

## ARCX-4000 Rugged, Small Form Factor Embedded Computer



### POWER MANAGEMENT



4<sup>th</sup> Gen Intel® Core™ i7 CPU ◆ Removable SATA drives ◆ PMC/XMC module expansion slots

### Description

[Acromag's ARCX embedded computer](#) is a customizable-off-the-shelf (COTS), SWaP-optimized deployable solution. This rugged, small form factor mission computer is designed for extreme rugged and MIL-AERO applications. This true COTS solution uses the Acromag COM Express Type 6 product platform.

Typical applications include military/aerospace deployable systems such as: vetronics, C4ISR, payload management, as well as command and control for drones and robotics. More specifically the ARCX is perfect as a portable data acquisition system in an aircraft by adding a 1553 interface board to a dual unit. Add a FPGA and high-speed graphics card for high-speed video transfer. For multi-sensor monitoring on mobile applications simply add a CAN bus interface.

### High-Performance, 4<sup>th</sup> Generation CPU

Intel's 4<sup>th</sup> generation of multi-core processors provides enhanced capabilities for floating-point-intensive computations, media, graphics, and security. Better power efficiency reduces heat and allows smaller, lighter designs with more portability.

Cutting-edge technology features programmable power limits, allowing the user to "dial-down" the maximum power consumption of the CPU in systems where heat and/or power is a concern.

### Rugged Military Design

The ARCX is designed and tested to meet IP67 ratings for reliably sealed protection from dust and limited immersion.

Thick circuit boards and advanced thermal management allow the computer to operate reliably under hostile conditions. This rugged computer can withstand extended temperatures. Shock and vibration has been tested to MIL-STD-810 specifications.

The front panel features 38999 type high-speed cylindrical connectors for extended I/O interfacing. Optional power filter is designed to meet the requirements of MIL-STD-704 and MIL-STD-1275.

Optional removable solid state drives allows for a variety of configurations including quick security access. Load the operating system on one drive and then collect data on the other drive.

### Customizable Expansion

The ARCX offers great flexibility to meet ever-changing requirements for long-term applications with its customizable-off-the-shelf (COTS) design. PMC, XMC, Mini PCIe and mSATA slots allow the addition of specialized I/O, storage, and FPGA modules. Optional removable solid state drives allow large amounts of data storage plus quick security access.

### Key Features & Benefits

- 4<sup>th</sup> Generation Intel Core i7
- Programmable power limits
- IP67 NEMA rating
- MIL-STD-810F environmental specification
- Optional power filter
- Wide range DC input power
- Provides access to standard computer peripherals via Type 6 COM Express CPU
- Ports available - varies by model
  - Two HDMI/DVI ports or three display ports
  - One VGA port
  - Three or two USB 2.0 ports
  - One SATA port
  - Two Gigabit Ethernet ports
  - Two COM RS232/485 ports
- Audio
- Fault/Status LED
- Two mPCIe/mSATA slots
- PMC/XMC expansion
- Dual/Quad SSD drive bay (optional)
- Two or four SATA SSD drive bays

**Acromag**   
THE LEADER IN INDUSTRIAL I/O

## ARCX-4000 Rugged, Small Form Factor Embedded Computer



### Performance Specifications

#### Processor Module

**Processor**  
Intel Core™ i7 processor  
(4th generation, codename Haswell). The CPU allows programming a lower power limit in the BIOS setup allowing use in applications where less power is required.

i7-4700EQ: 2.4GHz, quad core, 6Mb cache, 47W.

**Chipset**  
Intel 8-Series QM87 PCH chipset  
(codename Lynx Point).

**Memory**  
16GB of 1600 DDR3L ECC memory.

#### Processor Module Carrier

**I/O Slots**  
Two Mini PCIe/mSATA,  
One or two PMC/XMC modules.

#### Removable Solid State Bay Option

**ARCX-41xx**  
SATA drives: Supports two 2.5" drives (not included).  
Drives: Supports Raid 0 and Raid 1 (software).  
Enclosure: IP67 standard maintained.

