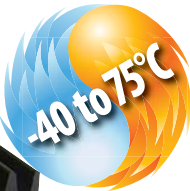


I/O Server Industrial PC

Fanless Design

Conduction-Cooled

Integrated I/O



A Compact, Rugged
Industrial PC with
Plug-in I/O Modules

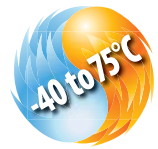


Acromag I/O Server



IOS-7000 Series The Industrial PC with Plug-in I/O Modules

*Introducing:
The only rugged
Industrial PC with
truly integrated
plug-in I/O —
Acromag's I/O Server*



An industrial PC made for I/O

Acromag's Industrial I/O Server is a rugged industrial PC with truly integrated support for user I/O. A built-in carrier card interfaces up to four plug-in I/O modules to the CPU. The embedded computer supports video, audio, Ethernet, serial, and USB devices. A wide variety of I/O modules provides mix and match flexibility, high channel density, and a clean cable interface.

- Intel® Atom® N270 1.6GHz CPU or AMD® Geode® LX800 500MHz CPU

Rugged Design

The I/O Server's fanless design employs advanced thermal technology and high-performance components to accommodate a wide operating temperature range -40 to 75°C. Conduction cooling plates and thermal pads wick internal heat away to the aluminum enclosure where external cooling fins dissipate the heat.

Units are shock/vibration resistant and sealed to IP40 standards to ensure long term reliability in a variety of applications.

Dozens of plug-in I/O modules custom-made for the I/O Server

This combination of industrial PC with fully integrated I/O offers a compact, yet powerful monitoring and control solution. Unlike many box PC systems that offer few I/O interface options or limit you to a single I/O card, Acromag's I/O Server integrates four I/O modules inside the chassis. A tight footprint is maintained, four plug-in I/O modules of any mix are supported, and high density connectors provide clean signal wiring.

Ideal for manufacturing, defense, research and mobile applications

The compact, shock/vibration resistant design is well-suited to harsh factory environments and outdoor installations.

- Machine control, factory automation
- Military and homeland security systems
- Transportation and mobile servers
- Outdoor signage and display systems
- Test & measurement, data acquisition
- Scientific research and simulation

