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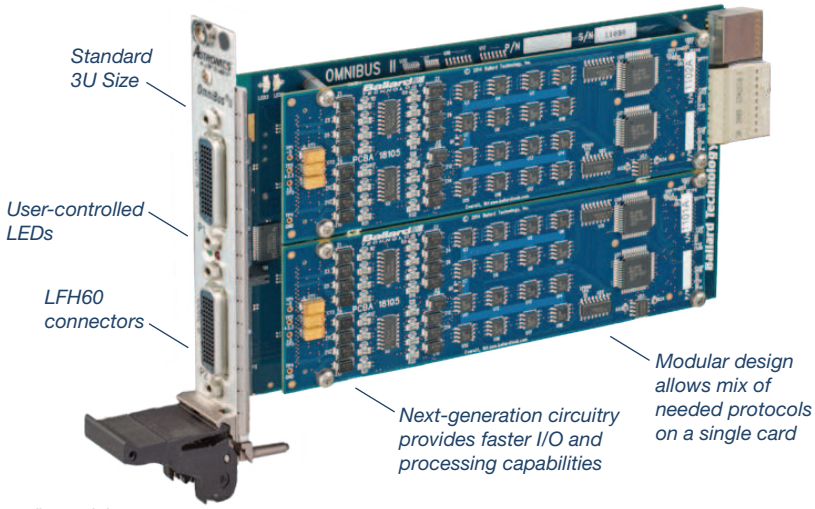
OmniBus® II
PXIe Interfaces sold by NI

Available Interfaces

MIL-STD-1553
ARINC 429/575
TTL Level Discrete I/O
Open/GND avionics discrete I/O



Multi-Protocol Avionics Databus Interface

The OmniBus® II PXI Express (PXIe) card is designed for use in multi-slot PXIe and CompactPCI Express test systems. It enables these systems to interface with multiple avionics databuses for testing, validating and simulating commercial and military avionics equipment and systems. The card is highly configurable and includes two internal Cores that can be populated with a variety of databus protocols and discrete I/O modules.

The OmniBus II PXIe is the next-generation of Ballard's popular OmniBus product with faster I/O and processing capabilities. With the newest advanced set of MIL-STD-1553 and ARINC 429 modules, users can verify wave form compatibilities, test functions of bus shorts and opens, and perform lab, production and flight test verification and simulation. Readily available as Commercial Off-The-Shelf (COTS) products, the PXIe interface is perfect for challenging simulation, test, interface, and data recording applications.

Hardware

OmniBus II modules used on this card feature the latest 6th generation protocol engines and bus mastering to yield high performance. Power is obtained from the backplane bus—no supplemental power is needed. All cards are standard 3U size and include sixteen TTL level input/output discretes and IRIG time synchronization/generation. User software can indicate status by controlling the two LEDs.

Software

The OmniBus II PXIe product has been certified by National Instruments as "Compatible with LabVIEW™." Included with all OmniBus II models sold by NI is the LabVIEW Avionics Instrument Driver—the best way to operate the PXIe product with LabVIEW Software.

COMPATIBLE WITH
NATIONAL INSTRUMENTS
LabVIEW

Users can also develop their own software applications with the included BTIDriver™ API. With only a few function calls, a program can operate the interface card and process messages to and from the avionics databuses. Functions include routines for transmitting, receiving, scheduling, recording, time-tagging, and manipulating data. The interface card can use applications developed for other Ballard devices. Code migrates seamlessly from BTIDriver compatible devices.