**ARCX-412xx**  
SATA drives: Supports four 2.5" drives (not included).  
Drives: Supports Raid 0, 1, 5 (software).  
Enclosure: IP67 standard maintained.

#### Operating System

Microsoft Windows 8.1 (32bit & 64bit).  
Microsoft Windows 7 (32bit & 64bit).  
Linux (Fedora).  
PMC and XMC modules may require hardware device driver's specific to your operating system to operate properly. Refer to your PMC or XMC manual for more information. \* User supplied.

#### Thermal Management Device

**Aluminum liquid cooled cold plate.**  
Size: 0.625" thick, 8.0" wide, 10.0" long  
Optimal Operating Temperature: 0 to 30°C  
Copper pipe Outside Dimensions: 0.375"

**Air cooled assembly**  
Size: : 2 in (50.8 mm) height x 8.2 in (208.28 mm)  
wide x 9 in (228.6 mm) depth approx.  
Operating temperature: -10 to 60C \*\*

\*\* Note: This may be less depending on the amount of power used by the ARCX box.

Reference the environmental considerations in the manual.

#### Interface Connections

Access to standard computer peripherals of the processor module through B-keyed connector.

**Graphics**  
**ARCX-41xx**  
1 x VGA port.  
2 x HDMI/DVI ports.

**ARCX-412x**  
3 display ports.

**Audio**  
1 x speaker out. 1 x mic in.

**LAN Port**  
2 x Gigabit Ethernet.

**Serial ATA Interface**  
**ARCX-41xx**  
1 x SATA Port.

**USB Interface**  
**ARCX-41xx**  
3 x USB 2.0 ports.

**ARCX-412x**  
3 x USB 2.0 ports.

**Serial Ports**  
2 x RS-232/485.

#### Power Filter Option

Designed to be compliant to MIL-HDBK-704-8 and MIL-STD-1275B

#### Physical & Environmental

**Size**  
ARCX-4110: 5.46" (138.684mm) W x 3.29" (83.566mm) H x 8.108" (205.943mm) D.  
ARCX-4120: 8.405" (213.487mm) W x 3.29" (83.566mm) H x 8.108" (205.943mm) D.  
NOTE: does not include 38999 type connectors.

Solid state drives (optional): 4" (1.06mm) W x 1.9" (48.26mm) H x 7" (177.8mm) D

ARCX-22x: 8.405 (213.487mm) W x 5.78" (146.812mm)H x 8.108"(205.943mm) D.

**Weight**  
ARCX-4110: 6.8 lbs (3.08 Kg).  
ARCX-4120: 9.1 lbs (4.13 Kg).  
Solid state drives (optional): less than 2 lbs (0.907 Kg).  
ARCX-4122: 14.11 lbs (6.395Kg) estimated.

**Operating temperature**  
-40°C to +85°C based on end application configuration.  
Refer to manual for details.  
Up to 110W on the ARCX-411x.  
Up to 125W on the ARCX-412x and ARCX-4122x.

**Storage temperature**  
-40°C to 85°C

**Relative humidity**  
5% to 95% non-condensing.

**MTBF**  
110,080 hrs. at 25°C.  
81,332 hrs. at 40°C.

**Ruggedization**  
Thicker PCB.

High shock and vibration SODIMM hold-down mechanism and heat sink.

**Shock**  
Operating and Non-operating:  
50g peak-to-peak, 11ms duration,  
MIL-STD-810F Method 516.6  
Procedure I (Functional shock)

**Vibration (8Hz-500Hz)**  
Operating and Non-operating:  
5g sinusoidal, 1hr/axis  
MIL-STD-810F Method 514.6  
Procedure I (General vibration)  
Category 20 (Ground vehicles/ground mobile)

**Power**  
10-36VDC (on-board DC/DC, fused).180 W Maximum

**Base Line Power Usage:**  
(i7 CPU/carrier, no PMC/XMC or MiniPCIe installed)  
Idle (~5% CPU usage) - 20W  
Typical (~40% CPU usage) - 45W  
Max (~100% CPU usage) - 70W  
EMC Directive 204/108/EC