24 HR
STOCK ITEM

7 YEAR
WARRANTY

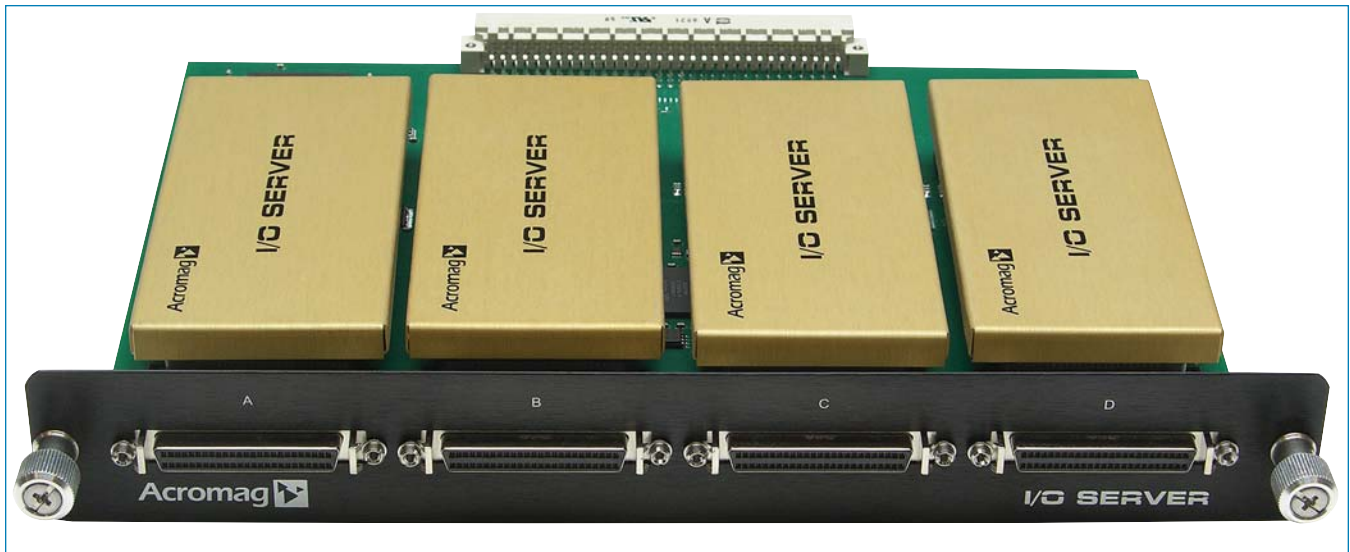
ISO9001
AS9100



Plug-in I/O Modules



IOS Modules Compact Mezzanine I/O Modules



Dependable I/O Operation

With more than 50 years of industrial I/O design experience, Acromag stands alone in the high-performance embedded computing market. Developing VMEbus I/O boards since 1984, we combine our process control expertise with extensive experience in embedded systems. This background gives us unrivaled insight to many unique concerns when interfacing computer systems to various sensors and controllers in many applications.

The I/O Server's plug-in I/O modules reflect Acromag's experience with a truly rugged and reliable design. We start with industrial-grade components for superior integrity and performance. Next, we assemble the boards in our AS9100 / ISO 9001-certified factory for optimum quality control. Then we subject the finished I/O module to extensive inspection and testing to ensure each unit is free of defects.

Industrial-grade 50-pin receptacle headers provide high-integrity connections. When the I/O module carrier card is inserted into the chassis, the modules are securely held in place for shock and vibration resistance. Additionally, there are no internal cables for higher reliability.

UL Class I Div 2 approval permits use in locations with volatile liquids, gases, or vapors, such as gas, oil, chemical, and mining facilities. This allows installation of the I/O Server closer to sensors and actuators to reduce installation costs.

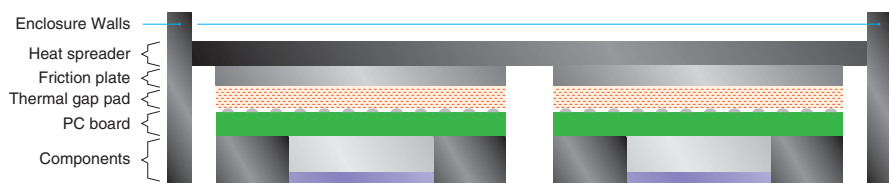
Conduction-Cooled I/O

The I/O modules are all rated for -40 to 85°C operation. However, to eliminate excessive heat inside the enclosure, the I/O modules employ advanced thermal technologies. A thermal pad wicks heat away from the module and transfers the energy to a friction plate that makes contact with a large heat spreader plate. Heat moves to the enclosure walls where it is dissipated by the external cooling fins.



Above: A bottom view shows the heat spreader plate that removes heat from the I/O modules.

Below: A cut-away view of the heat sink methodology.



Mix & Match I/O Flexibility

Acromag offers more than 20 I/O modules to perform analog, digital, counter/timer, and serial I/O functions. User-configurable FPGA modules allow you to execute custom signal processing algorithms and logic routines on TTL, differential, or LVDS I/O signals.

With four I/O module slots on the carrier card, you can install any mix of I/O module types to meet your unique I/O interface requirements. You can also insert up to four modules of the same type to achieve extremely high channel densities.

