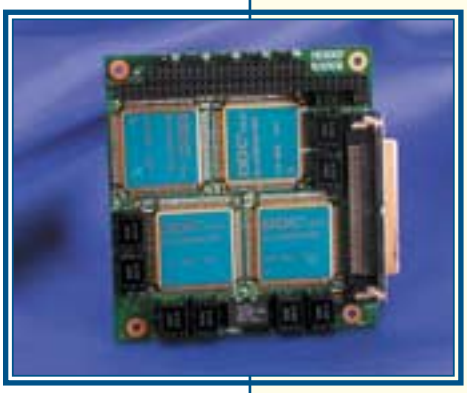
www.ddc-web.com

MIL-STD-1553 PC/104 Card

MODEL: BU-65568



FEATURES

- 16-bit Card per PC/104 Version 2.3
- One to Four Dual Redundant MIL-STD-1553 Channels
- Enhanced Mini-ACE™ BC/RT/MT Architecture
- 64K-word RAM per Channel
- Highly Autonomous Bus Controller Architecture
  - 20 Instruction Set
  - Conditional Operations
  - Subroutine Capability
  - User-definable Interupts
  - General Purpose Queue
- RT Buffering Options
  - Single Buffering
  - Double Buffering
  - Subaddress Circular Buffering
  - Global Circular Buffering
- Selective Message Monitor
- "Segmented" and "Flat" Addressing Modes
- Applications
  - Embedded Systems
  - Mission Computers
  - Communication Links
  - Munitions
- Software Support for DOS, Linux®, VxWorks®, and Windows NT®

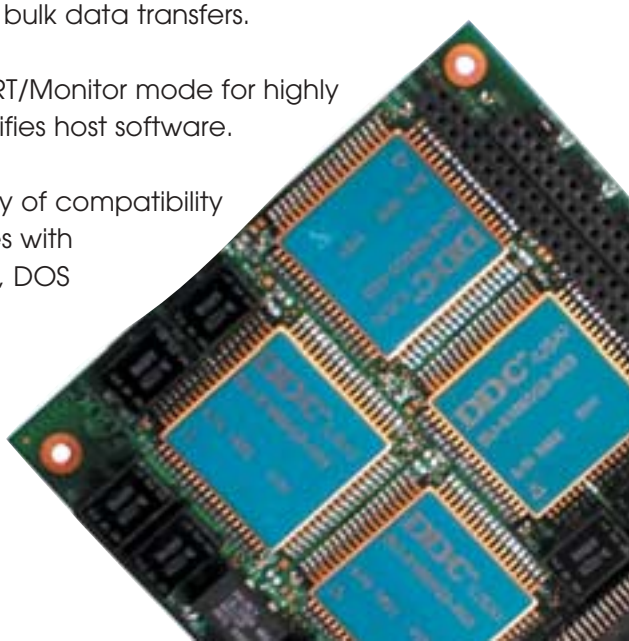
DESCRIPTION

The BU-65568 is a COTS solution for interfacing between an embedded PC/104 processor card and a MIL-STD-1553 bus. With one to four channels of DDC's field-proven Enhanced Mini-ACE, the BU-65568's advanced bus controller architecture provides considerable flexibility and autonomy in a number of areas. This includes methods to control message scheduling, along with the means to minimize host overhead for implementing data double buffering and bulk transfers, and inserting asynchronous messages. The BC architecture also supports various message retry and bus switching strategies, and provides flexibility for data logging and fault reporting.

The card's remote terminal architecture provides flexibility in meeting all common MIL-STD-1553 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.

