RAR-XMC

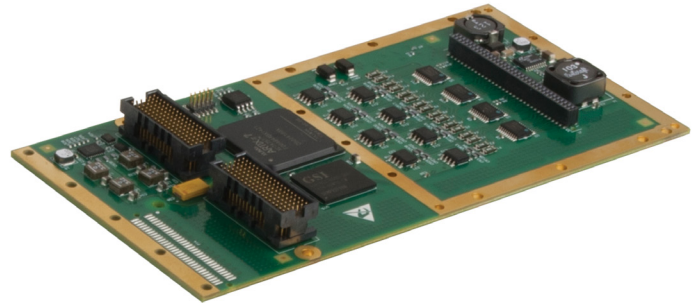## ARINC High Density XMC Interface

Features

- Up to 16 Rx and 16 Tx/Rx fully compliant ARINC 429 channels
- XMC.3 (PCIe 4 lane) host interface
- Front I/O, or P14 or P16 rear I/O
- Standard Industrial operating temperature of -40°C to +85°C at the XMC rail
- Anti-sulfuration resistors used throughout to enhance reliability in harsh environments
- 64-bit message time-tagging
- 1 microsecond timing resolution
- High performance, high density interface with large buffers
- Advanced, high-level software API included for Microsoft® Windows® 7, 8, 8.1, 10, Server 2012 R1/R2, Vista®, XP, VxWorks®, and Linux® Kernel Versions 2.6.x and 3.x
- Supports maximum data throughput on all channels simultaneously
- Independent, software-programmable bit rates for all channels
- Support for 2-wire ARINC 573, 575, and 717
- RoHS compliant to EU directive 2011-95-EC

Hardware

Available in a range of configurations to match your needs, RAR-XMC provides complete, integrated databus functionality for ARINC 429 protocols. The RAR-XMC supports maximum data throughput on all channels while providing onboard message scheduling, label filtering, multiple buffering options, receive message time-tagging and error detection, and IRIG-B Receiver (AM or DC/TTL) and Generator (DC/TTL). Configurations with support for ARINC 717 support are optional. Dual-Mode functionality supports either ARINC 717 HBP (Harvard Bi-Phase) or BPRZ (Bi-Polar Return to Zero) across a range of Bit Rate/ Sub-frame combinations.

Software

GE Intelligent Platforms' software tools and solutions significantly reduce the time required to integrate ARINC 429 and other avionics protocols into your application. Included with the RAR-XMC is our flexible, high-level, API (Application Programming Interface) support for Microsoft Windows 7, 8, 8.1, 10, Server 2012 R1/R2, Vista, XP, VxWorks and Linux Kernel Versions 2.6 and 3.x. This powerful API supports multiple cards, and is compatible with GE Intelligent Platforms x30 API support on PCI, PCI Express, PC/104-Plus, Express Card, AMC, Compact PCI and PMC platforms. Optional software includes LabVIEW support.

Architecture

RAR-XMC features include independent, software programmable data rates and parity, error detection and programmable transmit channel slew rate. 1 MBytes of on-board RAM provide large transmit and receive data buffers. All channels operate independently.

Data Handling

On-board firmware, large data buffers, and a high-level API are integrated to provide total flexibility in monitoring and generating ARINC bus traffic. Simultaneous Scheduled and Burst Mode (FIFO) messaging is supported on all ARINC 429 transmit channels. Each ARINC 429 receive channel provides simultaneous Dedicated and Buffered Mode storage, along with label/SDI filtering.

Three different methods are provided to buffer received data:

- Buffered Mode utilizes a separate circular buffer for each channel.
- Merged Mode combines all received data into a single, time-sequenced circular buffer.
- Dedicated Mode provides a snapshot of the very latest label values.