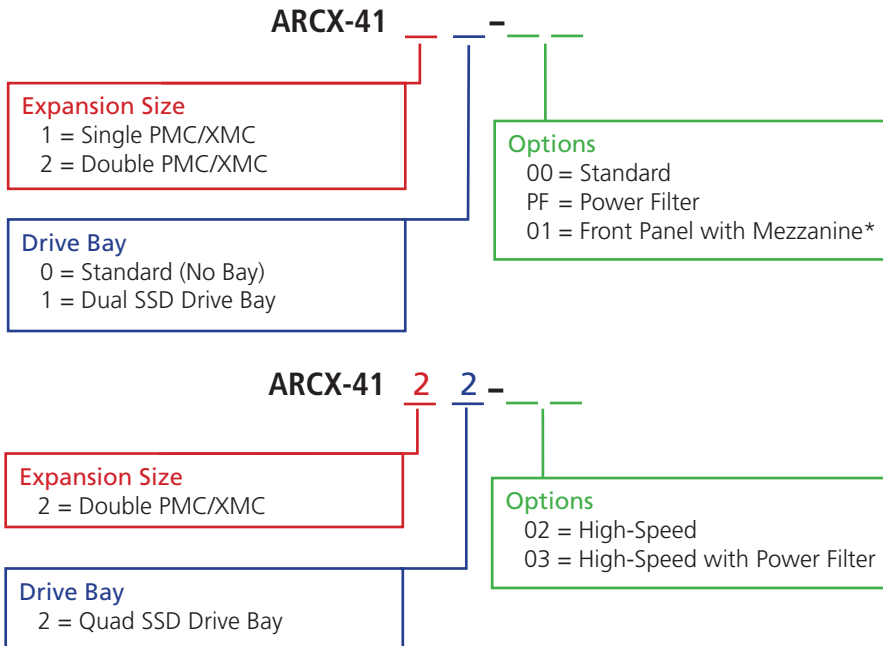
# Embedded Computers

## **ARCX-4000** Rugged, Small Form Factor Embedded Computer



### Ordering Information

NOTE: Build your model using the tables below. Single size not available for quad SSD drive bay version.



### Accessories

For more information, see [www.acromag.com/ARCX](http://www.acromag.com/ARCX).

**5028-556**  
Size #23 38999 Type Peripheral I/O Breakout Cable for ARCX-41xx models.

**5028-573**  
High-Speed Type Peripheral I/O Breakout Cable for ARCX-4122 models.

**5028-557**  
Size #12 38999 Type Power Cable.

**5028-566**  
High-Speed Type A-keyed mating cable to SCSI-3 Breakout Box

**5028-567**  
High-Speed Type C-keyed mating cable to SCSI-3 Breakout Box

**5028-558**  
Size #23 38999 Type A-Keyed Mating Connector Kit.

**5028-559**  
Size #23 38999 Type C-Keyed Mating Connector Kit.

**5028-560**  
Size #23 38999 Type B-Keyed Mating Connector Kit.

**5028-561**  
Size #12 38999 Type A-Keyed Mating Connector Kit.

**5028-571**  
Drive Bay additional tray.

**ATMD-02**  
Air cooled assembly.

**ATMD-03**  
Aluminum liquid cooled cold plate.

**Front Panel with Mezzanine \***  
Allows for front panel signal conditioning.  
Please contact the factory for details.



