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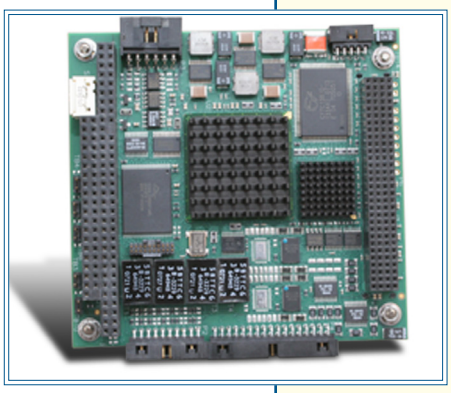
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Find the *DDC BU-65590C* at our website: *Click HERE*

MULTI-IO PC/104-*PLUS* CARD DATA SHEET

MODEL: BU-65590C



FEATURES

- PC/104-*Plus* or PCI-104 Card
- Multiple Configurations with up to:
  - 2 Dual-Redundant 1553 Channels
  - 16 Receive 429 Channels
  - 8 Transmit 429 Channels
  - 9 Discrete Digital I/O
  - 8 +35V Avionics Discrete I/O
- IRIG-B Input and Output
- E²MA (Extended Enhanced Mini-ACE) BC/RT/MT Architecture
  - API Compatible with Enhanced Mini-ACE® BU-69090S Library Software
- 2 MB RAM with Parity Per 1553 Channel
- Built-In Self Test
- 48-bit / 1µs Time Stamp
- IRIG-106 Chapter 10 Monitor Format
- DMA Engine for Low CPU and PCI Utilization
- VxWorks®, Linux® and Windows® 2000/XP Support

DESCRIPTION

The BU-65590C is a multi-protocol PC/104 *Plus* card that provides flexibility for systems interfacing to a MIL-STD-1553 or ARINC 429 data bus. There are up to 2 dual redundant MIL-STD-1553 channels operating in BC, RT, MT, or combined RT/MT modes. Sixteen ARINC-429 receive and eight ARINC-429 transmit channels operate in high/low speed with automatic slew rate adjustment. The card also contains up to nine digital discrete I/O, eight +35V Avionics Discrete I/O, an IRIG-B time code input, an IRIG-B time code generator, a clock time stamp input and a clock output. The combination of multiple I/Os on one card saves valuable PC/104 *Plus* space, shortening the height of the stack to fit inside of small spaces.

Each 1553 channel uses DDC's Extended Enhanced Mini-ACE (E²MA) architecture which is an extension of DDC's industry standard, field proven, Enhanced Mini-ACE. The card includes the MIL-STD-1553 EMACE Plus C Software Development Kit (SDK) and the ARINC-429 Multi-IO C SDK with drivers for VxWorks 5.x/6.x, Linux 2.6.x, and Windows 2000/XP.

APPLICATIONS

The BU-65590C is designed for harsh environments and can be used in either conduction or convection cooled applications. The card's rugged construction and ability to operate from -40°C to +85°C make it ideal for use in flight data recorders, display applications, embedded black boxes, mission computers, and avionics labs.

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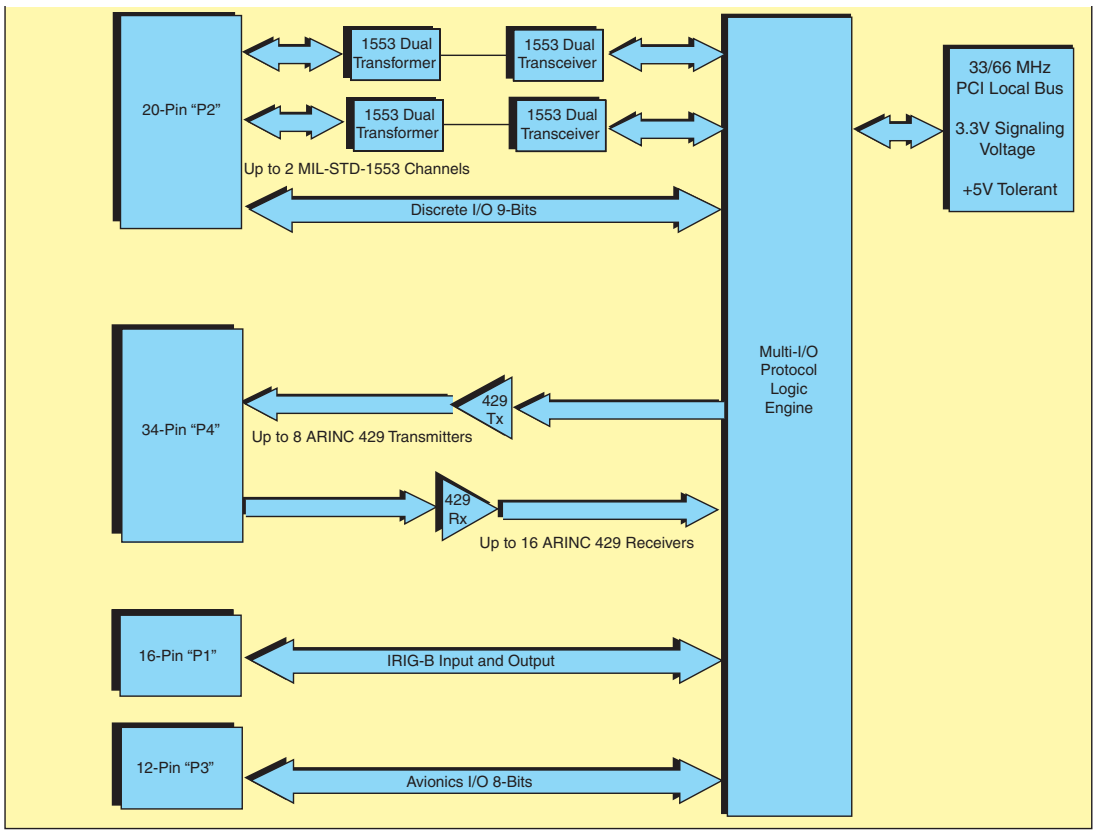
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Quick Specifications

