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Find the *Aitech Defense Systems A190* at our website: ***Click HERE***

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
- Core™ i7 Processor
- VPX Architecture
- Compact and Lightweight
- Internally Conduction-Cooled
- Two External Cooling Configurations
  - Convection and Radiation Cooling by Fins
  - Cold Plate-Cooling
- Fully Sealed Faraday Cage and Complete EMI/RFI Filtering
- Environmentally Sealed
- 18 – 36 Vdc Input Power
- High Speed SDRAM
- SATA Flash SSD Mass Storage
- Video/Graphics Capabilities
- Plentiful I/O
  - Gigabit Ethernet
  - Serial Ports
  - Discrete I/O
  - MIL-STD-1553B
  - USB
  - ARINC-429
  - Video Outputs
  - Audio I/O
- Software Support
  - Windows™
  - Linux®
  - VxWorks®

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A member of the Aitech Rugged Group
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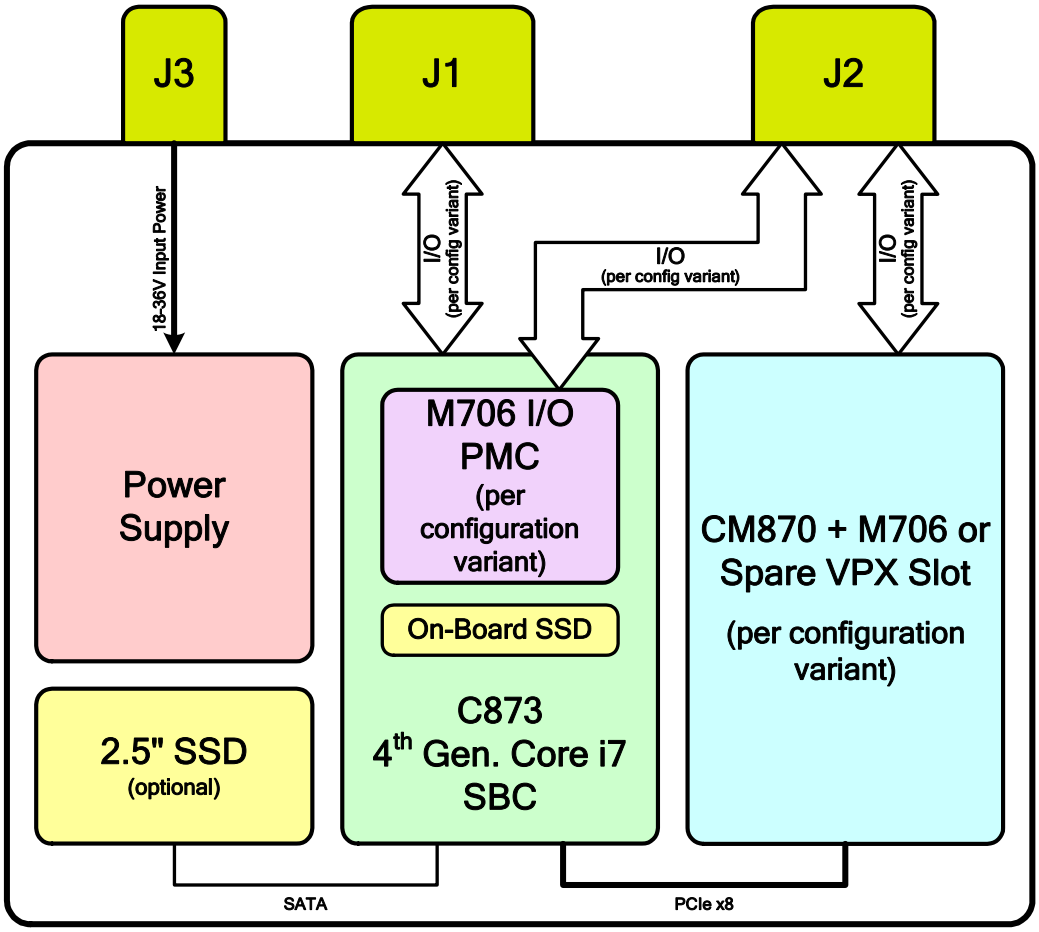
Introducing RediBuilt™

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

The A190 includes a 2-slot 3U 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 ensures reliable operation over a wide range of input voltages.

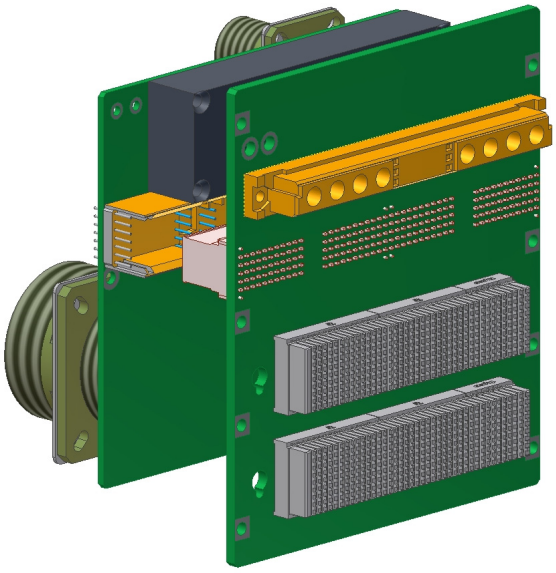
The RediBuilt family of products offers a variety of configuration options, making it easy to select a variant that meets your mission requirements without any need for customization or modification. The basic configurations may also be enhanced by adding standard Aitech COTS PMCs/XMCs, providing access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

The A190 is based on a rugged Aitech 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.



