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Find the *Aitech Defense Systems A174* at our website: ***Click HERE***

A174

I/O Expansion Subsystem

Aitech

Embedded Computing *without* Compromise



Aitech's A174 I/O Expansion Subsystem is a small add-on unit specially designed to expand I/O capabilities of existing avionics systems.

With its high variety of I/O interfaces, small form factor, and low power dissipation, the A174 can be used to expand the I/O of any avionics computer with a standard Ethernet interface.

The A174 can be connected to a Multiple-Client – Multiple-Server system architecture, with any number of A174 (servers) and avionics computers (clients) on a single Ethernet network. Each client can access and control I/O resources on any of the A174 units on the network, and each A174 can be accessed simultaneously by any of the clients on the network. Each client can have any processor architecture (PowerPC, ARM, Intel), and can be running any OS.

All I/O interfaces are implemented in the unit's FPGA, with only the physical layers being dedicated devices. This minimizes power consumption, and enables convenient customization of the unit to meet specific applications.

To ensure highest reliability, the A175 includes extensive Built-in Test (BIT) capabilities

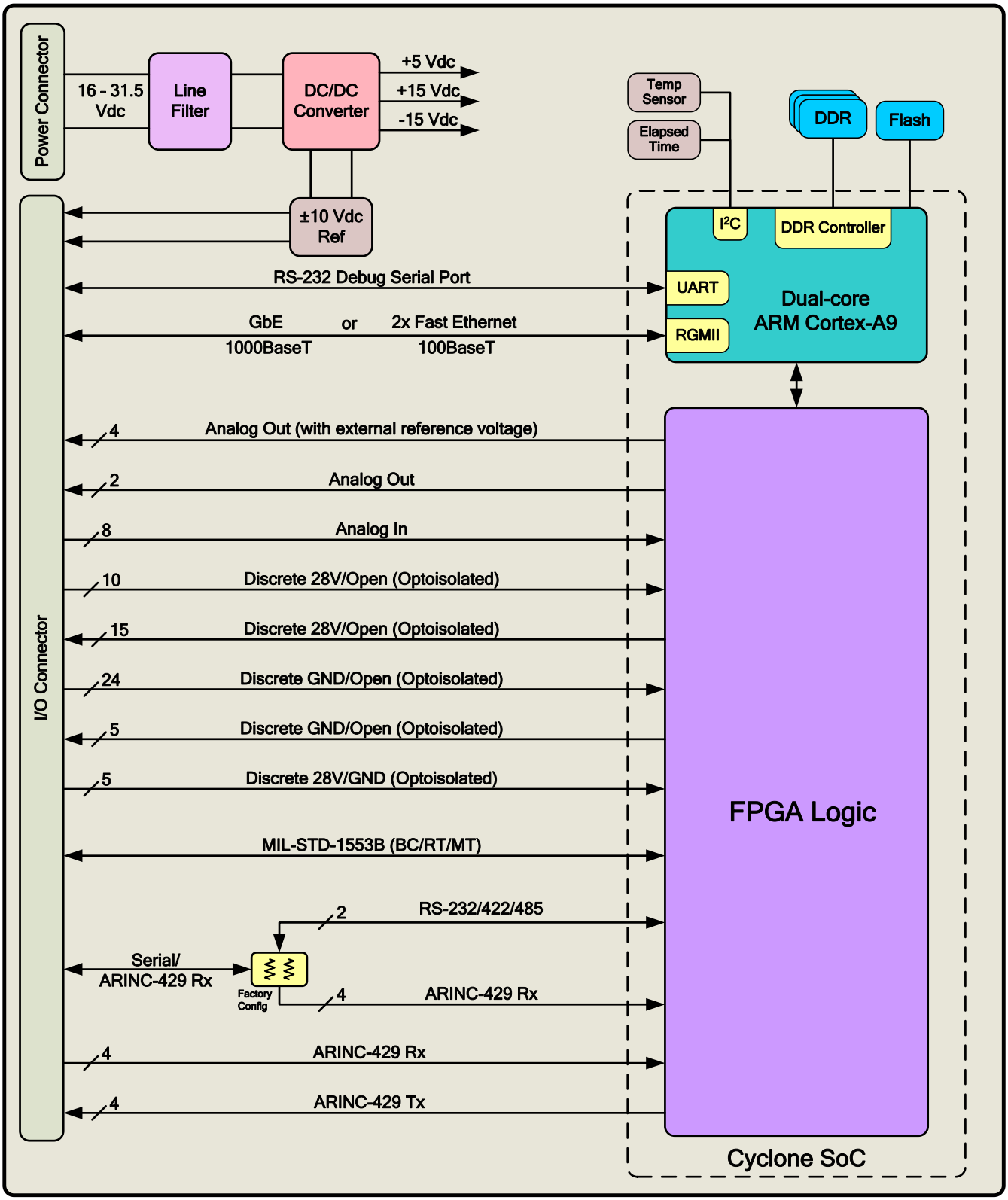
- **Intel Cyclone® V SoC FPGA with dual core ARM® Cortex®-A9 Hard Processor System**
- **Avionics Computer Interface Options**
  - **Gigabit Ethernet**
  - **Two Fast Ethernet**
- **Small Form Factor**
- **Low Power Consumption**
- **EMI/RFI filtering of I/O signals**
- **Environmentally Sealed**
- **Natural Convection Cooled**
- **Powered from a standard 28V input (16-32 Vdc)**
- **Large Variety of I/O Interfaces**
  - **MIL-STD-1553B (BC/RT/MT)**
  - **ARINC-429 In/Out**
  - **Analog In/Out**
  - **Isolated Discretes In/Out**
  - **RS-232/422/485 Serial Ports**
  - **Reference Voltages**
- **Onboard Temperature Sensor**
- **Elapsed Time Recorder**



