



RAR15-XMC-IT

High Density MIL-STD-1553 and ARINC 429 XMC Embeddable Module

Abaco Systems' embeddable RAR15-XMC-IT is the latest generation of performance and flexibility for MIL-STD-1553A/B Notice II and ARINC 429 on a XMC.0 Mezzanine Card. The RAR15-XMC-IT includes advanced API (Application Programming Interface) software that reduces application development time.

Standard features include 8 Mbytes of RAM, 64-bit, 25 nanosecond message time tagging, extensive BC & RT link-list structures, error injection/detection, automatic/manual RT Status Bit and Mode Code responses, along with advanced BC functionality.

The RAR15-XMC-IT Bus Monitors provide unparalleled error detection and 100% monitoring of fully loaded buses.

Conductive cooling and conformal coating is standard on the RAR15-XMC-IT.

ARINC 429 Message 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 messages:

- Buffered Mode utilizes a separate circular buffer for each channel.
- Merged Mode combines all received messages into a single, time-sequenced circular buffer
- Dedicated Mode provides a snapshot of the latest message by label or label+SDI.

MIL-STD-1553 Multi-function Interfaces

RAR15-XMC-IT features include independent, software programmable data rates and parity, error detection error injection. All channels operate independently. MIL-STD-1553 Multi-function Interfaces RAR15-XMC-IT multi-function interfaces are easily configured to operate with simultaneous Bus Controller, up to 31 Remote Terminals and Bus Monitor functionality.

MIL-STD-1553 Dual-function Interfaces

Dual-function RAR15-XMC-IT interfaces have all the features of the multi-function versions, with either Bus Monitor and Bus Controller or Bus monitor and 31 Remote terminals.

Software

Abaco Systems provides our advanced 1553 and ARINC 429 API in source code along with support for Microsoft® Windows® 7, Vista, XP (32 and 64 bit), Linux®, Integrity and VxWorks®. Contact your local sales person for additional operating system support

FEATURES:

- 2 or 4 dual-redundant MIL-STD-1553A/B Notice II channels
- 10 ARINC 429 Receive channels
- 4 or 8 ARINC 429 Transmit channels
- XMC.3 (PCIe) host interface
- Standard Industrial operating temperature of -40°C to +85°C at the XMC rail
- Standard conductively cooled, conformal coated
- P16 or P14 Rear I/O
- Simultaneous Bus Controller, up to 31 Remote Terminals and Bus Monitor
- Multi-function or Dual-function (BC and BM or RT and BM) 1553 operation
- High-level API for Microsoft® Windows® 7, Vista, XP (32 and 64 bit), Linux®, Integrity, and VxWorks® included. Contact your local sales person for additional operating system support.
- Bi-directional Avionics level discretes individually configurable as 1553 output or input triggers.
- Flexible Hardware Remote Terminal Addressing
- IRIG receiver
- 64-bit, 25 nanosecond message time-tagging
- External differential time-tag reset and clock inputs
- Complete message programmability
- Flexible message status/interrupt generation
- Error injection/detection
- 1760 level compatible
- RoHS compliant to EU directive 2002-95-EC

RAR15-XMC-IT High Density MIL-STD-1553 and ARINC 429 XMC Embeddable Module

Specifications

Physical

- XMC Mezzanine Card (74mm x 143.75 mm without bezel)
- Rear I/O interface

Environmental

- Standard conduction cooled rear I/O operating temperature range: -40°C to +85°C (at the XMC rail)
- Relative humidity: Up to 95% (non-condensing)

Software Support

- API – High-level libraries with source code included for Microsoft Windows 7, Vista, XP (32 and 64 bit), Linux, Integrity and VxWorks. Contact your local sales person for supported software.

