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Find the *Aitech Defense Systems S910* at our website: ***Click HERE***

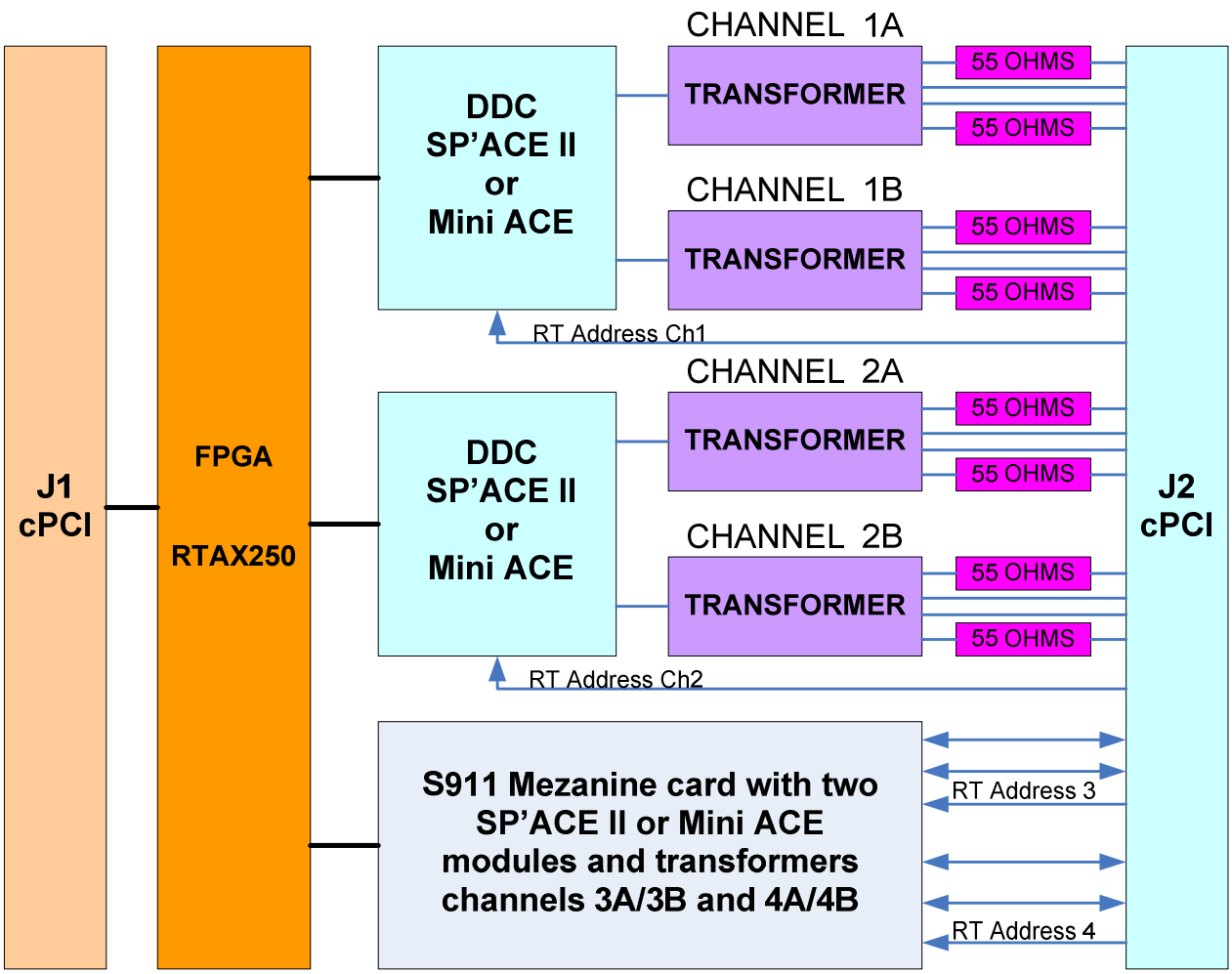
S910

3U cPCI Radiation Hardened MIL-STD-1553B



- **Designed for LEO, MEO, GEO and Option for Deep Space Environments**
- **Up to Four, Dual Redundant MIL-STD-1553B BC/RT/MT (STANAG 3838 compliant) Channels**
    - **Two 1553 Channels on the S910 Base Board, Two on the S911 Mezzanine**
- ***16k by 16 Shared RAM Buffer Memory per Channel (min) for Flight Unit***
- **Simultaneous RT / Monitor Mode and Automatic BC Frame Retries**
- **On-Board Interrupt Mask And Status Register and Programmable BC Gap Timing**
- **Programmable RT Address (Software or Hardwired)**
- **Integrated BIT (Built-In Test) Capability**
- **Full BC/RT/MT Driver Library for VxWorks**
- **3U CompactPCI base board (2 Channels) with S911 Mezzanine (4 Channels total)**
- **ANSI/VITA 30.1-2002 (conduction cooled) for both Engineering and Flight Units**
- **32-bit PCI 2.1 compliant cPCI interface at 33.333 MHz**
- **S910 nominal power consumption is less than 9.8 Watts (50% duty cycle)**
- **Grade-2 Components per NASA EEE-INST-002 Specifications**
    - **Other component selection & grade options are available**

Aitech Defense Systems Inc.
A member of the Aitech Rugged Group
19756 Prairie Street, Chatsworth, CA 91311
Tel: (888) AITECH-8 (888-248-3248) Fax: (818) 407-1502 e-mail: sales@rugged.com web: www.rugged.com



S910 Quad Dual-redundant 3U cPCI 1553 Interface Card Block Diagram

S910 Radiation Tolerant MIL-STD-1553B 3U cPCI

Aitech's S910 MIL-STD-1553B board – with its companion S911 mezzanine – features four BU61688P3 Mini-Advanced Communication Engine or 4 BU63825G3 SP'ACE hybrid by DDC in a single 3U cPCI slot. Each 1553 channel/terminal provides dual transceiver and encoder/decoder, complete MIL-STD-1553B protocol, minimum of 16k 16-bit words of shared RAM, and memory management logic for all three modes (BC/RT/MT). Background Mode Operation prevents inadvertent access to the card during power-on self-test. On-board Interrupt Mask and Interrupt Status Registers support flexible operation for both interrupt and polling applications.

