

MIL-STD-1553 Conduction Cooled cPCI

MODEL: BU-65566R



FEATURES

- One to Four MIL-STD-1553 Dual-Redundant Channels on a 3U Conduction-Cooled cPCI Card
- Enhanced Mini-ACE Architecture
- Designed for Harsh Military Environments
- RAM Parity
- Autonomous BC Architecture Offloads the Host Computer
- Programmable BC/RT/MT, and Combined RT/MT Modes
- Built-In Self-Tests
- Auto-Run/Auto-Load Boot Option
- Applications
 - Mission Computers
 - Avionics
 - Communication Links
 - Spacecraft
 - Ground Vehicles
 - Data Recorders
 - Test Systems
- Software Support for VxWorks, Integrity[®], Linux[®], Windows[®] 9x/2000/XP and Windows NT[®]
- Optional Advanced Graphical Data Monitoring and Analysis Software

DESCRIPTION

DDC's BU-65566R provides a complete COTS solution for interfacing between embedded cPCI systems and MIL-STD-1553 buses. The card offers one to four dual redundant MIL-STD-1553 channels in a small 3U conduction cooled cPCI form factor. The card features a robust design with thermal vias, a heat spreading plane, and thermal interfaces that efficiently carry heat to the user's cPCI chassis.

Standard features include transformer or direct coupling, message time tagging, 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 improving message schedule control, minimizing host overhead for asynchronous message insertion, facilitation bulk data transfers, double buffering, message retry, bus switching strategies, data logging, and fault reporting.

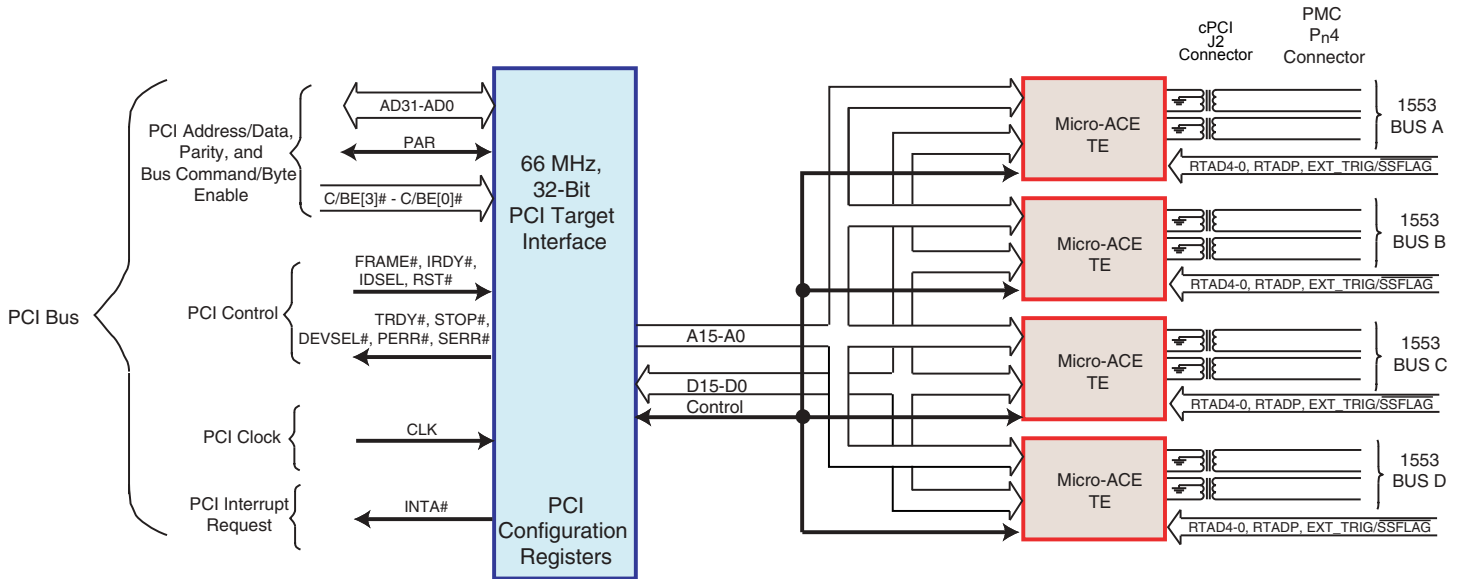
The BU-65566R Bus Monitor provides complete error detection on 100% fully loaded buses. Each channel can emulate a Bus Controller, a Remote Terminal, or a Bus Monitor. The device can also be configured in a combined RT/MT mode.

