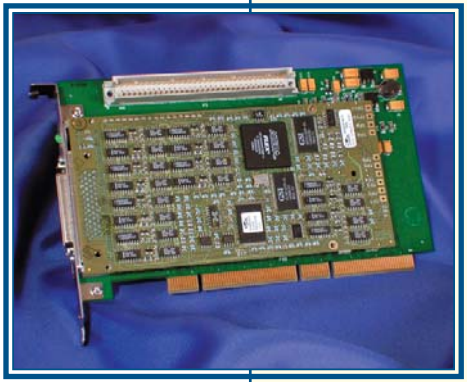
DDC®
Data Device Corporation
www.ddc-web.com

ARINC 429 PCI Card

MODEL: DD-42916i3-300



FEATURES

- 16 Independently Programmable Receiver/Transmitter, High/Low Speed ARINC Channels
- Supports High-Speed Data Rates on All Channels Simultaneously
- Six Discrete Inputs and Four Discrete Outputs
- Multiple Reception Methods
- Receive Label/SDI Data Filtering and Data Time Stamping
- Programmable Interrupt Support
- On-Board Processor for Engineering Unit Conversions and Data Processing
- Synchronous and Multiple Asynchronous Transmission Methods
- Wraparound Internal Self Test for Each Channel
- Command/Response Communication FIFO
- Dual Port RAM for ARINC Data
- Drivers and Run-Time Library Support for Windows® 9x/2000/XP, Windows NT®, Linux, and VxWorks®, Including LabVIEW™ and LabWindows™/CVI Support
- Optional Commercial Avionics Utilities 32-bit Software Suite
- Optional *dataMARS/dataSIMS* 32-Bit Monitoring and Simulation Software

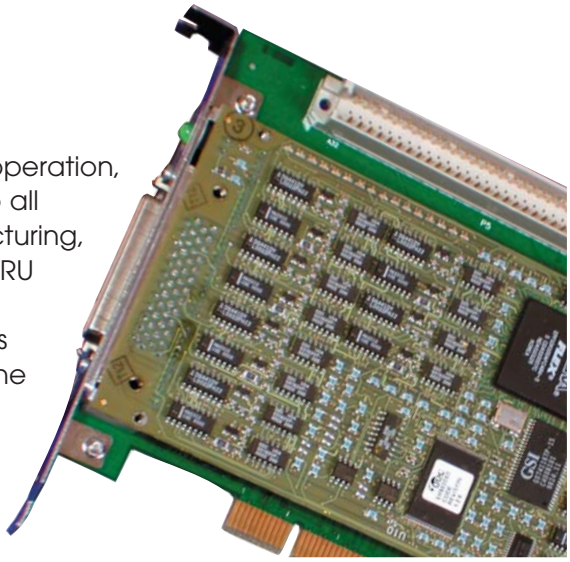
DESCRIPTION

The DD-42916I3-300 is a DD-42916C1-300 PMC card on a PCI carrier, which provides a PCI interface to an ARINC 429 data bus. The card contains a high performance processor used for data processing, time stamping, and engineering unit conversion. The DD-42916I3-300 efficiently transfers ARINC 429 data via dual port RAM accessed by both the host computer and the card.

DD-42916I3-300 software supports all modes of operation and includes 'C', LabVIEW and LabWindows/CVI programming libraries. An optional Commercial Avionics Utilities Suite includes an ARINC 429 Data Bus Analyzer and an ARINC 615 Data Loader. Optional *dataMARS* software provides powerful monitoring and extensive post analysis capabilities. Optional *dataSIMS* software adds simulation capability.

APPLICATIONS

With 16 programmable receive/transmit channels, high/low speed operation, and engineering unit conversion; the DD-42916I3-300 is well suited to all types of ground support work, including development and manufacturing, testing, and on-board data acquisition. The DD-42916I3-300 equips LRU developers with easy access for simulating and testing new systems prior to use with actual flight systems. It can also be used by avionics maintenance and validation teams to perform end-item testing in the laboratory and onboard testing via portable PC's.