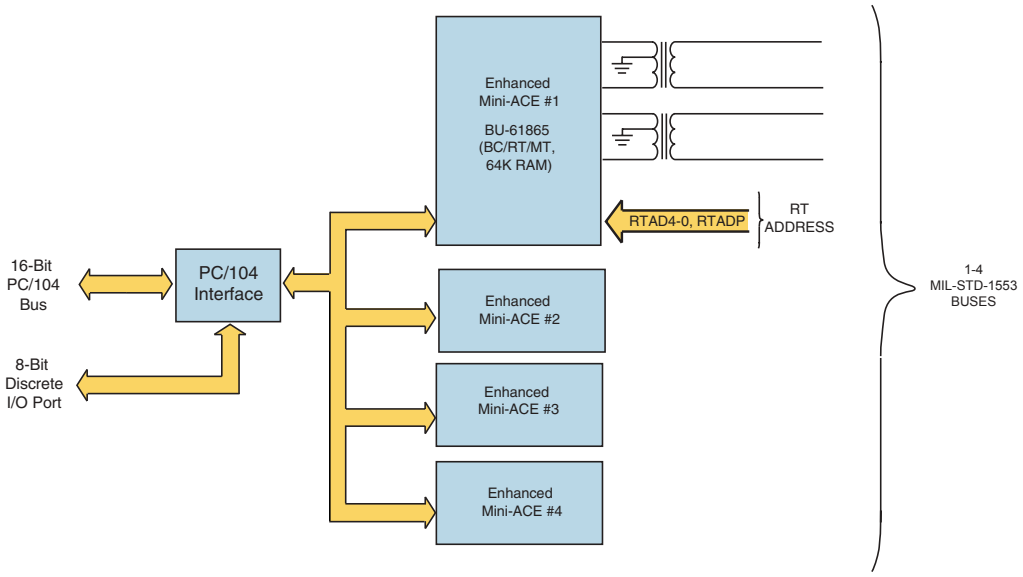
The card includes a true message monitor mode and a combined RT/Monitor mode for highly flexible message filtering and robust interrupt architecture that simplifies host software.

The BU-65568 includes two addressing modes, to provide consistency of compatibility with both Intel and Motorola pressure platforms. The BU-65568 comes with BU-69090 series software, a library supporting all modes of operation, DOS and VxWorks device drivers including source code, and an offline development environment. The BU-65568 also includes an 8-bit bi-directional I/O port.



BU-65568 Block Diagram

Figure 1



COTS Solution for Embedded MIL-STD-1553

- Convection Cooled PC/104 (Version 2.3) Card
- One to Four MIL-STD-1553 Channels
- FREE Library, DOS, and VxWorks Software Available

Each Channel Individually Programmable as BC, RT, Monitor, or RT/Monitor

- 64K X 17 RAM Per Channel

PC/104 Interface

- 16-Bit
- "Segmented" (64 KB) Addressing Mode for Intel Processors
- "Flat" (512 KB) Addressing Mode for Motorola Processors

Transformer Coupled 1553 I/O

- Option for Direct Coupling

8-bit Bi-directional Parallel I/O Port

Convection Cooled Card

Three Operating Temperature Ranges

- 0 to +55° C, BU-65567/8CX-300
- -40 to +85° C, BU-65567/8CX-200
- -55 to +85° C, BU-65567/8CX-900

BC Hardware Architecture

- Highly Autonomous Message Sequence Control
- Defined Set of 20 Instructions
- Control/Status Blocks for Individual Messages
- Minor and Major Frame Scheduling
- Asynchronous Message Insertion
- Conditional Branching and Subroutines
- General Purpose Queue: Message Status, Time, Immediate and Indirect Data
- Fully User-definable Interrupts
- Legacy Mode for Compatibility with ACE and Mini-ACE Applications

RT Hardware Architecture

- Choice of Subaddress Single Message, Double Buffering, or Circular Buffering; or Global Circular Buffering
- 32-Entry Interrupt Status Queue
- 50% and 100% Circular Buffer Rollover Interrupts
- Stack with Descriptors for Individual Messages
  - Message Status, Time Tag, Command Word, Data Pointer
- RT Address Selectable via Either Hardware (I/O connector) or Software Programmable
- Programmable Command Illegalization
- Programmable Busy by Subaddress
- Interrupts on All Messages, or Individual Subaddresses and/or Mode Codes
- Hardware (via connector) or Software-Programmable RT Address
- Available with Option for RT AUTO-BOOT with BUSY Bit Set
- Compatibility with ACE and Mini-ACE Applications

Monitor Hardware Architecture

- Selective Message Monitor
  - Filter Based on RT Address, T/$\overline{R}$ bit, Subaddress
- True Message Monitor
- Command Stack
  - Message Status, Time Tag, Command Word, Data Pointer
- Data Stack
  - All Monitored Words Following (first) Command Word
- 50% and 100% Rollover Interrupts for Command and Data Stacks
- 32-Entry Interrupt Status Queue
- Simultaneous RT/Message Monitor Option

