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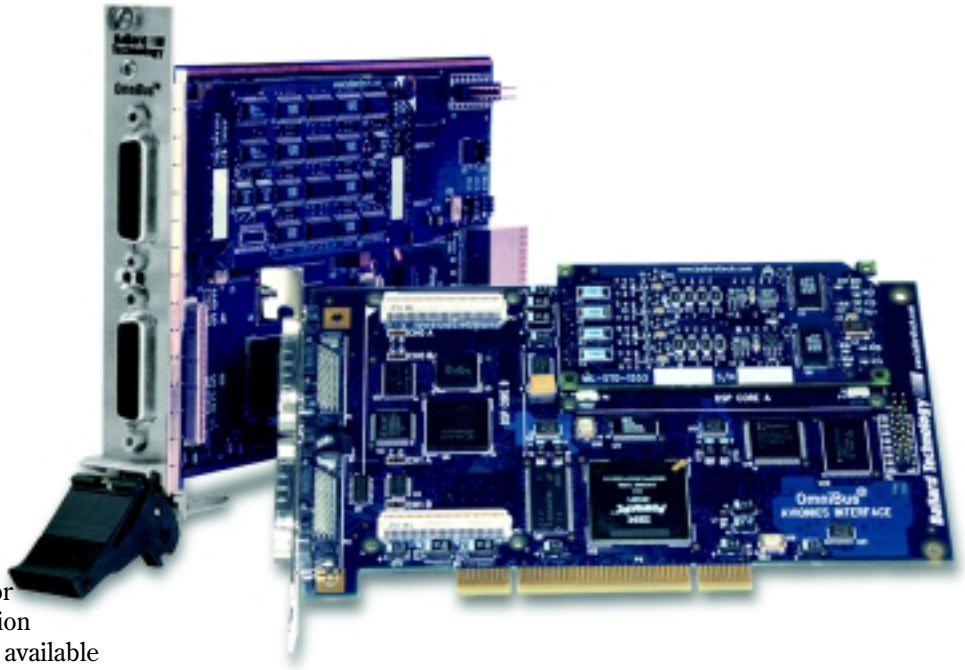
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Find the *Astronics / Ballard Technology OmniBus* at our website: *Click HERE*

OmniBus® PCI/cPCI

Multi-Protocol

PCI/cPCI Interface to Multiple Avionics Databuses



Protocols

- MIL-STD-1553
- ARINC 429/575
- ARINC 708/453
- ARINC 717/573
- RS-232/422/485
- Discrete I/O
- Custom

Features

- High channel counts
- Mixed protocols
- PowerPC user processor
- IRIG time synchronization
- Extended temperatures available
- Can be upgraded/reconfigured

Description

The high-performance OmniBus PCI and cPCI boards may be used for simulating, monitoring, and testing avionics databuses. OmniBus PCI/cPCI are members of Ballard's OmniBus® product line, a family of avionics databus interfaces that takes flexibility and power to a new level. With the demand for products with high channel counts and multi-protocol capability comes the need for more processing power, not only for handling the protocol but also for running the user's application. The OmniBus family has addressed these requirements through modularity and by adding multiple processors.

Flexible Configuration

Through modularity, Ballard can provide unique, user-specified configurations on short notice at minimum cost. The flexibility of this design allows more protocol and channel count combinations to be developed and stocked than is practical with fixed configurations. The unique OmniBus architecture offers higher performance than general-purpose modular systems. Modularity also means that users may upgrade or reconfigure their OmniBus with additional functionality, channels, and protocols as their requirements change.

Multiple Processors

OmniBus modularity allows additional processors to be added as more channels and/or protocols are added. Because each module has its own DSP (see diagram on next page), OmniBus products provide high channel count and mixed protocol capability without relying on the host processor or risking data loss from an overloaded DSP. By including more channels, protocols, and processing power in a single product, OmniBus provides better economy of scale and requires less computer space (slots).

User Processor

An on-board PowerPC® processor can be programmed by the user to off-load or run independently of the host computer. Users can upload programs and may save them in non-volatile on-board memory. The PowerPC can be configured to automatically boot and run without host intervention. Possible applications include data servers/converters, dynamic data generation/simulation, data filtering, and event triggering.

Additional Capabilities

- IRIG circuits allow channels, boards, and other equipment to be synchronized to a standard clock time. The IRIG time can come from an outside source or be generated on board.

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- All OmniBus products include various digital input and output signals.
- OmniBus PCI and cPCI cards are available for industrial temperatures. Commercial temperature versions are standard.

