



A190 RediBuilt™

Integrated Rugged COTS Computer



- Rugged Computer for Military and other Harsh Environment Applications
- Fully Integrated and Tested – Ready to Use
- Front Panel I/O board with MIL-DTL-38999 Military Connectors
- CompactPCI or VPX Architecture
- Compact and Lightweight
- Internally Conduction-Cooled; External Convection and Radiation by Fins
- Fully Sealed Faraday Cage and Complete EMI/RFI Filtering
- Environmentally Sealed
- 18 - 36 Vdc Input Power (MIL-STD-704)
- Choice of Processor - Core™i7 or PowerPC™ 7448
- High Speed SDRAM
- SATA Flash SSD Mass Storage
- Powerful Graphics Capabilities
- Plentiful I/O
 - Gigabit Ethernet
 - Serial Ports
 - Discrete I/O
 - MIL-STD-1553B
 - USB
 - CANbus
 - ARINC-429
 - Video Outputs
 - Audio I/O
- Software Support
 - Windows™
 - VxWorks®
 - Linux®
 - INTEGRITY®

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Introducing RediBuilt™

Aitech's A190 RediBuilt™ system is a true rugged COTS computer. Assembled, tested, and qualified, RediBuilt provides an out-of-the-box solution to meet many of today's military and airborne computing requirements. Designed using proven Aitech technology, RediBuilt is a fully integrated product, requiring no NRE or any additional development.

RediBuilt includes a 2-slot 3U CompactPCI or VPX backplane and an Aitech proprietary front panel I/O board that together provide all system interconnections and filtering circuitry. The high efficiency modular power supply complies with MIL-STD-704, ensuring reliable operation over a wide range of input voltages.

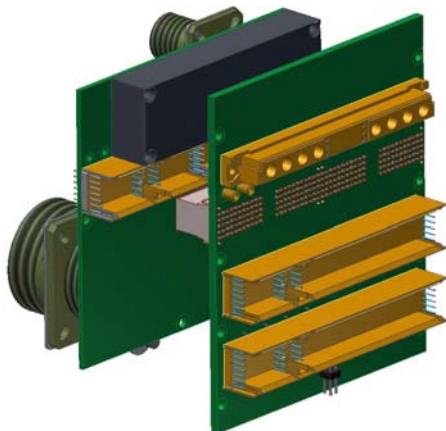
The RediBuilt family of products offers a variety of configuration options, making it easy to select a variant that meets your mission requirements without any need for customization or modification. The basic configurations may also be enhanced by adding standard Aitech COTS PMCs/XMCs, thus providing access to a wide selection of additional functions and capabilities.

High processing power. Plentiful I/O capabilities. Graphics processing. Audio/Video functionality. Low power consumption. Small form factor. No NRE. Have we missed anything?

Rugged and Reliable

RediBuilt is based on a rugged Aitech 3U enclosure constructed from aircraft grade anodized aluminum. Fasteners are stainless steel and often-used threads have self-locking stainless steel helicoils to withstand severe vibration and shock. All connectors are located on the enclosure front panel for easy access. Sidewalls are externally finned for natural convection and radiation cooling without sacrificing ruggedness. Designed with a built-in handle for convenient handling, the A190 is equipped with brackets and captive screws for convenient hard mounting.

Internal I/O routing from the backplane to the front panel connectors is by means of a solid-state I/O transition module. This design philosophy, which was pioneered by Aitech, provides higher reliability and improved signal integrity than harnessing, and is lower in cost.



Versatile

Aitech has been designing custom embedded real-time rugged computing systems for many years. In that time we have listened and learned. Our experience, together with the increasing functionality and decreasing size and power consumption of today's components, led us to develop the RediBuilt family of off-the-shelf computers that pack unprecedented processing power and functionality in a small, lightweight, low power package.

The A190 RediBuilt is currently available with two different microprocessor options (PowerPC 7448 or Core i7) and a broad range of functional configurations, to meet a wide variety of mission requirements. Refer to the system configurations section of this datasheet for complete information.

