LC429-3

ARINC 429 Interface for CompactPCI Computers

Features

- Up to eight ARINC channels
- For rugged, industrial applications
- Automatic speed detection on receive channels
- Error injection and detection
- Extensive monitoring capability
- CoPilot 429 and CoPilot 429 Plus graphical software available
- Easy plug-and-play CompactPCI interface
- Upgrade later as requirements change
- Optional ARINC 717 Flight Data Recorder interface

Description

The LC429-3 is a flexible, powerful ARINC 429 avionics databus interface board for the development and maintenance of commercial avionics. Installed in a CompactPCI® computer, users can transmit and receive messages on up to eight databuses. Several mixes of transmit and receive channels are available, and units can be upgraded at any time to meet changing requirements. The advanced features, ease-of-use, and upgrade paths make the LC429-3 an ideal solution for ARINC 429 hardware and system development, testing, and simulation.

The LC429-3 can be easily configured to automatically transmit and receive labels (ARINC 429 words) while saving a sequential record of the activity of interest. At any time, the host computer can write or read data, alter transmit labels, or read receive labels without interfering with the operation of the LC429-3. Transmissions are automatically maintained at the specified transmit intervals and may include concurrent aperiodic labels for file data transfer protocols. Received data are filtered by label/SDI and saved according to user specifications. The sequential record is a time-tagged history of databus activity that can be saved for later analysis. The user specifies which labels go in the sequential record and what other performance information is to be recorded.

Hardware

Once configured, the LC429-3 hardware can transmit, receive, and build the sequential record without requiring any processing by the host computer. The onboard, high-speed DSP, large memory, and custom gate arrays provide power and flexibility for

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the multitude of LC429-3 features and user options. An interface to the ARINC 717 Flight Data Recorder databus is available as an option.

Software

The easiest way to use the LC429-3 is with Ballard's CoPilot 429 graphical software (available with board or separately). Using the ARINC 429 database of equipment IDs and label definitions, users can quickly build transmit schedules and display data in meaningful engineering units. The powerful Sequential Monitor captures data and saves time-tagged messages to a host file for subsequent processing and analysis. In addition, CoPilot 429 Plus provides virtual instruments, strip charts, and moving map displays, as well as scripting routines and hardware and software playback.

The LC429-3 comes bundled with an Application Program Interface (API) which enables quick and easy development of solutions. The LC429-3 can be configured for simple applications with only a few API calls using default options. Although most users will accomplish their tasks with a small number of API functions, the comprehensive library includes a broad range of tools for specialized needs. Also provided are many example programs with source code.

Driver software is included for Windows® 95/98/NT/Me/2000/XP and LabVIEW®. Linux and VxWorks® drivers are available.

Ordering Information

LC429-3/xRyT: ARINC 429 Interface Card (where x is the number of receive channels and y is the number of transmit channels). The nine standard combinations are as follows:

Total Channels	xRyT Combinations
2	1R1T
4	4R0T 2R2T 0R4T
8	8R0T 6R2T 4R4T 2R6T 0R8T

Includes circuit board, API library, and manual.

Cz-LC43/xRyT: CoPilot 429 System (z is S for CoPilot standard and P for CoPilot Plus). Includes the LC429-3 (options specified as above) and CoPilot 429 software.

Technical Specifications: LC429-3

Number of Channels
- 2, 4, or 8 in nine standard configurations

Transmit Channels
- Speed
  - Low (12.5 Kbps)
  - High (100 Kbps)
- Software-established schedule
  - Periodic and/or file transfer
  - Continuous cycle or single word
  - Internal or external trigger
- Error generation
  - Parity, word gap (0 to 3 bit times)

Receive Channels
- Speed
  - Auto-detect or fixed
  - Low (12.5 Kbps)
  - High (100 Kbps)
- Filters
  - Words mapped by filter value
  - Up to 1024 label/SDIs per channel
- Error detection
  - Minimum gap, bit count, bit encoding, parity
- Time-tag, selectable range/resolution

Sequential Record
- Time-tagged recording of user selected messages
- Interval and Delta modes for sampling and record compression

DSP Core
- 80 MHz Digital Signal Processor
- Memory
  - 1 MB SRAM
  - 32 KB true dual-port RAM
  - User-configurable list buffers

Interrupts
- Software-configurable interrupt log list
- Generated on user-specified conditions
  - Schedule
  - Errors
  - Specific messages

CompactPCI Interface
- 32 bits at 33 MHz
- 3U x 4HP card (100 x 160 mm)
- Plug-and-play
- For 5 Volt cPCI backplane

Connector
- 25-pin male D-sub

Other signals
- External Trigger
- Sync Output
- Digital I/O (4)

Temperature grades
- commercial (std)
- extended temperature available

Software
- Easy-to-use API
- Included drivers: Windows 95/98/NT/Me/2000/XP and LabVIEW
- Available drivers: Linux and VxWorks
- Optional CoPilot 429 and CoPilot 429 Plus software

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