The BU-69090S Series software, included with the purchase of a card, includes DDC's Enhanced Mini-ACE C API (Application Programming Interface) Library and drivers to support all modes of operation for VxWorks, Integrity, Linux, Windows 9X/2000/XP and Windows NT, including source code, samples, detailed documentation, and an offline development environment.



BU-65566 Block Diagram

Figure 1



Complete Off-the-Shelf Solution for Embedded MIL-STD-1553

- C API Library and drivers
- Each Channel Individually Programmable as BC, RT, Monitor, or RT/Monitor
- 64K X 17 RAM Per Channel with RAM Parity Checking
- 66 MHz, 32-Bit Target PCI Interface
- Operates in 3.3V or 5V PCI Signaling Environments
- Operates off 5V Supply Only
- Transformer Coupled 1553 I/O
- Option for Direct Coupling
- Rear Panel I/O

Designed for Harsh Environments

- Conduction Cooled
- -40 to +85° C Operating Temperature Range
- Constructed in Accordance with ANSI/VITA-30.1-2002
- Thermal Vias under Hottest Chips (transceivers)

Available for Commercial Environments

- 0 to +55° C Operating Temperature Range

Autonomous BC Architecture

- Built-in Message Sequence Control Engine Serves to Greatly Offload Host Processor
- Control/Status Blocks for Individual Messages
- Minor and Major Frame Scheduling
- Asynchronous Message Insertion
- Conditional Branching and Subroutines
- General Purpose Queue: Message Status, Time Tag, Immediate Data, Indirect Data

- Fully User-Definable Interrupts
- Legacy Mode for Compatibility with ACE and Mini-ACE Applications

Remote Terminal Flexibility

- Compatibility with ACE and Mini-ACE Applications
- Multiprotocol: MIL-STD-1553A/B, STANAG-3838
- Choice of Subaddress Single Message, Double Buffering, Circular Buffering, or Global Circular Buffering 50% and 100% Rollover Interrupts for Command and Data Stacks
- Stack with Descriptors for Individual Messages
- Hardware (via connector) or Software-Programmable RT Address
- Programmable Command Illegalization
- Programmable Busy by Subaddress
- Interrupts on All Messages, or Individual Subaddresses and/or Mode Codes

True Message Monitor

- Selective Message Monitor
 - Filter Based on RT Address, T/R bit, Subaddress
- 50% and 100% Rollover Interrupts for Command and Data Stacks
- Simultaneous RT/Message Monitor Software Programmable Option

Autonomous Built-In Self-Test

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

Supporting Software

- **Complete BU-69090 series 'C' Library for all supported operating systems**
- Drivers for VxWorks, Integrity, Linux, and Windows 9x/2000/XP, and Windows NT Included
- RTL High-Level Routines Abstract Register/Memory Setup
- No Low Level Knowledge of Hardware Required
- Supports BC, RT, MT, and RT/MT Modes of Operation
- Memory Management Software
- Open/Access/Close Model
- Memory Allocation Performed Transparent to User's Application
- Internally Manages Data Structures
- Includes Examples for All Operating Modes
- Detailed Library Software Manual Included
- **BC Software**
- Supports Full Use of BC Instruction Set
- Manages Creation of Data Blocks
- Easily Create BC Opcodes, Messages, and Frames
- Dynamically Insert Asynchronous Messages While BC is Running
- Host Buffer Logs all messages and Data Software
- **RT Software**
- Easily Create RT Data Blocks
- Map Data Blocks to Subaddresses
- Command Illegalization
- Software Host Buffer Logs all Messages and Data
- **Monitor Software**
- Monitor Filtering for Specified Address/T-R/Subaddresses
- Software Host Buffer Logs All Messages and Data
- **VxWorks Driver**
- Source Code Included
- Power PC and Intel Processor
- **Linux Driver**
- Loadable Linux Driver Module
- Source Code Included
- Power PC and Intel Processor Support
- **Windows Driver**
- PnP Windows Driver to Support all Modes of Operation
- **Integrity Driver**
- Source Code Included
- Power PC and Intel Processor Support
- **Supports an 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
- Allows Development In Simulated Access Mode
- No Need For Hardware To Start Software Development
- Allocates Host Memory As If Enhanced Mini-ACE Memory
- Setup Can Be Easily Recreated In An Embedded System