Ready to Use

The A190 RediBuilt is ready-to-use right out of the box, with features and functionality suitable for many defense and aerospace applications.

The system is fully integrated, with all drivers and BSP of your choice already installed. Just connect power and I/O harnessing, load your application, and you are ready to go.

Connectability

Aitech's RediBuilt computer systems feature MIL-DTL-38999 front panel power and I/O connectors for reliable operation in adverse environments. Each system is furnished with front panel mating connectors for convenient harness fabrication.



High Performance Power Supply

The integral modular power supply is MIL-STD-704A and D compliant, accepting input voltage over a wide range of 18 - 36 Vdc. The high efficiency of the power supply ensures reliable operation of the A190 RediBuilt, with minimum heat dissipated by the power supply itself.

Numerous protection mechanisms in the power supply protect the A190 RediBuilt from power line interference, reverse polarity, and overheating. Output overvoltage and short circuit protection prevent damage to the power supply in the event of malfunctions in the system.

Software

The A190 RediBuilt is available with several popular real time and other operating systems, depending on the processor used. Refer to the configuration tables on the following pages for complete information.

Environmental

- **Operating Temperature**

Minimum: -40 °C

Maximum operating temperature is dependent on system configuration and power dissipation. Refer to the Power consumption section of the configuration tables on the following pages.

- **Non-operating Temperature**

-50 to +100 °C

- **Humidity**

5%-95% relative humidity with condensation

- **Vibration**

Sine	Cycling of 5 g (max) at 5 to 500 Hz
Random	10 g _{rms} at 20 to 2000 Hz
Transportation	Loose cargo vibration

- **Shock**

Single half-sine shocks: 40 g_{peak}/11 ms

- **Transit Drop (packaged)**

4 ft. drop on concrete

- **Bench Handling**

4-in unpackaged drop at a 45° angle to simulate conditions during servicing

- **Salt Fog** 5% salt spray

- **Fine Dust** Wind and fine dust particles

General Specifications

- **Dimensions**

Maximum external dimensions with fins and handle:
181 x 261 x 132 mm (W x D x H)

- **Weight**

Less than 6.0 kg
(depending on configuration)



	CompactPCI Configurations with Core i7 Processor					
	11 Basic	12 Video/ Graphics	13 I/O	14 Mixed	15 Dual Processor ⁽¹⁾	
Card Complement	C802	C802 + M590 ⁽²⁾	C802 + M706 ⁽²⁾	C802 + M706 + M590 ⁽²⁾	C802 x 2	
Bus Architecture	cPCI	cPCI	cPCI	cPCI	cPCI	
Gigabit Ethernet	2	2	2	2	4	
High Speed/Std Serial ⁽³⁾	0/2	0/2	0/8	0/4	0/4	
Discrete I/O Channels	8	8	18	8	16	
USB Ports	2	2	2	2	4	
MIL-STD-1553B Channels	-	-	2	-	-	
CANbus Ports	-	-	2	2	-	
ARINC-429 Rx Ports	-	-	4	-	-	
ARINC-429 Tx Ports	-	-	2	-	-	
Stereo Audio (In or Out)	1	1	1	1	2	
DVI Output	1	3	1	3	2	
RGBHV Output	1	3	1	3	2	
Analog TV Output	-	3	-	3	-	
RGBHV Input	-	1	-	1	-	
Composite Video Input	-	2	-	2	-	
RS-343 Input	-	1	-	1	-	
RAM	4 GB	4 GB	4 GB	4 GB	8 GB	
Flash Disk	16 GB	16 GB	16 GB	16 GB	32 GB	
Operating Systems	Windows, Linux, VxWorks					
Power Consumption (typical) @ max ambient temp ⁽⁴⁾	S	C802S with Core i7 @ 2.53 GHz				
		53 W @ 62 °C	72.5 W @ 53 °C	59.5 W @ 59 °C	79 W @ 51 °C	N/A
	L	C802L with Core i7 @ 2.0 GHz				
		41 W @ 67 °C	60 W @ 59 °C	47 W @ 64 °C	66.5 W @ 56 °C	81 W @ 50 °C
	U	C802U with Core i7 @ 1.33 GHz				
		31 W @ 71 °C	51 W @ 63 °C	37.5 W @ 68 °C	57 W @ 60 °C	62 W @ 58 °C

(1) Resources are total for the system. Half of each resource is associated with each of the two processors.