Features

- Supports multiple protocols in one card
- Up to 4 MIL-STD-1553 databuses
- Up to 32 ARINC 429 databuses
- 16 bidirectional TTL level discrete I/O
- PXI triggers/syncs/clocks
- Advanced timing: IRIG, 10 MHz, and PPS
- Built-in test: PBIT, IBIT and CBIT
- CompactPCI Express (cPCIe) compatible

Software

- Certified Compatible with LabVIEW™ Instrument Driver
- Universal BTIDriver™ API compatible
- Efficient DMA monitoring
- Compatible with other Ballard hardware

Benefits

- Powerful protocol engines
- Easy installation
- 3-year limited warranty standard
- RoHS compliant

Applications

- Product development and validation
- Production testing
- Simulation of databus and I/O system traffic
- Data servers
- Data recorders
- System analysis and integration testing
- Performance monitoring and analysis

LabVIEW Compatible hardware and driver available at:
www.ni.com

ASTRONICS
BALLARD TECHNOLOGY

OmniBus II
PXIe Interfaces sold by NI

I/O Details

MIL-STD-1553

Up to 2 dual-redundant channels
BC/RT/MON (Single- or Multi-Function)
Hardware controlled transmit scheduling
Sequential monitor and Time Stamping
CH/TA/SA filtering
Error injection including MBZC shifting
Playback with errors
Amplitude control
16 Open/GND avionics discrete I/O

ARINC 429

Up to 16 Tx/Rx configurable channels
Periodic and asynchronous messages
Hardware controlled transmit scheduling
Hardware playback mode
Receive message filtering (Label/SDI)
Sequential monitor and Time Stamping
Programmable bit rate
Error detection and injection
  Parity bit inversion
  +/- bit count (8-33 bits)
  Intermessage gap error

Specifications

OmniBus II PXIe is available in a number of configurations that all share the base model features below:

Base Model Features

- 2 Core I/O sites
- 8 bidirectional TTL discrete I/O per core
- 2 user controlled LED indicators per core
- 64 MB memory per core (ECC)
- Temperature monitoring

Advanced Timing

64-bit hardware time-tag (1ns resolution)
IRIG A/B input and output (AM, PWM)
  Generate or synchronize timer
  Synchronize hardware time-tags
10 MHz and PPS
  Frame synchronization
  Synchronize hardware time-tags

Interrupts/Logging

Poll or use interrupts
Configurable event log
Programmable event logging/interrupts from messages, tx schedules, and buffers

PXI Triggers/Syncs/Clocks

PXI_STAR, PXI_TRIG, PXIe_DSTAR, and PXIe_CLK100 signals
Route PXI triggers to BTIDriver triggers & syncs
3 syncs and 3 triggers per core
Integration to Advanced Timing functions

Specifications

Component Temperature: -40 to 85°C
Storage Temperature: -55 to 100°C
I/O Connectors: LFH60
Size: Standard 3U (100 x 160 mm)
PCIe bus: x1 lane, bus mastering
Power: +3.3 and +12 VDC

Software

LabVIEW Instrument Driver for LabVIEW™ 2010–2016 (32- and 64-bit) on Windows®
LabVIEW RT Instrument Driver for LabVIEW 2013–2016 on Phar Lap ETS
Universal BTIDriver API for C/C++, C#, VB, VB.Net, and LabVIEW
MS Windows and Linux® OS drivers

Ordering Information

Part No.	*Description*
784802-01	ARINC429 - 8 Channel
784803-01	ARINC429 - 16 Channel
784804-01	ARINC429 - 32 Channel
784796-01	MIL-STD-1553 - 1 Channel (Single Function)
784797-01	MIL-STD-1553 - 2 Channel (Single Function)
784798-01	MIL-STD-1553 - 4 Channel (Single Function)
784799-01	MIL-STD-1553 - 1 Channel (Multi-Function)
784800-01	MIL-STD-1553 - 2 Channel (Multi-Function)
784801-01	MIL-STD-1553 - 4 Channel (Multi-Function)
784805-01	MIL-STD-1553 - 2 Channel (Single Function), plus ARINC429 - 16 Channel
784806-01	MIL-STD-1553 - 2 Channel (Multi-Function), plus ARINC429 - 16 Channel

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NI Product Support
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E-mail: support@ni.com
www.ni.com/contact-us

Astronics Ballard Technology is committed to quality and is AS9100 and ISO 9001 registered.

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