PARAMETER	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS				
Supply Voltage				
+5V	-0.3		6.0	V
POWER SUPPLY REQUIREMENTS				
Voltages/Tolerance				
+5V	4.75	5.0	5.25	V
CURRENT DRAIN				
BU-65590C0				
MIL-STD-1553 (+5V, no 1553 in this version)				
Idle - 0% Transmitter Duty Cycle		240	264	mA
ARINC-429 (+12V, all channels)				
Idle - 0% Transmitter Duty Cycle		54	39	mA
75% Transmitter Duty Cycle		129	142	mA
ARINC-429 (-12V, all channels)				
Idle - 0% Transmitter Duty Cycle		46	50	mA
75% Transmitter Duty Cycle		125	138	mA
BU-65590C1				
MIL-STD-1553 (+5V, 1-Channel)				
Idle - 0% Transmitter Duty Cycle		320	352	mA
75% Transmitter Duty Cycle		680	748	mA
ARINC-429 (+12V, all channels)				
Idle - 0% Transmitter Duty Cycle		40	44	mA
75% Transmitter Duty Cycle		104	114	mA
ARINC-429 (-12V, all channels)				
Idle - 0% Transmitter Duty Cycle		34	37	mA
75% Transmitter duty Cycle		100	110	mA
BU-65590C2				
MIL-STD-1553 (+5V, 2-Channel)				
Idle - 0% Transmitter Duty Cycle		400	440	mA
75% Transmitter Duty Cycle		1.08	1.19	A
ARINC-429 (+12V, all channels)				
Idle - 0% Transmitter Duty Cycle		27	30	mA
75% Transmitter Duty Cycle		78	86	mA
ARINC-429 (-12V, all channels)				
Idle - 0% Transmitter Duty Cycle		23	25	mA
75% Transmitter Duty Cycle		74	81	mA
BU-65590C3				
MIL-STD-1553 (+5V, no 1553 in this version)				
Idle - 0% Transmitter Duty Cycle		240	264	mA
ARINC-429 (+12V, all channels)				
Idle - 0% Transmitter Duty Cycle		27	30	mA
75% Transmitter Duty Cycle		78	86	mA
ARINC-429 (-12V, all channels)				
Idle - 0% Transmitter Duty Cycle		23	25	mA
75% Transmitter Duty Cycle		74	81	mA
THERMAL				
Operating Temperature				
BU-65590Cx-2x0 (ambient)	-40		+85	°C
BU-65590Cx-3x0 (ambient)	0		+71	°C
Storage Temperature	-55		+125	°C
PHYSICAL CHARACTERISTICS				
Size				
	3.775 x 3.550 x 0.6			in.
	(98.9 x 90.2 x 15.2)			(mm)
Weight				
BU-65590C2	4.4			oz.
(Heaviest Model)	125			(g)

Note: For full specifications and additional information refer to the ***BU-65590C PC/104-Plus Card Hardware Manual*** (#MN-65590CX-001), the ***BU-69092 EMACE Plus SDK Software Manual*** (#MN-69092SX-001), and the ***DD-42992 Multi-IO ARINC 429 SDK Software Manual*** (#MN-42992SX-001)

Figure 1. BU-65590Cx Block Diagram



MIL-STD-1553 Channels

Each 1553 channel can emulate a Bus Controller (BC), a Remote Terminal (RT), a Bus Monitor (MT), or a combined RT/MT. Standard features include 2MB of RAM with parity per 1553 channel, 48-bit message time tagging, IRIG-B time code input, IRIG-B time code output, clock time stamp input, clock output, transformer coupling, triggers, extensive BC and RT frame structures, error detection, RT Status Bit and Mode Code responses, along with advanced BC functionality. The 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 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 card 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 address. The Bus Monitor mode provides complete error detection on 100% fully loaded buses. The Monitor can record data in an IRIG-106 Chapter 10 format and DMA this data over to host space to allow for super-low CPU and PCI utilization which can be a critical aspect of embedded systems.