(2) Mounted on a CM900 PMC carrier.

(3) Software configurable as RS-232, RS-422, or RS-485

(4) Power consumption values are for Standard (S), Low Power (L), and Ultra Low Power (U) versions of the A190 (see ordering information)



	CompactPCI Configurations with PowerPC Processor				
	21 Basic	22 Video/ Graphics	23 I/O	24 Mixed	25 Dual Processor ⁽¹⁾
Card Complement	C901	C901 + M590 ⁽²⁾	C901 + M706 ⁽²⁾	C901 + M706 ⁽²⁾ + M590 ⁽²⁾	C901 x 2
Bus Architecture	cPCI	cPCI	cPCI	cPCI	cPCI
Gigabit Ethernet	2	2	2	2	4
High Speed/Std Serial ⁽³⁾	2/0	2/0	2/6	2/2	4/0
Discrete I/O Channels	8	8	18	8	16
USB Ports	2	2	2	2	4
MIL-STD-1553B Channels	-	-	2	-	-
CANbus Ports	-	-	2	2	-
ARINC-429 Rx Ports	-	-	4	-	-
ARINC-429 Tx Ports	-	-	2	-	-
DVI Output	-	2	-	2	-
RGBHV Output	-	2	-	2	-
Analog TV Output	-	3	-	3	-
RGBHV Input	-	1	-	1	-
Composite Video Input	-	2	-	2	-
RS-343 Input	-	1	-	1	-
RAM	1 GB	1 GB	1 GB	1 GB	2 GB
Operating Systems	VxWorks, INTEGRITY				
Power Consumption (typical) @ max ambient temp ⁽⁴⁾	S	C901 with MPC7448 @ 1.4 GHz			
		31 W @ 71 °C	51 W @ 63 °C	37.5 W @ 68 °C	57 W @ 60 °C
	L	C901L with MPC7448 @ 1.0 GHz			
		23 W @ 75 °C	42.5 W @ 66 °C	29.5 W @ 72 °C	49 W @ 63 °C
	U	C901U with MPC7448 @ 600 MHz			
		17 W @ 77 °C	36.5 W @ 69 °C	23.5 W @ 74 °C	43 W @ 66 °C

(1) Resources are total for the system. Half of each resource is associated with each of the two processors.

(2) Mounted on a CM900 PMC carrier.

(3) Software configurable as RS-232, RS-422, or RS-485

(4) Power consumption values are for Standard (S), Low Power (L), and Ultra Low Power (U) versions of the A190 (see ordering information)