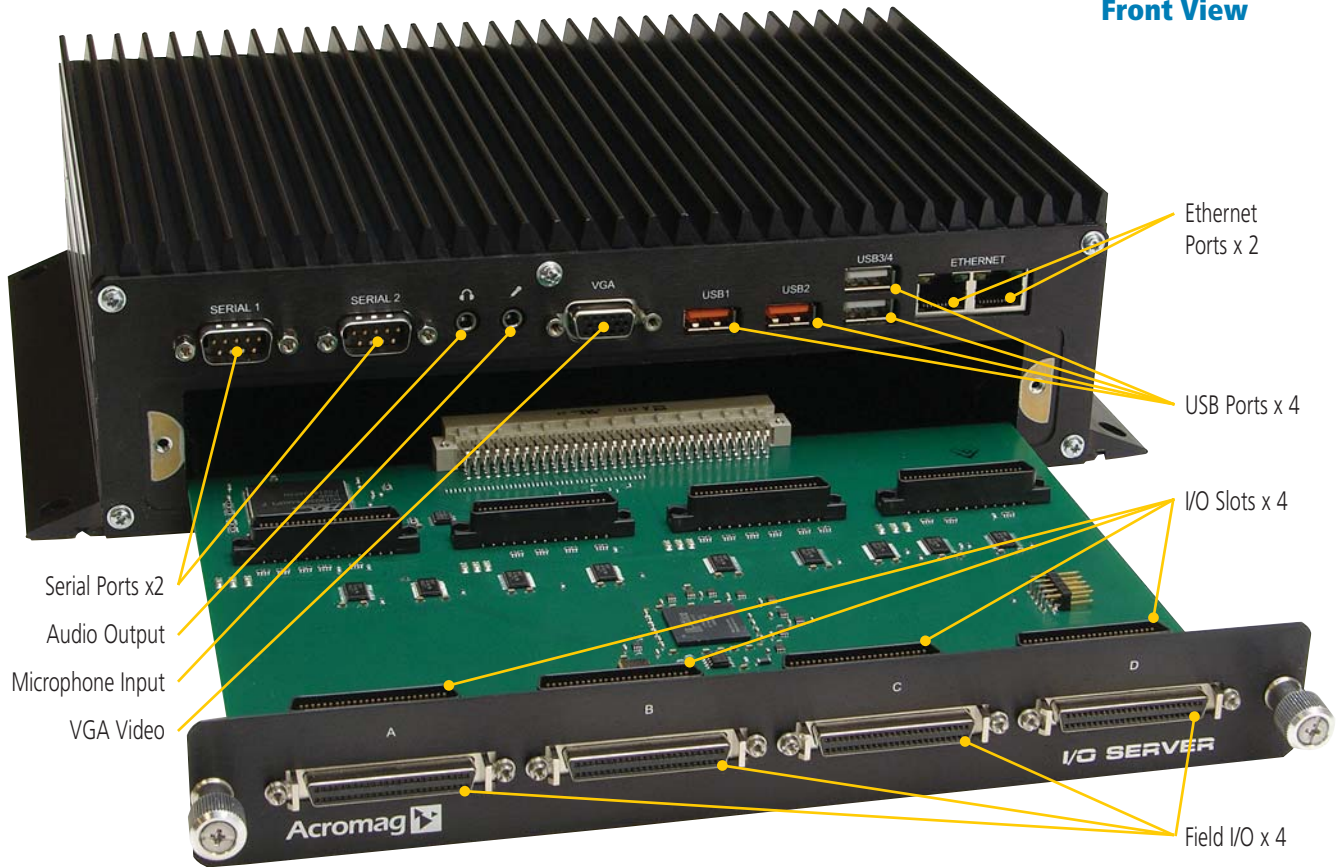
- 4 plug-in I/O module slots provide easy, low cost interface to instrumentation
- High-density, interchangeable I/O modules enable mix and match flexibility
- 20+ I/O modules available for a wide variety of analog, digital, and serial I/O functions