Specifications

ARINC 429 Receive Channels
- Number of channels: up to 16 (dedicated) plus 16 (programmable or dedicated)
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 200 KHz programmable
- Standard input levels: ± 6.5 to ±13 VDC (A to B)
- Filtering: label and/or SDI
- Parity: odd, even or none
- Error reporting: parity and invalid bit count

ARINC 429 Transmit Channels
- Number of channels: up to 16 (programmable or dedicated)
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 200 KHz programmable
- Programmable slew rate
- Output level: ±10 VDC typical (A to B)
- Parity: odd, even or none
- Error injection option: parity, gap, high or low bit count
- Output protection

Time Support
- IRIG-B Receiver (AM or DC/TTL) and Generator (DC-TTL)
- 64-bit one-microsecond resolution internal timer

Software
- API – Includes high-level API for Microsoft Windows 7, 8, 8.1, 10, Server 2012 R1/R2, Vista, XP, VxWorks and Linux (CEI-x30-SW Distribution)
- LabVIEW - Optional LabVIEW support

Physical
- XMC Mezzanine Card (74mm x 143.75 mm without bezel)
- Rear I/O: PMC P14 or XMC P16 interface
- Front I/O: 68 pin SCSI-3

Environmental
- Operation Temperature range -40°C to +85°C
- Relative humidity: 5 up to 95% (non-condensing)
- Storage Temperature range -55°C to +105°C
- Optional AR conformal coating

Optional Configurations
- A wide range of Rx/Tx or programmable combinations
- ARINC 717 Bi-Polar RZ and Harvard Bi-Phase
- For front-I/O configurations, four independent discrete I/O inputs and outputs, two for rear-I/O
- Conductive cooled on rear I/O only
- Mounted on PCI express carrier card (front I/O only)
- Transition cable for front I/O

Electrical
- VPWR (+5 or + 12)
- Typical operating current:
  – 4W@VPWR = 5V
  – 4.3W@VPWR = 12V

Ordering Information

RAR-XMC-22-C1	ARINC 429 XMC 4 lane card with 2RX, 2TX Channels, P16 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-22-C3	ARINC 429 XMC 4 lane card with 2RX, 2TX Channels, P14 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-22-4	ARINC 429 XMC 4 lane card with 2RX, 2TX Channels, Front I/O, IRIG, -40°C to +85°C operating temp, ROHS Compliant, Mating conn only
RAR-XMC-44-C1	ARINC 429 XMC 4 lane card with 4RX, 4TX Channels, P16 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-44-C3	ARINC 429 XMC 4 lane card with 4RX, 4TX Channels, P14 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-44-4	ARINC 429 XMC 4 lane card with 4RX, 4TX Channels, Front I/O, IRIG, -40°C to +85°C operating temp, ROHS Compliant, Mating conn only
RAR-XMC-88-C1	ARINC 429 XMC 4 lane card with 8RX, 8TX Channels, P16 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-88-C3	ARINC 429 XMC 4 lane card with 8RX, 8TX Channels, P14 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-88-4	ARINC 429 XMC 4 lane card with 8RX, 8TX Channels, Front I/O, IRIG, -40°C to +85°C operating temp, ROHS Compliant, Mating conn only
RAR-XMC-1515-C1	ARINC 429 XMC 4 lane card with 15RX, 15TX Channels, P16 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-1515-C3	ARINC 429 XMC 4 lane card with 15RX, 15TX Channels, P14 rear I/O, IRIG, Conductive cooled, AR conformal coated, Ruggedized, -40°C to +85°C operating temp, ROHS Compliant
RAR-XMC-1616-4	ARINC 429 XMC 4 lane card with 16RX, 16TX Channels, Front I/O, IRIG, -40°C to +85°C operating temp, ROHS Compliant, Mating conn only
RAR-XMC-16P16-4	ARINC 429 XMC 4 lane card with 16RX, 16 Programmable RX or TX channels, Front I/O, IRIG, -40°C to +85°C operating temp, ROHS Compliant, Mating conn only

Ordering Information

-J suffix	1 RX, 1TX ARINC 717 channels (13 RX, 13 TX max ARINC 429 channel)
-N suffix	4 in and 4 out on front I/O or 2 in and 2 out on P14 or P16 rear I/O
-K suffix	AR conformal coating
-CBL suffix	Includes front transition cable for front I/O only
-PCIE suffix	Mounted on a PCI express carrier card for front I/O only