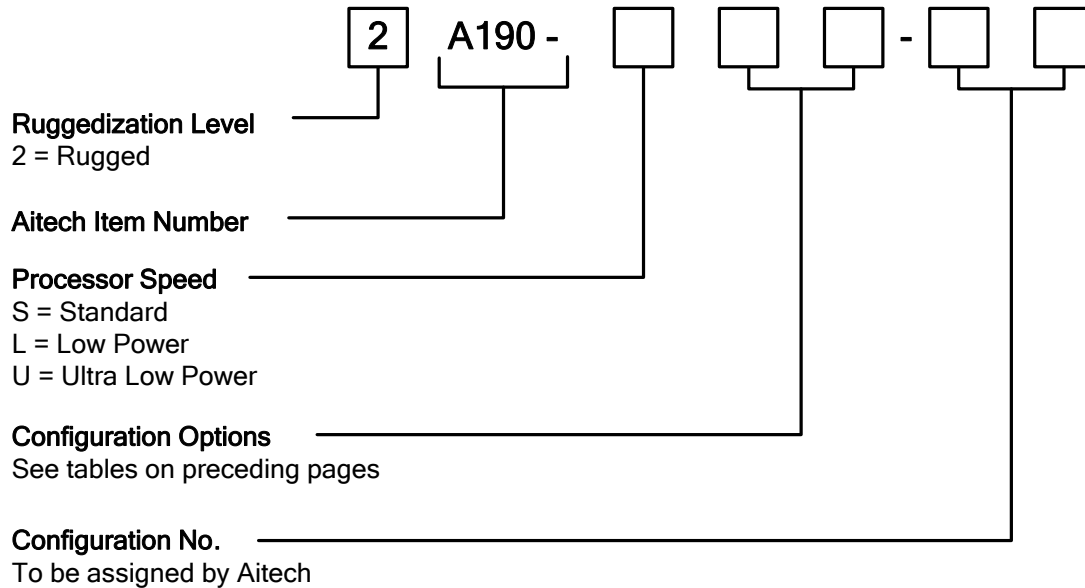
	VPX Configurations with Core i7 Processor					
	31 Basic	32 Video/ Graphics	33 I/O	34 Mixed	35 Dual Processor ⁽¹⁾	
Card Complement	C870	C870 + M595 ⁽²⁾	C870 + M706 ⁽²⁾	C870 + M706 + M595 ⁽²⁾	C870 x 2	
Bus Architecture	PCIe x8	PCIe x8	PCIe x8	PCIe x8	PCIe x8	
Gigabit Ethernet	2	2	2	2	4	
High Speed/Std Serial ⁽³⁾	0/2	0/2	0/8	0/5	0/4	
Discrete I/O Channels	8	8	18	12	16	
USB Ports	3	3	3	2	6	
MIL-STD-1553B Channels	-	-	2	2	-	
CANbus Ports	-	-	2	2	-	
ARINC-429 Rx Ports	-	-	4	-	-	
ARINC-429 Tx Ports	-	-	2	-	-	
Stereo Audio (In or Out)	1	1	1	1	2	
DVI Output	1	4	1	4	2	
RGBHV Output	1	3	1	3	2	
Analog TV Output	-	1	-	1	-	
STANG 3350 Class A/B/C	-	2	-	2	-	
SMPTE 292M	-	1	-	1	-	
RAM	4 GB	4 GB	4 GB	4 GB	8 GB	
Flash Disk	16 GB	16 GB	16 GB	16 GB	32 GB	
Operating Systems	Windows, Linux, VxWorks					
Power Consumption (typical) @ max ambient temp ⁽⁴⁾	S	C870S with Core i7 @ 2.53 GHz				
		53 W @ 62 °C	75 W @ 52 °C	63 W @ 58 °C	81.5 W @ 50 °C	N/A
	L	C870L with Core i7 @ 2.0 GHz				
		41 W @ 67 °C	63 W @ 58 °C	50.5 W @ 63 °C	69 W @ 55 °C	81 W @ 50 °C
	U	C870U with Core i7 @ 1.33 GHz				
		31 W @ 71 °C	53 W @ 65 °C	41 W @ 67 °C	60 W @ 59 °C	62 W @ 58 °C

- (1) Resources are total for the system. Half of each resource is associated with each of the two processors.
- (2) Mounted on a CM870 PMC/XMC carrier.
- (3) Software configurable as RS-232, RS-422, or RS-485
- (4) Power consumption values are for Standard (S), Low Power (L), and Ultra Low Power (U) versions of the A190 (see ordering information)



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Ordering Information for the A190



Example: 2A190-U24-00

For more information about Aitech's RediBuilt™ computer systems or any Aitech product, please contact Aitech Defense Systems' sales department at (888) Aitech-8 (248-3248).

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