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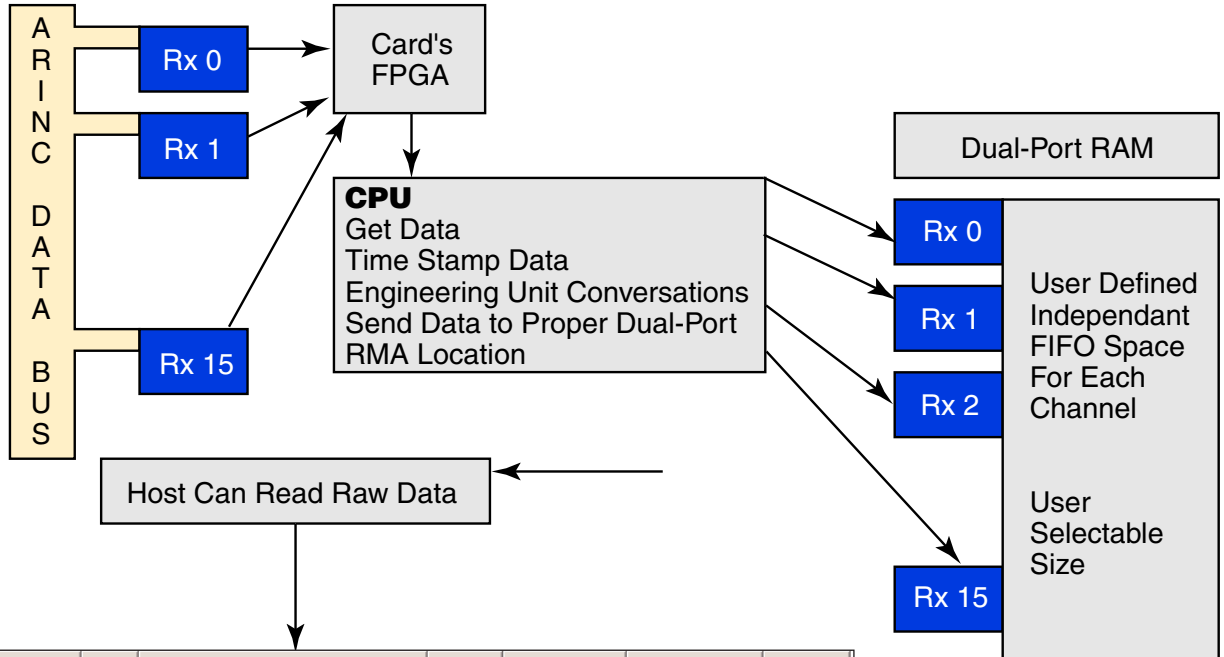
Data Reception

