



# R15-MPCIE

## MIL-STD-1553 Mini PCI Express card

Abaco Systems' R15-MPCIE is the latest generation of performance and flexibility for MIL-STD-1553A/B Notice II on a Mini PCI Express® module. The rugged MIL-STD-1553 Mini PCI Express® card is ideal for harsh environments and is available in -40°C up to +85°C temperatures with one or two dual-redundant channels. The R15-MPCIE includes advanced API (Application Programming Interface) software that reduces application development time.

The R15-MPCIE is very small in size (30mm x 50.95mm x 4.7mm) and is lightweight for applications deployed in highly-constrained environments where platforms require SWaP solutions.

Standard features include IRIG-B signal Receiver/Generator with GPS synchronization, transformer coupling, 1-lane PCI Express support, 1 Mbyte of RAM per channel, 64-bit, 25 nanosecond message time-tagging, triggers, extensive BC and RT link-list structures, error injection/detection, avionics level discretes, external

RT addressing, automatic/manual RT Status Bit and Mode Code responses, along with advanced BC functionality. The R15-MPCIE Bus Monitors provide unparalleled error detection and 100% monitoring of fully loaded buses.

### Multi-function Interfaces

R15-MPCIE multi-function interfaces are easily configured to operate with simultaneous Bus Controller, 31 Remote Terminals and Bus Monitor functionality.

### Dual-function Interfaces

Dual-function R15-MPCIE interfaces have all the features and functionality of the multifunction versions, with either Bus Monitor and Bus Controller, or Bus Monitor and up to 31 Remote Terminals.

### Software

Abaco Systems provides our advanced 1553 API in source code, along with support for Windows® 7, 8, 8.1, 10, XP, Vista (32- and 64-bit), Server 2012 R1/R2, VxWorks®, Linux® and other operating systems.

### FEATURES:

- 1 or 2 dual-redundant MIL-STD-1553A/B Notice II channels
- Native 1-lane PCI Express interface (no bridge)
- Simultaneous Bus Controller, 31 Remote Terminals and Bus Monitor
- Multi-function and dual-function versions
- Standard with IRIG-B Receiver/Generator
- 64-bit, 25ns message time tagging (virtually unlimited time stamping)
- Two bi-directional avionics discretes
- Complete message programmability
- Flexible message status/interrupt generation
- I/O triggering and error injection/detection
- Rugged high retention connector optional
- Transition cabling to 1553 cable jacks optional
- Optional conformal coating
- Supportable throughout program lifetime with Product Lifetime Management (PLM) program

## RT15-MPCIE MIL-STD-1553 Mini PCI Express card

### Specifications

#### Physical

- Mini PCI Express interface card (30mm x 50.95 mm x 4.7mm)
- Weight: 14.4 grams

#### Environmental

- Standard operating temperature range: -40°C up to +85°C
- Relative humidity: 5 to 95% (non-condensing)
- Optional conformal coating configurations

#### Software support

- API - High-level libraries with source code included for Windows 7, 8, 8.1, 10, XP, Vista (32 and 64bit), Server 2012 R1/ R2, VxWorks 6.X and Linux
- IRIG-B Receiver (AM or DC/TTL) and Generator (DC/TTL)

#### Connections

- Transformer coupled 1553
- Two bidirectional avionics I/O discretes or user programmable as triggers
- One RS-485/422 transceiver for general I/O use and software selectable to be used and bi-directional differential discrete or triggering
- External RT addressing, modifiable in Flash
- Two open-drain 1553 activity-led outputs, can also be avionics outputs
- Transition cabling to 1553 cable jacks and I/O optional

#### Multi-function Operational Modes

- Simultaneous BC, 31 RTs and BM

#### Dual-function Operational Modes

- BM and BC or BM and 32RTs

#### Power (2 channels at 75% duty cycle)

- +3.3 VDC @ 1.05 A (typ.)
- 2.0 W power dissipated on board

#### On board Shared RAM

- 1 Mbyte (per dual-redundant channel)

#### Optional Configurations

- 1 or 2 dual-redundant channels
- 1 or 2 dual or multi-function channels
- Optional conformal coating
- Optional rugged high retention I/O connector
- Optional transition cabling

### Description

#### Bus Controller

- Programmable control over
  - Major and minor frame content and timing
  - inter-message gap times
  - Response time-out and late response
- Modify messages, data or setup while card is running
- Insert aperiodic messages into a running BC list
- "One-shot" mode for simplified BC operation
- 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
- Full error detection
  - Invalid word
  - Late response
  - Bit count error
  - Early response
  - High word
  - No response
  - Low word
  - Incorrect RT address
  - Inverted sync
  - Parity error
  - Manchester
- Extensive programmable error injection (on a per word basis)