Industrial PC with Plug-in I/O

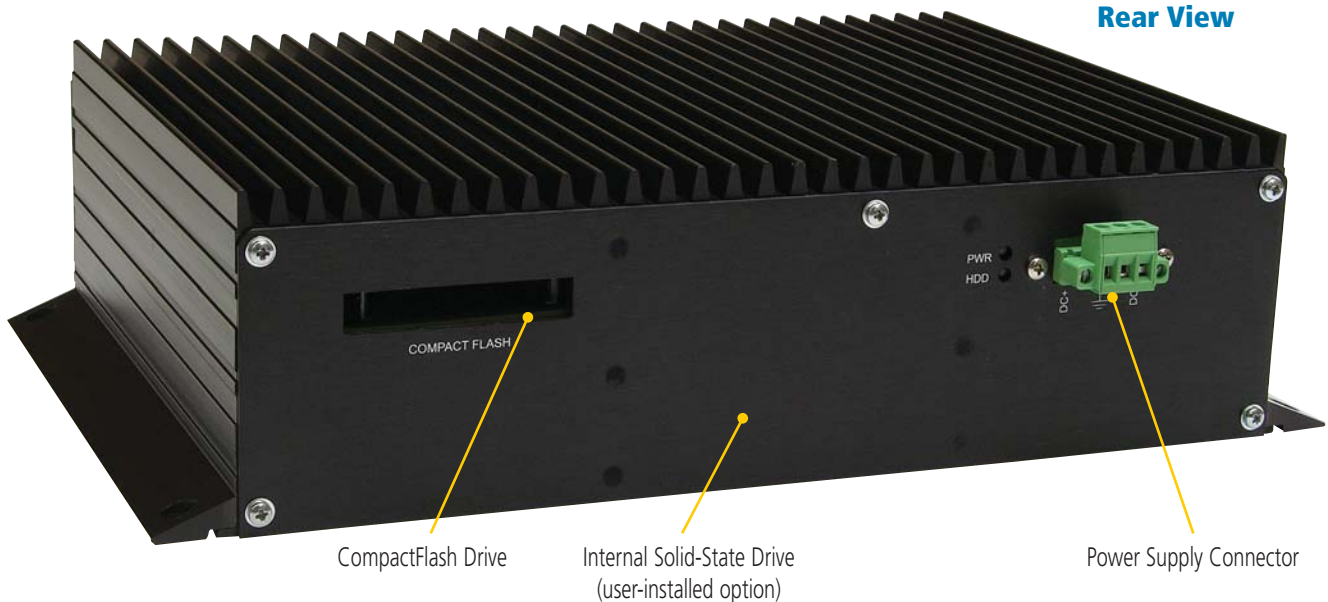


IOS Server Industrial PC with I/O Mezzanine Carrier Card

Front View



Rear View



I/O Server IOS-7000 Series



General Operation and Performance Specifications

	Model IOS-7400	Model IOS-7200
Processor System		
CPU	Embedded Intel Atom N270 1.6GHz.	Embedded AMD Geode LX800 500MHz.
System Memory	1GB installed. 200-pin SODIMM socket, DDR2 400/533MHz.	512MB installed. 200-pin SODIMM socket, DDR 400MHz.
System Chipset	Intel 945GSE / ICH7M chipset 533MHz FSB.	AMD CS 5536.
BIOS	AWARD™ 8Mbit Flash BIOS.	AWARD™ 4Mbit Flash BIOS.
Ethernet Chipset	Intel 82562GZ 10/100Mbps Ethernet chip.	Intel 82551ER 10/100Mbps Ethernet chip.
Display Chipset	Intel 945GSE.	AMD Geode LX800/CS 5536.
Display Resolution	Up to 2048 x 1536.	1024 x 768 @ 85Hz.
Operating System	Supports Windows Embedded Standard and Linux.	Supports Windows Embedded Standard and Linux.
Interface Connections		
Video	1 x VGA connector. Resolution CPU-dependent.	1 x VGA connector. Resolution CPU-dependent.
Audio	1 x speaker out. 1 x mic in. AC97 2.3 compliant.	1 x speaker out. 1 x mic in. AC97 2.3 compliant.
Hard Disk Drive / Solid-State Drive	User-installed option, 2.5" HDD/SSD PATA.	User-installed option, 2.5" HDD/SSD PATA.
Removable Memory	1 x CompactFlash slot.	1 x CompactFlash slot.
Serial Ports	1 x RS232. 1 x RS232/422/485.	1 x RS232. 1 x RS232/422/485.
USB Ports	4 x USB 2.0 compliant ports.	4 x USB 2.0 compliant ports.
Ethernet Ports	2 x 10/100 BaseT (unmanaged switch).	2 x 10/100 BaseT (unmanaged switch).
I/O Module Carrier		
Number of I/O Slots	Holds up to four Acromag IOS I/O Modules.	Holds up to four Acromag IOS I/O Modules.
Thermal Control	Conduction-cooled I/O modules.	Conduction-cooled I/O modules.
Connectors	SCSI-II 50-pin connector for each I/O module.	SCSI-II 50-pin connector for each I/O module.
Physical & Environmental		
Size	11.8" x 3.0" x 7.3" (299.7mm x 76.2mm x 182.9mm).	11.8" x 3.0" x 7.3" (299.7mm x 76.2mm x 182.9mm).
Weight	5.95lbs (2.7kg).	5.95lbs (2.7kg).
Operating Temperature	-30 to 75°C (-22 to 167°F).	-40 to 75°C (-40 to 167°F).
Storage Temperature	-40 to 85°C (-40 to 185°F).	-40 to 85°C (-40 to 185°F).
Operating Humidity	0% - 90% relative humidity, non-condensing.	0% - 90% relative humidity, non-condensing.
Shock Resistance	50g rms per IEC-68-2-27, half-sine, 11ms duration.	50g rms per IEC-68-2-27, half-sine, 11ms duration.
Vibration Resistance	5g rms per IEC-68-2-64, random, 5-500MHz, 1 oct/min, 1hr per axis.	5g rms per IEC-68-2-64, random, 5-500MHz, 1 oct/min, 1hr per axis.
Power Supply Voltage	9 - 32V DC ±10% @ 60W max.	9 - 32V DC ±10% @ 60W max.
Power Usage	Depends on configuration. 30W typical.	Depends on configuration. 30W typical.
Approvals	CE; UL/cUL Class 1 Division 2 Groups ABCD.	CE; UL/cUL Class 1 Division 2 Groups ABCD.
FCC Compliance	FCC Part 15, Subpart B, Class A Digital Device.	FCC Part 15, Subpart B, Class A Digital Device.
MTBF	450,000 hours.	348,000 hours.
Software Support		
Windows Embedded	Optional licensed Windows Embedded Standard 2009 image installed on CompactFlash card.	Optional licensed Windows Embedded Standard 2009 image installed on CompactFlash card.
Win32 DLL drivers	Optional Windows® Win32 development package. Includes CD-ROM with API development software, example programs with source code, Win32 DLL drivers.	Optional Windows® Win32 development package. Includes CD-ROM with API development software, example programs with source code, Win32 DLL drivers.
Linux	Optional Linux function libraries software.	Optional Linux function libraries software.