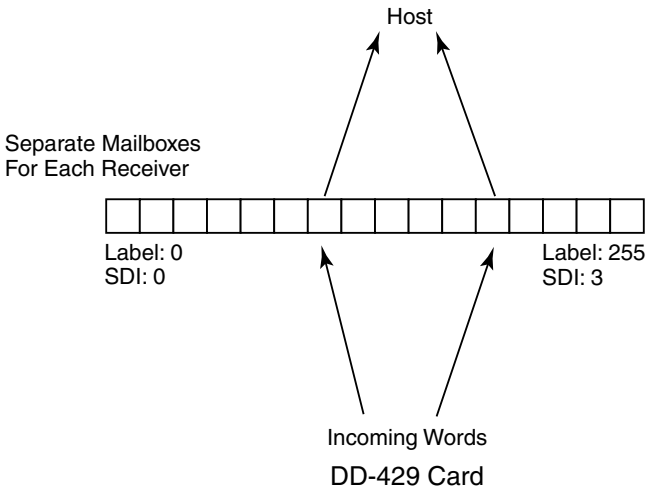
Figure 1



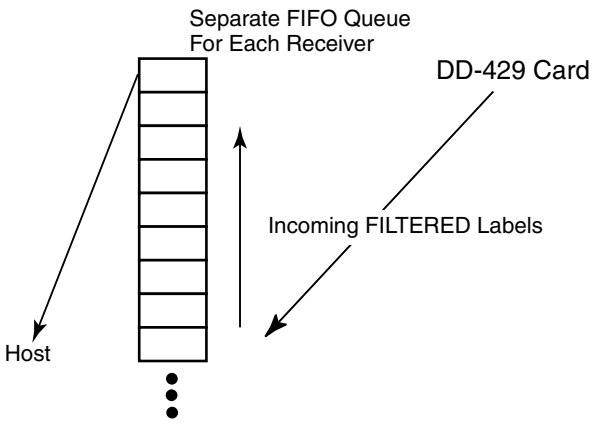
Chan	Label	SDI	Raw Data	Parity	Abs. Time	Rel. Time	SSM
1	005	01	00000000000000000000101	E	47.83 sec	0.3 msec	00
1	006	10	00000000000000000000110	E	47.83 sec	0.4 msec	00
1	007	11	00000000000000000000111	E	47.83 sec	0.4 msec	00
1	010	00	00000000000000000001000	E	47.84 sec	0.3 msec	00
1	011	01	00000000000000000001001	E	47.84 sec	0.4 msec	00
1	012	10	00000000000000000001010	E	47.84 sec	0.4 msec	00
1	013	11	00000000000000000001011	E	47.84 sec	0.3 msec	00

Chan	Eq. ID	Eq. Name	Label	SDI	Parity	Abs. Time	Rel. Time	Type	Parameter Name	Value	Unit
1	005	Attitude and Heading Ref. System	012	00	O	0.0 msec	0.0 msec	BCD	Ground Speed	0	Knots
1	005	Attitude and Heading Ref. System	015	00	O	0.0 msec	0.0 msec	BCD	Wind Speed	0	Knots
2	0ca	Brake Temperature Monitor Unit	171	00	O	0.0 msec	0.0 msec	BNR	Mfr-Specific Status	Co... Ca...	
2	0ca	Brake Temperature Monitor Unit	171	00	O	0.0 msec	0.0 msec	BNR	Mfr-Specific Status	Co... Ca...	
1	005	Attitude and Heading Ref. System	015	00	O	0.0 msec	0.0 msec	BCD	Wind Speed	2	Knots

Mailbox Reception Method

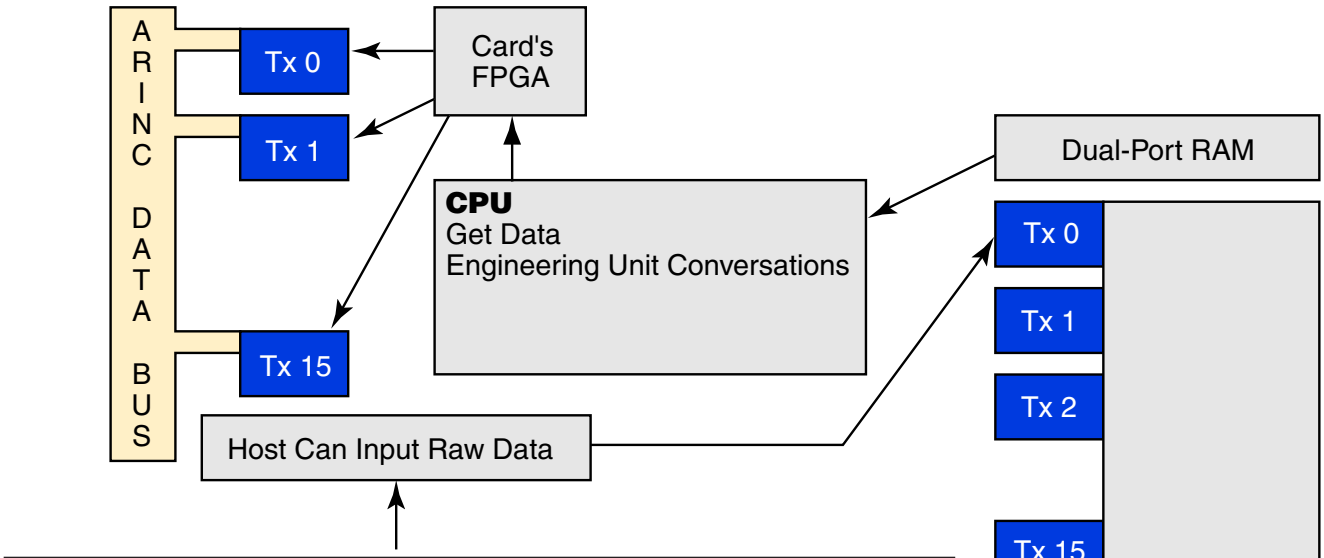


FIFO Reception Method



Data Transmission

Figure 2



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1	006	10	00000000000000000000110	E	47.83 sec	0.4 msec	00
1	007	11	00000000000000000000111	E	47.83 sec	0.4 msec	00
1	010	00	00000000000000000001000	E	47.84 sec	0.3 msec	00
1	011	01	00000000000000000001001	E	47.84 sec	0.4 msec	00
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										Ca…	
2	0ca	Brake Temperature Monitor Unit	171	00	O	0.0 msec	0.0 msec	BNR	Mfr-Specific Status	Co…	
										Ca…	
1	005	Attitude and Heading Ref. System	015	00	O	0.0 msec	0.0 msec	BCD	Wind Speed	2	Knots