Autonomous Built-In Self-Test Capability

- Protocol Self-Test
- RAM Self-Test
- Online Loopback Test
- Capability for CH. A-to-CH. B Wraparound Test
- Capability to Test Transmitter Timeout Function

BU-69090 Series Software

- FREE
- Complete Library
- DOS and VxWorks Drivers
- High-Level Register/Memory Initialization Routines
- For All Modes, Creation of Consolidated Status + Data Structures for Individual Messages in Host Memory
- Memory Management Software
- Open/Access/Close Model
- Memory Allocation Performed Transparent to Application Program
- Management of Data Structures in Card RAM and Host Memory

BC Software

- Supports Full Use of BC Instruction Set
- Manages Creation of Data Blocks
- Creates BC Messages
- Create and Start BC Frames
- Creation of Message Control/Status Blocks

RT Software

- Allocates RT Data Blocks
- Map Data Blocks to Subaddresses
- Command Illegalization
- Read Consolidated Message Structures From Host Buffers
- Initialize and Manage Circular Buffers

Monitor Software

- Enable Monitor Filtering for Specified Address/T-R/Subaddresses
- Copy Monitored Messages Into Consolidated Structures in Host Buffers
- Read Last Unread Message From Host Buffer
- Read Most Recent Message From Host Buffer

DOS Driver

- For Pentium Environment
- Source Code Included

VxWorks Driver

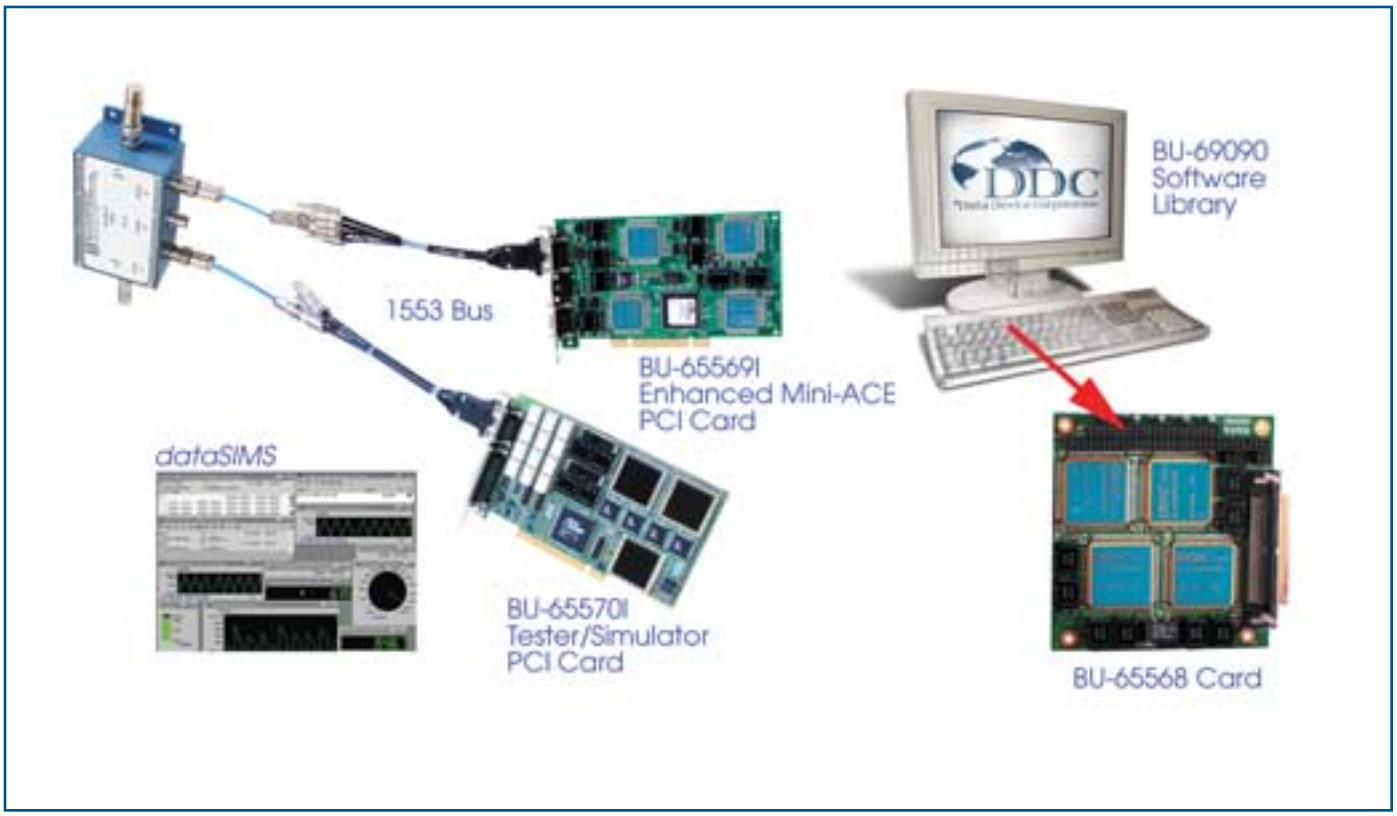
- Designed for Version 5.2 of Wind River's VxWorks
- For Power PC, Developed Using 750 Processor
- Version for Intel Pentium Platform Included
- Source Code Included

