

Interfaces

- ARINC 429
- ARINC 717
- Discrete I/O
- IRIG
- PCI or PCI Express (PCIe)

Features

Hardware

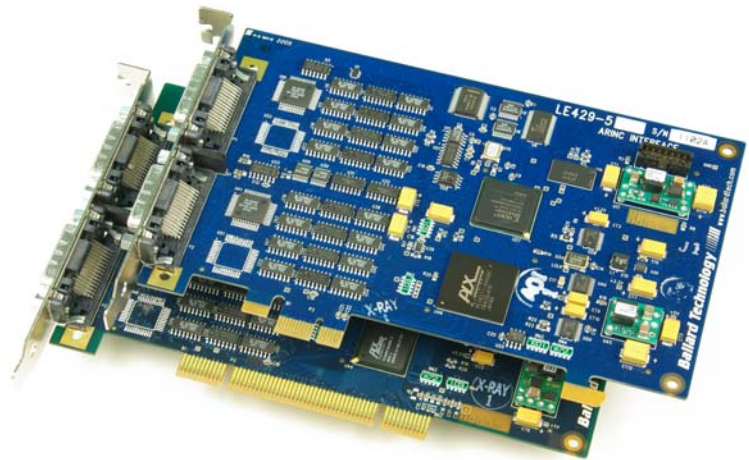
- 4 to 32 ARINC 429 channels
- ARINC 717 (4 channels optional)
- Multiple channel configurations
- 16 Avionics discrete I/O
- Large 32 MB on-board memory
- IRIG A/B PWM and AM synchronization
- 48 bit, 1 uSec hardware time-tagging
- RoHS compliant design

Software

- Universal BTIDriver™ API
- Translation DLL for use in place of other Ballard hardware
- CoPilot® analysis, simulation, & test software supported (optional)
- DMA monitor mode

Benefits

- Universal PCI or x1 PCIe for maximum flexibility
- Unified BTIDriver API compatible with most other Ballard products
- Plug and play installation
- Powerful protocol engines offload host application
- All power drawn from backplane (no auxiliary cabling required)



LP429-5 and LE429-5 Family of Products

Description

The LP429-5 (PCI) and LE429-5 (PCIe) are personal computer expansion cards for communicating with ARINC 429 and ARINC 717 systems. These feature-rich interfaces provide programmable dual redundant data buffers and deep built-in memory. Models offer 4 to 32 ARINC 429 channels, and up to 4 ARINC 717 channels, 16 input/output avionics level discretes, and IRIG time synchronization/generation. Avionics discretes can be used as general purpose I/O or linked in hardware to databus activity as triggers or syncs.

The Lx429-5 products support maximum data throughput on all avionics interfaces. Each channel is independently configurable for high or low speed operation. Messages can be captured by a sequential monitor for all channels, or via individual message monitoring. Notification of databus activity is handled through the on-board Event Log, which can be processed by polling or via an interrupt. To dramatically reduce the host CPU processing, the sequential monitor has a DMA mode that automatically moves records to host memory through PCI/PCIe bus mastering.

Hardware

The Lx429-5 products are half size compliant cards. Avionics transition cabling is available from the unit's IO connectors to standard cable connections. The universal PCI or PCI Express interfaces available make the Lx429-5 compatible with virtually all modern desktop, rackmount, and server computers.

Software

Users can develop their own applications using the included BTIDriver API. With only a few function calls, a program can operate the Lx429-5 and process messages to and from the avionics databuses. Functions include routines for transmitting, receiving, scheduling, recording, time-tagging, and data manipulation.

Ballard's easy-to-use CoPilot 429 graphical software (optional) incorporates these functions and provides added productivity through automatic engineering unit interpretation of 429 labels, virtual instrument displays, flexible monitoring and analysis tools and a powerful scripting engine.

www.ballardtech.com

LP429-5 and LE429-5 Specifications**Interfaces****ARINC 429 Receive Channels**

- Automatic bit rate detection
- Receive message filtering (Label/SDI)
- Current value and multi-buffered list messages
- Error detection and logging

ARINC 429 Transmit Channels

- Speed configurable per channel
- Periodic and asynchronous messages
- Automatic transmit schedule generation based on rep rates or min/max times
- Hardware controlled transmit schedule
- Gap and parity error injection
- Parametric bit rate and amplitude control

ARINC 717 (optional)

- Software selectable biphase/bipolar
- Hardware subframe and superframe support
- 64, 128, 256, 512, 1024, 4096, 8192 wps

Sequential Monitor

- Record all or selected card activity (ARINC 429, ARINC 717, and/or discrete I/O)
- 1 usec time stamp – self generated or from external source
- DMA operation

IRIG

- IRIG A or B, AM, PWM and PPS modes
- Generate or synchronize (AM synchronize only)
- Synchronize hardware time-tags

Avionics Discrete I/O

- 16 avionics level inputs/outputs
- Self monitoring
- Record state transitions and time-tags to sequential record (concurrent with avionics bus activity)

Features and Descriptions**Configuration**

- Universal PCI interface (LP) or x1 PCIe interface (LE)
- 16 avionics discrete I/O
- IRIG A/B input and output
- User LED indicators
- ARINC 429 (4 to 32 channels)
- ARINC 717 optional (2R/2T)

Environmentals

- -40 to +70 deg C operational
- -55 to +100 deg C storage

Mechanical

- Compliant half card (6.9 x 4.2 in.) (both PCI and PCIe)
- Weight: 4.0 oz

Power (typical)

- PCI: +5V = 280mA;
+12V = 25mA + 1.0mA * N
(where N = no of transmit channels)
- PCIe: +3.3V = 1030mA + 45mA * N
+12V = 165mA + 1.0mA * N
(all power to PCIe via backplane)

MTBF

- LP429-5 (PCI): 1,200,000+ hrs
- LE429-5 (PCIe): 1,200,000+ hrs

Connectors

- Avionics I/O: Molex™ LFH60

Accessories

- LFH60 to DB25 transition cables

Software

- Ballard BTIDriver™ Unified API
- CoPilot analysis, simulation, and test software (optional)
- Windows® and Linux® driver software
- Translation DLLs for prior Ballard products
- Contact factory for other operating systems.

Ordering Information

Note: Part numbers with “LP” indicates PCI, and “LE” indicates PCI Express.

Substitute as appropriate for “Lx” below.

ARINC 429 Board Part Numbers

Four (4) Channels
Lx429-5/2R2T

Eight (8) Channels
Lx429-5/4R4T
Lx429-5/8R0T
Lx429-5/0R8T

Sixteen (16) Channels
Lx429-5/8R8T
Lx429-5/16R0T
Lx429-5/12R4T
Lx429-5/4R12T
Lx429-5/0R16T

Thirty-two (32) Channels
Lx429-5/16R16T
Lx429-5/32R0T
Lx429-5/24R8T

ARINC 429/ARINC 717 Part Numbers

Lx429-5/0R0T/717
Lx429-5/6R6T/717
Lx429-5/14R14T/717

CoPilot Systems

All of the PCI/PCIe devices can be ordered with Ballard Technology’s easy-to-use CoPilot Software. To order, prefix the part numbers with “CP-“

Example:

CP-LE429-5/8R8T 16 Channel 429
PCI Express board
with CoPilot Software