CARD and SOFTWARE CAPABILITIES

Transmit Data Options
- Queued FIFO Transmission to any Channel
- Scheduled Major/Minor Frames Transmission to any Channel
- Scheduled Label/SDI Rate Transmission to any Channel

Received Data Options
- "Mailbox" Type Reception from any Channel
- Queued FIFO Reception from any Channel
- Filtering of Received Label/SDI Combinations
- Time Stamping of Received Data

512 KB Dual Port RAM

Low-Speed (12.5 KHz) or High-Speed (100 KHz) Operation

Engineering Units Conversion

Built-in Test, with Diagnostic LEDs

Interrupt Options
- Word Received
- Receive Errors
- Changes in Tx/Rx FIFO Status
- End of Major Frame

Discrete I/O
- Six Open/Ground Discrete Inputs
- Four 30V/100 mA Discrete Outputs

Software
- Driver Support for Windows 95/98/2000 for Windows 9x/2000/XP and Windows NT, Linux, and VxWorks
- Support for LabVIEW and LabWindows/CVI
- High-Level API with Over 40 Commands
- Demo Programs
- Optional Avionics Utilities Suite
  - ARINC 429 Data Bus Analyzer
  - ARINC 615 Data Loader
- Optional *dataMARS* and dataSIMS Software
  - *dataMARS* Monitoring Software
  - *dataSIMS* Simulation and Monitoring Software

Specifications

PARAMETER	VALUE	UNITS
ELECTRICAL CHARACTERISTICS		
Nominal Data Rates	12.5 or 100	kHz
Expected Bus Impedance	75	ohms
Receiver Input Impedance	1000	ohms
Time Tag Resolution	1 or 1,000	µs
Power Supply Voltage	+3.3, +5, and ±12	Vdc
Discrete Inputs Logic Threshold	3.0 to 3.5	V
Discrete Outputs Current (open drain sink, at 30 volts)	100	mA
ENVIRONMENTAL CHARACTERISTICS		
Operating Temperature: (up to 95% relative humidity, non-condensing)	0 to 55	°C
Storage Temperature (up to 99% relative humidity, non- condensing)	-40° to 85	°C
PHYSICAL CHARACTERISTICS		
Standard Short PCI Card	6.9 x 4.2	in
	(17.5 x 10.7)	(cm)
I/O Connector	0.050" Mini-D Type 50-pin connector on front panel	
Weight	5.50	oz
	(156)	(g)

Ordering Information

DD-42916 I3 - X 0 0

- Test Criteria
  - 0 = Standard Testing
- Process Requirements
  - 0 = Standard DDC Processing
- Temperature Range
  - 3 = 0 to +55° C (DD-42916I3-300)
- Card Type
  - I3 = PCI Card
- Base Model Number
  - DD-42916 = DDC ARINC 429 16 Programmable Channel PCI Card

Included Software

DD-42977S0 - Software Drivers, `C´ API Library, LabVIEW, and LabWindows/CVI for Windows 9x/2000/XP and Windows NT

DD-42977S1 - Software Drivers and `C´ API Library for Linux

DD-42977S2 - Software Drivers and `C´ API Library for VxWorks

Optional 32-bit GUI Software

DD-42999S0 - Commercial Avionics Utilities Software Suite for Windows 9x/2000/XP and Windows NT

Includes:
- ARINC 429 Data Bus Analyzer
- ARINC 615 Data Loader

Mating Connector

3M Part Number - 10150-3000VE

Optional Monitoring and Simulation Software

BU-694X4DM-64VM - 32-bit *dataMARS*

BU-694X4DS-64VM - 32-bit *dataSIMS*

X = Software License Type, 0 = Parallel Port, 1 = USB

The information in this product brief 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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