A174

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System Architecture

Interface to Avionics Computer	1x Gb Ethernet or 2x Fast Ethernet
SoC	Intel Cyclone V System-on-Chip (SoC) featuring: • Dual ARM® Cortex® A9 MPCore processors • 1 GB DDR3L memory (32-bit) • 128 MB quad serial peripheral interface (SPI) Flash memory • Gigabit Ethernet Port • Debug serial port • FPGA fabric
Memory	1 GB DDR3L
System Resources	• Temperature Sensors • Elapsed Time Recorder

I/O

	I/O Variant	
	00	**01**
Analog Inputs 12-bit, Single ended	8	
Analog Outputs 16-bit, Differential	6 *	
Isolated Discrete Inputs, GND/Open	24	
Isolated Discrete Inputs, 28V/Open	10	
Isolated Discrete Inputs, 28V/GND	5	
Isolated Discrete Outputs, GND/Open	5	
Isolated Discrete Outputs, 28V/Open	15	
MIL-STD-1553B Dual Redundant – BC, RC, MT	1	
Reference voltage Outputs +10 Vdc & -10 Vdc	1	
ARINC-429 Tx	4	
ARINC-429 Rx	4	8
Serial Ports RS-232/422/485	2	0
Serial Port (debug) RS-232	1	

* 4 outputs with external or internal reference voltage

Software

- Linux Embedded OS pre-installed
- Drivers, server application, and test sample applications pre-installed
- Linux based client example application available

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Mechanical

Dimensions	180 x 180 x 52 mm [7.1 x 7.1 x 2.1"]
Weight	< 1 kg [2.2 lbs.]

Power

Input Power	• Wide input voltage range: 16 – 32 Vdc steady state operation • 50 ms holdup time • Input reverse polarity protection • EMI/RFI input filter • On-board supplies isolated from external supply
Power Consumption	• 13 W typical • 18 W maximum

Operating Temp.	**Min.**	-40 °C
	Max.	+71 °C
Non-Operating Temp.		-55 to +105 °C
Vibration		V2 per VITA 47
Operating Shock		OS2 per VITA 47
Altitude		-1,500 to +60,000 ft. (1)
Relative Humidity		0 – 100%
Ingress Protection		IP67 (2)
Rain		MIL-STD-810F, Method 506.4, Procedure III
Dust		MIL-STD-810F, Method 510.4, Procedure I & II
Salt Fog		MIL-STD-810F, Method 509.4
Bench Handling		MIL-STD-810F, Method 516.5, Procedure VI
Fungus		Fungus Resistant
EMI/RFI		MIL-STD-461

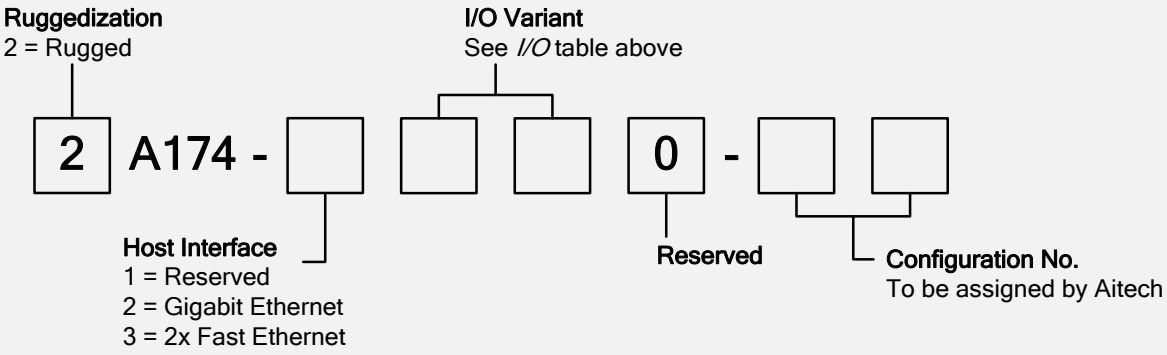
Notes: (1) Depending on temperature and system power dissipation
(2) With appropriate connections to system I/O and power connectors

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Ordering Information



Example: 2A174-2100-00

Optional Accessories

MCS174-1-00	Set of Front Panel Mating Connectors
TCA175-SK (Starter Kit)	• External Power Supply • J3 Power Cable • J1, J2 I/O Cables

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the A174 and additional software support.



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