#### Remote Terminal

- Multiple RT simulation (up to 31 RTs)
- Programmable error injection (on a per word basis)
- Modify data, status words or setup while card is running
- Programmable message content (linked message buffers)
- Selectable interrupts upon multiple conditions
- RT Map Monitoring

#### Bus Monitor

- Capture 100% fully loaded bus traffic with
  - Time-tagging
  - Word status
  - Error status
  - Message status
- Interrupts can be selected by RT / SA / WC
- Extensive filtering and triggering options
  - By individual RT/sub-address
  - 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



## R15-MPCIE MIL-STD-1553 Mini PCI Express card

### Ordering information

<b>R15-MPCIE1D</b>	MIL-STD-1553 DUAL-FUNCTION, MINI PCI EXPRESS INTERFACE, SINGLE DUAL-REDUNDANT CHANNEL, 32BIT FW, 2 AND 1 DIFFERENTIAL DISCRETES, XFMR COUPLED, FIXED VOLTAGE, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>R15-MPCIE1M</b>	MIL-STD-1553 MULTI-FUNCTION, MINI PCI EXPRESS INTERFACE, SINGLE DUAL-REDUNDANT CHANNEL, 32BIT FW, 2 AND 1 DIFFERENTIAL DISCRETES, XFMR COUPLED, FIXED VOLTAGE, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>R15-MPCIE2D</b>	MIL-STD-1553 DUAL-FUNCTION, MINI PCI EXPRESS INTERFACE, TWO DUAL-REDUNDANT CHANNEL, 32BIT FW, 2 AND 1 DIFFERENTIAL DISCRETES, XFMR COUPLED, FIXED VOLTAGE, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>R15-MPCIE2M</b>	MIL-STD-1553 MULTI-FUNCTION, MINI PCI EXPRESS INTERFACE, TWO DUAL-REDUNDANT CHANNEL, 32BIT FW, 2 AND 1 DIFFERENTIAL DISCRETES, XFMR COUPLED, FIXED VOLTAGE, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>RCONR15MPCIE</b>	10" CABLE WITH 50 POSITION SLIM STACK CONNECTOR TO A SCSI-50 FEMALE PC PANEL MOUNT CONNECTOR, ROHS COMPLIANT
<b>RCONR15MPCIER</b>	10" CABLE WITH RUGGED 37 POSITION CONNECTOR TO A SCSI-50 FEMALE PC PANEL MOUNT CONNECTOR, ROHS COMPLIANT
<b>RCONR15MPCIER-1</b>	10" CABLE WITH RUGGED 37 POSITION CONNECTOR TO A SCSI-50 FEMALE PC PANEL MOUNT CONNECTOR AND 9-14" CABLE SCSI-50 PIN (MALE) TO TWO CJ70 TWINAX, 3 LUG, 1553 CABLE JACK ENDS AND ONE DB37 (FEMALE), ROHS COMPLIANT
<b>RCONR15MPCIER-2</b>	10" CABLE WITH RUGGED 37 POSITION CONNECTOR TO A SCSI-50 FEMALE PC PANEL MOUNT CONNECTOR AND 9-14" CABLE SCSI-50 PIN (MALE) TO FOUR CJ70 TWINAX, 3 LUG, 1553 CABLE JACK ENDS AND ONE DB37 (FEMALE), ROHS COMPLIANT
<b>RCONR15MPCIE-1</b>	10" CABLE WITH 50 POSITION SLIM STACK CONNECTOR TO A 50-PIN SCSI FEMALE PC PANEL MOUNT CONNECTOR, AND 9-14" CABLE SCSI-50 PIN (MALE) TO TWO CJ70 TWINAX, 3 LUG, 1553 CABLE JACK ENDS AND ONE DB37 (FEMALE), ROHS COMPLIANT
<b>RCONR15MPCIE-2</b>	10" CABLE WITH 50 POSITION SLIM STACK CONNECTOR TO A 50-PIN SCSI FEMALE PC PANEL MOUNT CONNECTOR, AND 9-14" CABLE SCSI-50 PIN (MALE) TO FOUR CJ70 TWINAX, 3 LUG, 1553 CABLE JACK ENDS AND ONE DB37 (FEMALE), ROHS COMPLIANT
<b>RCONMPCIER</b>	RUGGED 37 POSITION CONNECTOR WITH 18" FLYING LEADS

### Optional Hardware

<b>K suffix</b>	Acrylic conformal coated
<b>R suffix</b>	Rugged high retention I/O connector
<b>L suffix</b>	Standard transition cable included
<b>V suffix</b>	Rugged high retention transition cable
<b>S suffix</b>	Acrylic conformal coated and standard transition cable
<b>X suffix</b>	Acrylic conformal coated and high retention transition cable
<b>1155-035-8</b>	PCI Express 1 Lane carrier card with 4 Mini PCI Express slots

For detailed information including systems options contact Abaco Systems

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