Software

The easiest way to use an OmniBus product is with CoPilot®, Ballard's Windows®-based software (available separately or bundled with hardware). Because CoPilot can host multiple cards, channels, and databuses (MIL-STD-1553, ARINC 429, and ARINC 708), it is the ideal tool for OmniBus products. CoPilot auto-detection, engineering units conversions, and other features increase user productivity. The Plus version of CoPilot adds graphical displays, a powerful scripting engine, and software and hardware playback.

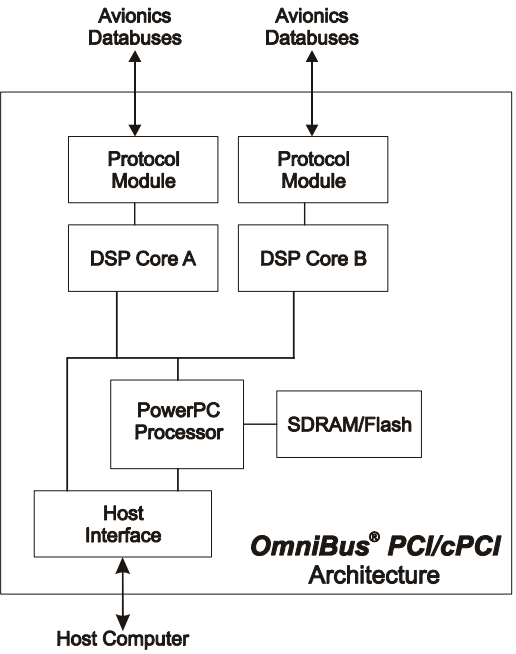
Alternatively, software developers can use the included BTIDriver™ API library to quickly develop custom applications. Although each OmniBus product can be easily configured and run with only a few API calls, the comprehensive library includes a broad range of functions for specialized needs. All OmniBus products run Ballard's universal BTIDriver API, so applications developed for one platform or product can be easily ported to another.

Windows drivers are included; call for availability of Linux, VxWorks®, or other drivers. For developing software to run on the PowerPC processor, an SDK is included with the embedded Linux option.

Ordering Information

The order number for an OmniBus product is a combination of the board part number and module part number(s). For example, a 111-xxx is an OmniBus PCI board with one protocol module (xxx = module P/N).

P/N	*Description*
111	one-core PCI
112	two-core PCI
121	one-core cPCI
122	two-core cPCI



OmniBus® PCI/cPCI Architecture

OmniBus PCI/cPCI Configurations:

Channel Count per Module

Protocol	*Maximum Channels*
1553	2 (both dual redundant)
429	16 (various R/T combinations)
708	4 (2R/2T)
717	4R/4T (biphase/bipolar selectable)

Example Configurations for 2 Modules

- Up to 4 MIL-STD-1553 channels
- Up to 32 ARINC 429 channels
- 1 or 2 MIL-STD-1553 channels plus up to 16 ARINC 429 channels
- Up to 16 ARINC 429 channels plus 2 or 4 ARINC 708 channels
- Up to 24 ARINC 429 channels plus 8 ARINC 717 channels

Technical Specifications:

Interface

PCI*/cPCI (rev. 2.1 to 3.0 compatible)
- Universal Card (5V or 3.3V signaling)
- 32-bit; 33 MHz/66 MHz
- Plug and Play

**PCI requires slot with 5V/3.3V power*

Software

CoPilot® available (Windows® software)
BTIDriver™ API included (VB, C/C++, LabVIEW®)
OS Drivers: Windows included; call for availability of Linux, VxWorks®, or others
Embedded Linux optional; SDK available

Main Board

Processor: IBM PowerPC® (405GPr), 333 MHz
Memory: 16MB SDRAM, 4MB Flash
DIO: 2 inputs, 2 outputs (additional 3 inputs and 3 outputs per core)

Physical

PCI
- 6.9 x 4.2 in. (17.5 cm x 10.7 cm)
- 4.0 oz. (113 g), plus 1 oz. per module

cPCI
- 3U x 4HP (single slot, standard)
- 5.3 oz. (150 g), plus 1 oz. per module

Connector

60-pin Molex® LFH™ (per core)
Various cables and connectors available

Power

Contact Ballard Technology for details

Environmental

Temperature: 0–55° C (extended temperatures available)
Humidity: 0–95% (non-condensing)

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OmniBus Products:
- OmniBus PCI
- OmniBus cPCI
- OmniBus VME
- OmniBusBox (Ethernet/USB)

OmniBus Protocols:
- MIL-STD-1553
- ARINC 429
- ARINC 708
- ARINC 717

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