mailbox Reception Methods
- FIFO or Scheduled 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
- RS-232 RTS/CTS & DTR/DSR serial data flow control signals
- Autonomous RS-485 Half Duplex data transceiver direction control signal

Built In Self-Test Capability

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

Supporting Software

- Complete 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
- Open/Access/Close Model

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 kernel version 2.6.x Driver Module
- Version for Power PC, and x86

Windows Driver

- Plug and Play Windows 2000/XP Device Driver

ORDERING INFORMATION

BU-65590XX-X X X X

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

Test Criteria:
- 0 = none

Environmental & Operating Temperature Options:
- 2A = Rugged Air-Cooled Card with Bezel; Temperature Range: -40°C to +85°C (measured at component case)
- 2C = Rugged Conduction-Cooled Card;Temperature 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)

I/O Options

OPTION #	CHANNEL NUMBER & TYPE						
	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

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

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

Optional Cable for Front Panel I/O PMC:

DDC-75530-X
- 1 = Cable for the BU-65590F0
- 2 = Cable for the BU-65590F1
- 3 = Cable for the BU-65590F2

Optional Connector for the BU-65590F0, F1, and F2:

5301-0382-0001 = TYCO Connector and Backshell

The information in this **Data Sheet** is believed to be accurate; however, no responsibility is assumed by Data Device Corporation for its use, and no license or rights are granted by implication or otherwise in connection therewith. Specifications are subject to change without notice.

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