Linux Driver

- Loadable Linux Driver Module
- Intel Processor Support
- Source Code Included

*Support of Offline Development Environment

- Allows Development on Desktop PC
- Generates Binary Image and 'C' Header Files
- Results in Reduced Embedded Code Size
- Reduced Computational Resources
- Reduces Software Validation and Documentation



Specifications

PARAMETER	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS				
Supply Voltage				
+5 V	-0.3		6.0	V
POWER SUPPLY REQUIREMENTS				
Voltages/Tolerance				
+5 V	4.75		5.25	V
Current Drain				
BU-65568C1				
0% Transmit/Monitor			220	mA
75% Duty Transmitter Cycle			550	mA
BU-65568C2				
0% Transmit/Monitor			380	mA
75% Duty Transmitter Cycle			1.09	Amps
BU-65568C3				
0% Transmit/Monitor			540	mA
75% Duty Transmitter Cycle			1.53	Amps
BU-65568C1				
0% Transmit/Monitor			700	mA
75% Duty Transmitter Cycle			2.02	Amps

PARAMETER	MIN	TYP	MAX	UNITS
THERMAL				
Hottest Die Dissipation (transceiver chips)				
0% Transmit/Monitor			0.28	W
75% Duty Cycle			0.82	W
BU-61864G3 Thermal Resistance, Junction-to-Case (JC)		9	11	°C/W
Operating Temperature				
BU-65568CX-900	-55		+85	°C
BU-65568CX-200	-40		+85	°C
BU-65568CX-300	0		+55	°C
Operating Junction Temperature	-55		+160	°C
Storage Temperature	-65		+160	°C
PHYSICAL CHARACTERISTICS				
Size	3.775 X 3.550 X 0.6			in.
	(98.9 X 90.2 X 15.2)			(mm)
Weight	4.2			oz.
	(120)			(g)

Ordering Information

BU-65568 C X - X00N

- **Supplemental Process Requirements:**
  - Blank = None
  - N = Conformal Coating
- **Operating Temperature Range**
  - 9 = -55 to +85° C (BU-65568CX-900)
  - 2 = -40 to +85° C (BU-65568CX-200)
  - 3 = 0 to +55° C (BU-65568CX-300)
- **Number of Channels**
  - 1 = 1 Dual Redundant 1553 Channel
  - 2 = 2 Dual Redundant 1553 Channels
  - 3 = 3 Dual Redundant 1553 Channels
  - 4 = 4 Dual Redundant 1553 Channels
- **Package Type**
  - C = PC/104 Card
- **Base Product**
  - BU-65568 = MIL-STD-1553 PC/104 Card
  - BU-65567= RT Only PC/104 Card,with 4K x 17 RAM per Channel. Contact factory for availability.

Included Software

BU-69090SX

- Enhanced Mini-ACE C API Library and Drivers
  - 0 = Windows NT Only for this Card
  - 1 = Linux
  - 2 = VxWorks
  - 3 = DOS

These products contain tin-lead solder.

DDC® Data Device Corporation

www.ddc-web.com *Call DDC or visit www.ddc-web.com for a quote today:*

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