ARINC 429 Receive Channels

- 10 receive channels
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 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

ARINC 429 Transmit Channels

- 8 Transmit channels
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Automatic transmit slew rate adjustment
- Transmit Output level: ± 10 VDC (A to B)
- Parity: Odd, even or none
- Transmit error injection option: parity, gap, high or low bit count

Power (4 channels at 75% duty cycle into transformer coupled bus)

- VPWR (+5 or +12)
- Quiescent = 240 mA @12V
- Power 25% channel transmit rate = 500mA@12V
- Power 75% channel transmit rate = 900mA@12V

On-board Shared RAM

- 8 Mbyte

Timing

- Independent 64-bit, 25ns message time-tagging per channel
- Time can be programmed via the host or by a 1553 trigger
- All timers can be synchronized to 0 via the host
- Timers can independently use IRIG time
- IRIG-B single ended
- Selectable External time-tag clock input provided
- Selectable External time tag reset input provided

Descriptions

Multi-function Operational Modes

- Simultaneous BC, 31 RTs and BM

Dual-function Operational Modes

- BC and BM or 31 RTs and BM

Bus Controller

- Programmable control over major and minor frame content and timing – Inter-message gap times
- Programmable control over response time-out and late response
- Modify messages, data or setup on the fly
- Insert aperiodic messages into a running BC list
- Conditional message sequencing based on real-time message data or status
- Selectable interrupt generation and status messages on full range of system conditions or all detected errors
- Programmable error injection (on a per word basis) See Full error detection/injection table below
- Synchronize BC operation to external time source or trigger
- Multiple BC data buffers

Full error detection/injection

- Invalid word
- Late response
- Bit count error
- Early response
- High word
- No response

- Low word
- Incorrect RT address
- Inverted sync
- Parity error
- Manchester
- Invalid command

Remote Terminal

- Multiple RT simulation (up to 31 RTs)
- Programmable error injection (on a per word basis) See Full error detection/injection table previous
- Modify data, status words or setup while card is running
- Programmable message content
- Selectable interrupts
- RT Map Monitoring

Bus Monitor

- Capture 100% fully loaded bus traffic with:
 - Time-tagging
 - Error status
 - Word status
 - Message status
- Interrupts can be selected by RT / SA / WC
- Extensive filtering and triggering options
 - By individual RT/subaddress
 - Transmit, receive or broadcast mode codes
 - Internal or external triggering
 - Trigger output on user specified data
- Real-time bus playback with RT edit mode
- IRIG/GPS synchronization

Optional Configurations

- P14 or P16 rear I/O
- Dual or Multi-function
- Contact factory for custom requirements

Ordering information

RAR15-XMC-IT-1042DC1	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 4TX, ARINC 429 channels; 2 Ch Dual-Function 1553, P16 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, 12 Avionics discretes
RAR15-XMC-IT-1042MC1	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 4TX, ARINC 429 channels; 2 Ch Multi-Function 1553, P16 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, 12 Avionics discretes
RAR15-XMC-IT-1042DC3	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 4TX, ARINC 429 channels; 2 Ch Dual-Function 1553, P14 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, 6 Avionics discretes
RAR15-XMC-IT-1042MC3	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 4TX, ARINC 429 channels; 2 Ch Multi-Function 1553, P14 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, 6 Avionics discretes
RAR15-XMC-IT-1084DC1	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 8TX, ARINC 429 channels; 4 Ch Dual-Function 1553, P16 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, 6 Avionics discretes
RAR15-XMC-IT-1084MC1	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 8TX, ARINC 429 channels; 4 Ch Multi-Function 1553, P16 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, 6 Avionics discretes
RAR15-XMC-IT-1084DC3	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 8TX, ARINC 429 channels; 4 Ch Dual-Function 1553, P14 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, No Avionics discretes
RAR15-XMC-IT-1084MC3	MIL-STD-1553 and ARINC 429 XMC Interface card with 10RX, 8TX, ARINC 429 channels; 4 Ch Multi-Function 1553, P14 Rear I/O, -40°C to +85°C Operating temp, Fixed volt, XFMR Coupled, Conformal coated, Conductive cooled, No Avionics discretes

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