ARCX-4122



5028-556



ARCX-4121-01 with optional SSD



ATMD-02



ARCX 4111-01 with ATMD-03 \* SSD not included

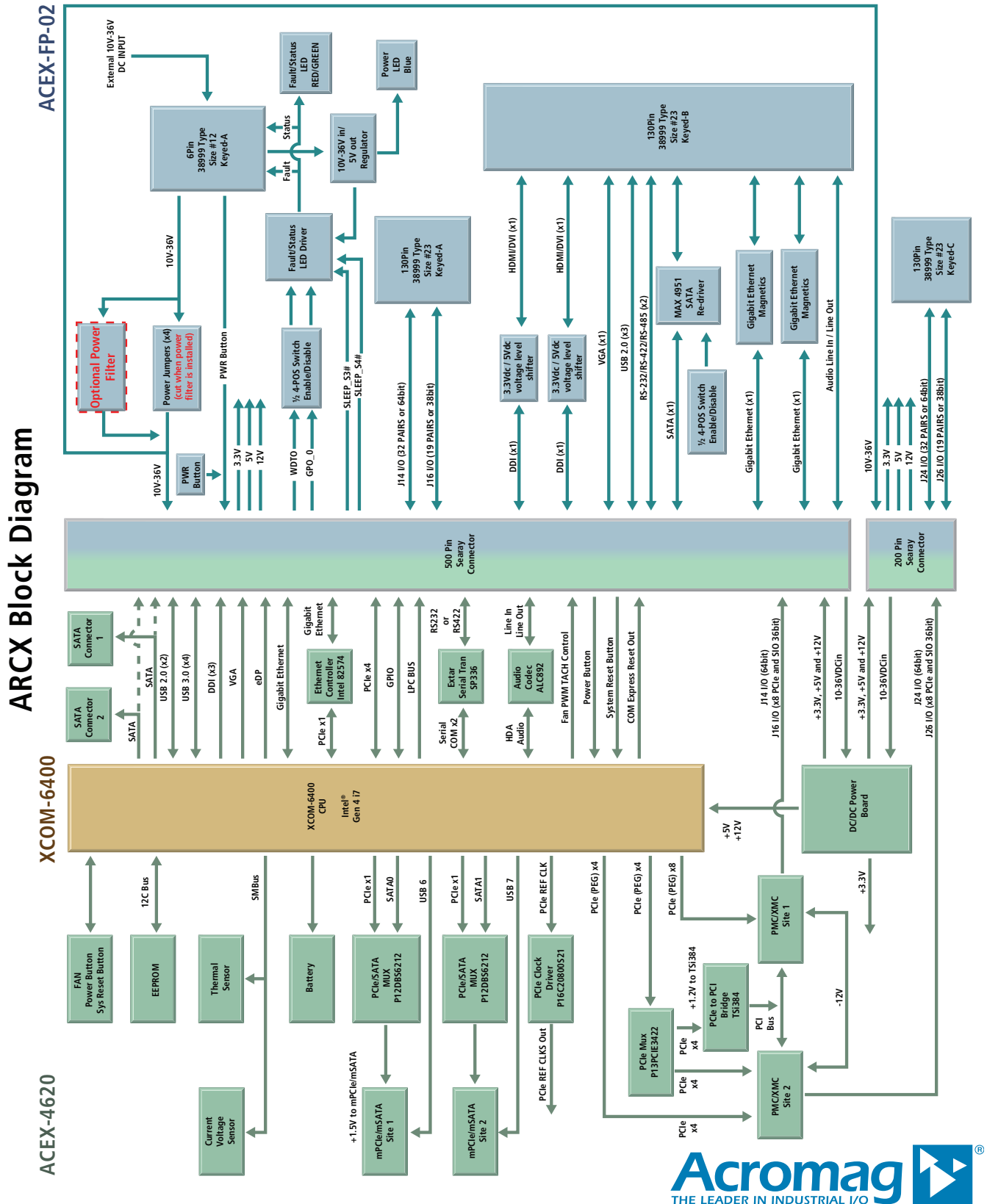
ISO9001  
AS9100  
 **MADE IN USA**

**Acromag**   
THE LEADER IN INDUSTRIAL I/O

Tel 248-295-0310 ■ Fax 248-624-9234 ■ [solutions@acromag.com](mailto:solutions@acromag.com) ■ [www.acromag.com](http://www.acromag.com) ■ 30765 Wixom Rd, Wixom, MI 48393 USA

# Embedded Computers

**ARCX-4000** Rugged, Small Form Factor Embedded Computer



**Acromag**   
THE LEADER IN INDUSTRIAL I/O

Tel 248-295-0310 ■ Fax 248-624-9234 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA

All trademarks are property of their respective owners. Copyright © Acromag, Inc. 2017. Data subject to change without notice. Printed in USA 03/2017.