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

Designed with a built-in handle for convenient handling, the A190 is equipped with brackets and captive screws for convenient hard mounting.

Cooling Configurations

The A190 is available in both natural convection air-cooled and cold plate conduction-cooled configurations. Both configurations are internally conduction-cooled, with the heat generated by the boards being conducted through the enclosure sidewalls for dissipation to the surrounding air or to the cold plate.

Sidewalls of the air-cooled configuration are externally finned for natural convection and radiation cooling without sacrificing ruggedness.

The cold plate-cooled A190 includes sidewalls that are specifically designed to efficiently conduct heat to the enclosure base. The high quality surface finish of the thermal surfaces at the bottom of the enclosure provides excellent thermal contact with the cooling base plate to ensure maximum heat transfer and cooling. The cold plate cooling is supplemented with convective cooling by means of the sidewall fins.

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 an advanced Intel Core i7 processor and a number 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.

Mass Storage

The A190 offers the following internal Flash storage options:

- Up to 256 GB from C873 SBC on-board SSD
- Up to 512 GB from standalone 2.5" SSD, mounted inside the A190 enclosure, connected to the C873 via a SATA II interface

A190 SSDs use SLC (Single-Level Cell) or MLC (Multi-Level Cell) memory as specified in *Ordering Information* below.

High Performance Power Supply

The integral modular power supply accepts input voltage over the 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 the Windows 7, Linux, or VxWorks operating systems. Other operating systems may be available by special order – contact your Aitech representative for details.

Environmental

- **Operating Temperature**
  Minimum: -40 °C
  Maximum operating temperature is dependent on system configuration and power dissipation
- **Non-operating Temperature**
  -50 to +100 °C
- **Humidity**
  5% to 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:
  Convection-Cooled Enclosure
  181 x 261 x 132 mm (W x D x H)
  7.13 x 10.26 x 5.20 in (W x D x H)
  Cold Plate-Cooled Enclosure
  156 x 261 x 126 mm (W x D x H)
  6.12 x 10.26 x 5.20 in (W x D x H)
- **Weight**
  Less than 6.0 kg (13.5 lbs)
  (depending on configuration)

A190 Configuration Variants

	31 Basic	**32 I/O**	**33 I/O**
Card Set	**C873**	**C873 + M706**	**C873 + M706 (1)**
Gigabit Ethernet	2	2	2
Serial Ports (2)	2	10	5
Discrete I/O Channels	8	6 I/O + 2 In	14 I/O + 2 In + 2 Out
USB Ports	3	2	3
MIL-STD-1553B Channels	-	-	2
CANbus Ports	-	-	reserved
ARINC-429 Rx Ports	-	-	3
ARINC-429 Tx Ports	-	-	1
Stereo Audio (In or Out)	1	-	1
DVI Output	1	1	1
RGBHV Output	1	1	1
Spare VPX Slot	Yes	Yes	No
Operating System	Windows 7, Linux, or VxWorks		
Power Consumption (typical) @ max ambient temp	C873S with Core i7 @ 2.4 GHz		
	60 W @ 62 °C	65 W @ 58 °C	65 W @ 58 °C

(1) Mounted on a CM870 PMC/XMC carrier.
(2) Software configurable as RS-232, RS-422, or RS-485

A190 RediBuilt™
Integrated Rugged COTS Computer

Accessories

Available A190 accessories include:

- Set of front panel mating connectors for convenient harness fabrication
- Breakout cables with industry standard I/O connectors
- Power cable
- AC input external power supply



Ordering Information

2	A190 -								0			0	-	

Ruggedization
2 = Rugged

Processor Speed
S = Standard

Cooling Configuration
1 = Convection-Cooled
2 = Cold Plate-Cooled

SDRAM
B = 8 GB
C = 16 GB

C873 On-Board SSD
0 = None *
1 = 16 GB SLC **
2 = 32 GB SLC **
3 = 64 GB SLC
4 = 128 GB SLC
5 = 256 GB SLC
E = 256 GB SLC + 32 GB SLC
* With 2.5" SSD only
** VxWorks only

Configuration Variant
See table above

Reserved

Operating System
0 = None
1 = Windows 7 32-bit
2 = Windows 7 64-bit
3 = Linux
4 = VxWorks

2.5" SSD
0 = None
3 = 64 GB SLC
4 = 128 GB SLC
5 = 256 GB SLC
C = 64 GB MLC *
D = 128 GB MLC *
E = 256 GB MLC *
F = 512 GB MLC *
* Not recommended for OS installation

Reserved

Configuration No.
To be assigned by Aitech

Example: 2A190-1SC43302F0-00

Available Accessories

MCS191-1-00 Set of Front Panel Mating Connectors

TC190-J1-xx * J1 I/O Breakout Cable

TC190-J2-xx * J2 I/O Breakout Cable

TC190-J3-00 J3 Power Cable

PS28-150-00 28 Vdc/150 W External Power Supply (100 - 240 Vac input)

* xx is the configuration variant of the system

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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