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. Each channel features independent selection of data rate and parity, and automatic transmit channel slew rate adjustment. Transmit data can be sent in FIFO mode or scheduled rate mode on each transmit channel.

Avionics Discrete I/O

The BU-65590C card includes eight Avionic Level Discrete I/O Channels that are individually programmable as inputs or outputs. As outputs they are Open-Drain type drivers. When used as inputs these channels are configured to sense Ground / Open discrete inputs with +35V input voltage tolerance.

The following specifications apply to these signals:

VIL max = 3.5V, VIH min = 4.0V , VOL max = 0.5V

Digital Discrete I/O

Up to nine Digital Discrete I/O are available on the card. Each digital I/O pin is individually programmable to be either an output or input-only digital discrete. Digital discrete inputs are +5V tolerant and outputs are +3.3V with 12 mA drive capability.

PC/104-*Plus* and PCI-104 Solutions

- PC/104-*Plus* or PCI-104 Card
- 32-bit, 33/66 MHz PCI
- Up to two Dual Redundant MIL-STD-1553 Channels
- Up to 16 ARINC 429 Receive Channels
- Up to 8 ARINC 429 Transmit Channels
- Up to 8 +35V Avionics Discrete I/O
- Up to 9 Discrete Digital I/O
- ARINC 429 only models available

1553 Bus Controller

- Minor/Major Frame Scheduling for flexible 1553 message timing
- High/Low Priority Asynchronous Messages
- Modify Messages or Data while BC is running
- Conditional Messages based on custom 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
- On Board DMA Engine for Low CPU/PCI Utilization
- Filter Based on RT Address, T/R bit, Sub-address
- Message Status, Time Tag, Command Word, Data Words
- Simultaneous RT/Message Monitor Option

ARINC 429

- High/Low Speed Operation
- 16 Receive Channels, 8 Transmit Channels
- FIFO or Mailbox Reception Methods
- FIFO or Scheduled Transmission Methods
- 48-bit Message Time Tagging and Message Filtering
- User Definable Interrupts

Discrete I/O

- Eight +35V Avionics Discrete I/O
  - Outputs are low side open collector drive capable of sinking up to 1A
  - +35V Tolerant Inputs
- Nine Digital Discrete I/O
  - Output are +3.3V with 12 mA minimum drive capability
  - Inputs are +5V tolerant

Built-In Self-Test Capability

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

Supporting Software

- MIL-STD-1553 EMACE Plus C SDK
- ARINC-429 Multi-IO C SDK
- VxWorks Driver
  - Designed for Wind River's Version 5.x and 6.x
  - Version for Power PC and x86
- Linux Driver
  - Loadable Linux Kernel Version 2.6.x Driver Modules
  - Version for Power PC and x86
- Windows Driver
  - Plug and Play Device Driver for Windows 2000/XP

ORDERING INFORMATION

BU-65590CX-XX0X

Conformal Coating:
N = Acrylic Conformal Coating
U = Polyurethane Conformal Coating
Blank = No Conformal Coating

Test Criteria:
0 = Standard DDC Testing

Environmental and Operating Temperature Range:
2A = Rugged Air-Cooled Card, Temperature Range: -40° to +85°C (measured at component case)
2C = Rugged Conduction-Cooled Card, Temperature Range: -40° to +85°C
3L = Non-Rugged Air-Cooled Card, Temperature Range: 0°C to +71°C (Ambient)

I/O Options
0 = 16 Receive ARINC 429, 8 Transmit ARINC 429
1 = 1 MIL-STD-1553 Channel, 12 Receive ARINC 429, 6 Transmit ARINC 429
2 = 2 MIL-STD-1553 Channels, 12 Receive ARINC 429, 4 Transmit ARINC 429
3 = 8 Receive ARINC 429, 4 Transmit ARINC 429

Card Form Factor:
C = PC/104-*Plus*, or PCI-104 Card

Base Model Numbers:
65590 = Multi-IO Avionics Card
65591 = PCI-104 Version Multi-I/O Avionics Card

Note: This product contains tin-lead solder.

INCLUDED SOFTWARE:

BU-69092SX - MIL-STD-1553 EMACE Plus C SDK

Operating System:
0 = Windows 2000/XP
1 = Linux
2 = VxWorks

DD-42992S0 - ARINC-429 Multi-IO C SDK

Operating System:
0 = Windows 2000/XP
1 = Linux
2 = VxWorks

STANDARD DDC PROCESSING FOR DISCRETE MODULES/PC BOARD ASSEMBLIES		
TEST	**METHOD(S)**	**CONDITION(S)**
INSPECTION / WORKMANSHIP	IPC-A-610	Class 3
ELECTRICAL TEST	DDC ATP	—

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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