Optional Debugging and Bus Analyzer Software Tools

- Advanced Graphical Monitoring and Simulation Software
- Easy to Use
- Customizable Simulation Environment
- Allows Simulating Engineering Units Using Constraints, Values, Built-In Waveforms and User Defined Expressions

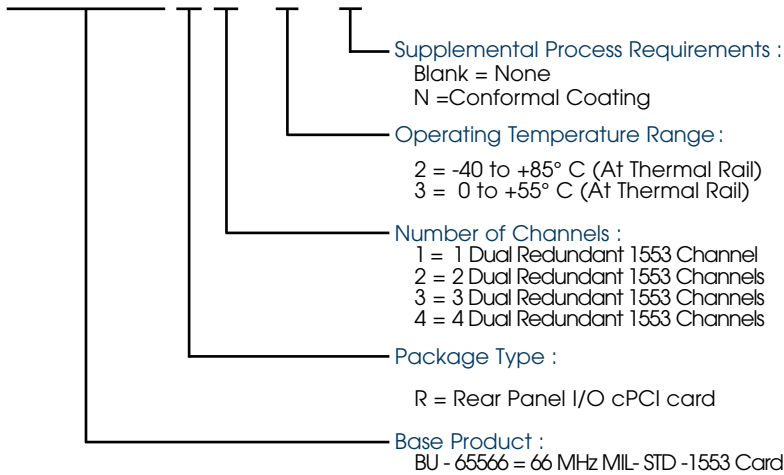


Specifications

PARAMETER	MIN	TYP	MAX	UNITS	PARAMETER	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS					THERMAL				
Voltage +5 V	-0.3		6.0	V	Operating Temperature BU-65566RX-200 (Measured at Thermal Interface)	-40		+ 85	°C
POWER SUPPLY REQUIREMENTS					BU-65566RX-300 (Measured at Thermal Interface)				
Voltages/Tolerance +5 V	4.75	5.0	5.5	V	Thermal Resistance, Junction to Thermal Interface			+ 39	°C/W
Current Drain					MECHANICAL DESIGN				
BU-65566R1					Shock: Three Pulses, Half Sine on Six (6) Axes 40g's, 11 msec/axes				
0% Transmit/Monitor		250	280	mA	Vibration: Random input, one hour each axes, 14g's rms				
75% Transmitter Duty Cycle		550	613	mA	Three Hours Total, 15 to 2000 Hz				
BU-65566R2					Resonant Frequency: BU-65566R2 (Calculated) 12 Hz				
0% Transmit/Monitor		350	394	mA	PHYSICAL CHARACTERISTICS				
75% Transmitter Duty Cycle		930	1,000	mA	Size	Standard 3U size cPCI			
BU-65566R3									
0% Transmit/Monitor		450	505	mA					
75% Transmitter Duty Cycle		1.30	1.50	A					
BU-65566R4									
0% Transmit/Monitor		550	611	mA					
75% Transmitter Duty Cycle		1.70	1.95	A					

Ordering Information

BU-65566 X X - X00N



Included Software

BU-69090SX

Enhanced Mini-ACE C API
Library and Drivers
0 = Windows 9x/2000/XP
and Windows NT
1 = Linux
2 = VxWorks
5 = Integrity

Optional Bus Analyzer Software Tool

BU-69404DM-64VM

dataMARS Advanced Graphical
Monitoring Software for Windows
9x/2000/XP and Windows NT



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

105 Wilbur Place, Bohemia, New York, U.S.A. 11716-2482

For Technical Support - 1-800-DDC-5757 ext. 7771

Headquarters, N.Y., U.S.A. - Tel: (631) 567-5600, Fax: (631) 567-7358

Southeast, U.S.A. - Tel: (703) 450-7900, Fax: (703) 450-6610

West Coast, U.S.A. - Tel: (714) 895-9777, Fax: (714) 895-4988

United Kingdom - Tel: +44-(0)1635-811140, Fax: +44-(0)1635-32264

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

Ireland - Tel: +353-21-341065, Fax: +353-21-341568

France - Tel: +33-(0)1-41-16-3424, Fax: +33-(0)1-41-16-3425

Germany - Tel: +49-(0)89-15 00 12-11, Fax: +49-(0)89-15 00 12- 22

Japan - Tel: +81-(0)3-3814-7688, Fax: +81-(0)3-3814-7689