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The onboard memory management scheme for RT mode provides an option for separation of broadcast data plus a circular buffer option for individual RT sub-addresses to off-load the demands on the PC host processor.

The S910's PCI interface provides bridging capabilities between the carrier board PCI bus and the local MIL-STD-1553B controller bus. The bridge supports a 32-bit wide PCI bus clocked at 33.333 MHz. The PCI Local Bus is compliant to Rev. 2.1 specifications.

The S910 provides onboard shared RAM memory with the cPCI bus of 16k x 16 for the Series 500 Flight unit and up to 64k x 16 for the Series 100 Engineering unit, per channel.

The S910 interface to the MIL-STD-1553B bus provides either transformer (long stub) or direct (short stub) coupling. Each S910 terminal/channel pair can be switched to use either transformer or direct coupling according to the factory installed configuration (transformer coupling by default). Both, transformer and direct-coupling configurations require the use of an isolation transformer located on the S910 and S911 mezzanine. For the (long stub) transformer-coupled configuration, a second external transformer (referred to as a bus-coupling transformer) is required, in accordance with MIL-STD-1553B.

In addition, the direct coupling configuration requires an isolation resistor to be placed in series with each leg of the transformer connecting to the MIL-STD-1553B bus. This design protects the bus against short circuit conditions in the transformers, stubs, or terminal components.

Mechanical Features

The S910 is a 3U CompactPCI carrier board with two dual redundant 1553B channels and hosts a specific and tailored dual channel, dual redundant 1553B S911 mezzanine module. The S910 is compliant with the conduction cooled 3U cPCI form factor per ANSI/VITA30.1-2002.