Plug-in I/O Modules

IOS Modules Compact Mezzanine I/O Modules

Analog I/O



Digital I/O and Counter/Timers



Serial I/O



User-configurable FPGA I/O



Analog I/O

Model	Analog Input	Analog Output	Resolution	Scan/Settling Time	Memory	Operating Temp. Range
IOS-220		8 or 16 channels	12-bit D/A	11µS		-40 to 85°C
IOS-231		8 or 16 channels	16-bit D/A	13µS		-40 to 85°C
IOS-320	20DI or 40SE		12-bit A/D	5.2µS		-40 to 85°C
IOS-330	16DI or 32SE		16-bit A/D	15µS	1 sample per channel	-40 to 85°C
IOS-341	16 differential		14-bit A/D	8µS for 8-ch simultaneous	512 samples	-40 to 85°C

Digital I/O and Counter/Timers

Model	Digital Input	Digital Output	Counter/Timers	Voltage	Isolation	Operating Temp. Range
IOS-408	32 bi-directional input/output channels			0 to 60V		-40 to 85°C
IOS-409	24 differential bi-directional I/O channels			differential RS422/485		-40 to 85°C
IOS-440	32 input channels			±60V AC/DC	optical isolation	-40 to 85°C
IOS-445		32 output channels		±60V AC/DC	optical isolation	-40 to 85°C
IOS-470	48 bi-directional input/output channels			TTL		-40 to 85°C
IOS-48x			up to 10 counters, 16-bit	TTL or RS422 differential		-40 to 85°C

Serial Communication

Model	# of Data Ports	Protocol	Data Rate	FIFO per channel	Options	Operating Temp. Range
IOS-520	Octal (8)	EIA-232	1 Mbps	64-byte	custom crystal	-40 to 85°C
IOS-521	Octal (8)	EIA-422	1 Mbps	64-byte	custom crystal	-40 to 85°C
IOS-560	Dual-channel	CAN bus	1 Mbps	64-byte	optical isolation	-40 to 85°C
IOS-570	Single or dual-channel	MIL-STD-1553	1 Mbps	choice of buffer options	--	-40 to 85°C

User-Configurable FPGA with Digital I/O

Model	FPGA	Logic Cells	TTL I/O	Differential I/O	LVDS I/O	Memory	Operating Temperature Range
IOS-EP201	Cyclone II EP2C20	18,752	48	--	--	64K x 16 RAM	-40 to 85°C
IOS-EP202	Cyclone II EP2C20	18,752	--	24 RS485	--	64K x 16 RAM	-40 to 85°C
IOS-EP203	Cyclone II EP2C20	18,752	24	12 RS485	--	64K x 16 RAM	-40 to 85°C
IOS-EP204	Cyclone II EP2C20	18,752	--	--	24	64K x 16 RAM	-40 to 85°C



Tel: 877-295-7092 or 248-295-0310 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 S Wixom Rd, Wixom, MI 48393 USA