The mass of the Series 200 2S910-R (with Mini ACE) without the S911 mezzanine (two 1553 channels) is 0.7 lb (318g) and 0.85lb (386g) with the S911 mezzanine (four 1553 channels).

The mass of the Series 500 Flight Unit 5S910-R (with SP' ACE) without the S911 mezzanine (two 1553 channels) is 0.85 lb (386g) and 1.05 lb (476g) with the S911 mezzanine (four 1553 channels)

Dimensions

All versions are offered in a conduction-cooled form factor per ANSI/VITA 30.1-2002 3U standard of 100mm (H) x 160mm (D).

Note that the 2 channel S910 (without the S911 mezzanine) is compliant with the standard 0.8" (20.32mm) slot width. Due to the height of the DDC components and coupling transformers, the 4 Channel S910 (with S911 mezzanine) requires a slot width of 0.947" (24.05mm).

Radiation Performance

- Radiation Hard with a minimum unshielded Total Ionization Dose (TID) of greater than 100 krad(Si).
- Latch-up Immune with a high LET threshold of 63 MeV▪cm^2/mg (SP'ACE) and 117 MeV▪cm^2/mg for RTAX FPGA.
- Low SEU Rate:

2.56×10^{-5} errors/device-day for SP'ACE in GEO orbit, Adams 90% worst case environment

1.57×10^{-10} upset/word-day for RTAX EDAC-RAM 16 bit word, 100mil Al shield, GEO-MIN environment.

Power Requirements

The S910 draws its power from +5.0V and +3.3V (VIO inputs) from the standard cPCI interface. It then generates its own power on board (+1.5V).

S910 typical power consumption is less than 10.8 Watts at 50% duty cycle. The S910 power consumption is estimated as follows:

+3.3V (+-5%):	0.2A	0.66W
+5V (±5%)	**One 1553 port**	
	0.428A (idle)	2.14W
	0.533A (25% duty cycle)	2.67W
	0.638A (50% duty cycle)	3.19W
	0.848A (100% duty cycle)	4.24W
+5V (±5%)	**Two 1553 ports (50%)**	5.49W
+5V (±5%)	**Four 1553 ports (50%)**	10.09W

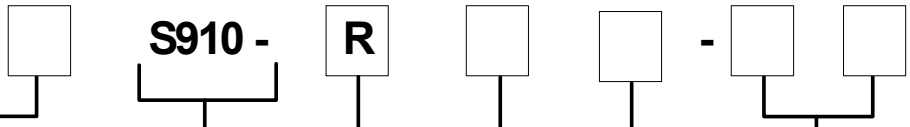
Environmental Features

Please refer to Aitech Ruggedization Datasheet:

http://www.rugged.com/home/rugged.html

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Ordering Information:



Ruggedization Level
1 = Development Unit, Series 100,
2 = Qual Unit, Series 200,
5 = Flight Unit, Series 500

Aitech Item Number

Cooling
R = Conduction

Components Screening Options
0 = Aitech Standard Component Screening
1 = Level-1 per MSFC-STD-3012, 1999 as tailored by CxP 72053
2 = Level-2 per GSFC 311-INST-001 Rev A (1996)

1553 Port Options
1 = Single Channel / Redundant 1553B port (without S911)
2 = Two Dual Channel / Redundant 1553B ports (without S911)
4 = Four Dual Channel / Redundant 1553B ports (with S911)

Configuration No.
-00 = Standard Product Configuration
-xx = Customer/Configuration Controlled Specific Variant

Available Configurations: 1S910-R02-00, 1S910-R04-00
2S910-R02-00, 2S910-R04-00
5S910-R12-00, 5S910-R14-00
5S910-R22-00, 5S910-R24-00

Note: Level-1 (MSFC) or Level-2 (GSFC) screened components are only available for the Series 500 Flight Units.

For more information about the S910 or any Aitech product, please contact Aitech Defense Systems sales department at (888) AITECH-8 (888-248-3248).

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