AB3000

Rugged Avionics I/O Computers

The AB3000 is small, lightweight, and loaded with capabilities for easy integration into today's modern aircraft, UAVs, and ground mobile platforms. With an efficient Intel® E680T processor, multiple avionics databus interfaces, Ethernet, USB, video, audio, and PMC expansion, this rugged, conduction-cooled COTS device is ready to take on all of your toughest computing and interface problems.

Embedded Computers for Demanding Applications

The AB3000 is a rugged Commercial Off-The-Shelf (COTS) solution to challenging interface, bridging, control, and audio/display problems in demanding environments. It can be used for data and protocol conversion, databus/network bridging, data servers, data recorders, communications, power controllers, federated controllers, and multiple net-centric applications. It also supports voice and visual processing for cockpit voice actions, canned message delivery, workstation expansion, and more.

Versatile Operation

There are two ways software can operate the AB3000: embedded or tethered. Embedded programs are typically developed on a host computer and then uploaded to the AB3000's non-volatile Flash memory. At power-on the embedded application boots from the Flash memory and runs without host intervention. In tethered operation, a separate computer runs the application and controls the AB3000 over Ethernet.

Software Capabilities

The included Software Development Kit (SDK) provides tools and examples to facilitate the development of software applications. The AB3000 uses Astronics Ballard Technology's universal BTIDriver API, so application software for this device is easily ported to or from other Ballard products. Although the AB3000 can be configured and run with only a few API calls, the comprehensive library includes a broad range of functions for specialized needs. Optional CoPilot® software facilitates analysis and test for in-flight and other embedded applications.

Vertical Mounting Chassis

KEY FEATURES

- Highly reliable, prevalidated COTS solution
- Intel® Atom™ E680T processor
- Low SWaP (Size, Weight, Power)
- Wide range of avionics and computer I/O:
  - MIL-STD-1553
  - ARINC 429, 708, 717
  - Serial, CANBus, Discrete
  - Ethernet, USB 2.0 Host
  - 2D/3D Video and Audio
  - PMC expansion options
- Helicopter, fixed wing, UAV, and ground mobile
- Rugged: MIL-STD-810
- EMC quiet: MIL-STD-461
- Commercial: DO-160
- Resilient: MIL-STD-704
- Reduces project risk, time, and cost

Avionics Interfaces

MIL-STD-1553

Up to 4 dual-redundant channels
BC/RT/MON (Single- or Multi-Function)
Hardware controlled transmit scheduling
CH/TA/SA filtering
Sequential monitor

ARINC 429

Up to 24 channels
Periodic and asynchronous messages
Hardware controlled transmit scheduling
Receive message filtering (Label/SDI)
Sequential monitor

ARINC 708

Up to 4 channels
Hardware controlled transmit scheduling
Receive message filtering
Sequential monitor

ARINC 717

Up to 4 channels
Biphase/Bipolar
Transmit and receive
Sub-frame and super-frame support
64,128,256,512,1024,2048,4096,8192wps
Sequential monitor

RS-232/423/422/485

4 ports
Selectable baud rates
Ethernet (TCP) serial server mode

Ethernet

2 ports
Auto-sensing 10/100/1000 Mb/s
IEEE 1588 (PTP) hardware assisted
TCP/IP, UDP
Built-in Telnet/SSH, FTP, and Web servers

USB 2.0 Host

2 ports
High-speed (480 Mb/s)

Avionics Discrete I/O

Up to 48 programmable inputs/outputs
Open/GND configuration

Differential Discrete I/O

4 inputs/4 outputs (8 total)
(AB32XX models only)

Specifications

The AB3000 is available in a large number of configurations that all share the standard features below:

Standard Features

- Intel Atom E680T 1.6GHz processor
- Hyper-threading and virtualization
- 2 GB RAM
- 8 GB solid-state storage (32GB optional)
- Video Out: DVI; Intel GMA 600 2D/3D graphics engine; MPEG-4, H.264
- Audio In: 2 mic pre-amps with 8-96kHz sampling; Audio Out: 2 headphones, 50 mW into 16 ohm
- 2 Ethernet ports (10/100/1000)
- 4 RS-232/423/422/485 (selectable)
- 1 CANbus 2.0 (ARINC 825 PHY)
- 2 USB 2.0 host ports
- Keyboard connection via USB
- Avionics discrete I/O
- IRIG A or B, AM, PWM and PPS
- Voltage and temperature monitoring
- Conduction-cooled PMC site
- Power: 28 VDC nominal, MIL-STD-704, MIL-STD-1275
- MTBF: 242,000+ hours

Environmental

Storage temperature: -55 to 100°C
Operating temperature: -40 to 55°C
Conduction or convection cooled
DO-160, MIL-STD-810, MIL-STD-461
Hose down; salt fog resistant
(Contact factory for environmental test data)

Mechanical

Compact enclosure: 5.3 x 7.7 x 2.8 in (135 x 195 x 71 mm), mounting flanges extend 0.6 in (15 mm) on each side
Weight (typical): 5 lb (2.3 kg)
Horizontal and vertical chassis options
(CAD installation drawings available)

Connectors

Base & databus I/O: D38999 (100-pin)
PMC I/O: D38999 (100-pin)
Power: D38999 (4-pin)

Software

Embedded Linux OS and SDK
Universal BTIDriver API compatible
Optional Software:

- Microsoft® Windows® Embedded 7
- VxWorks, LynxOS-178, and other RTOS BSPs (contact factory)
- CoPilot analysis & test software
- Data recorder software

AB3000 Models

Ballard offers over 200 COTS configurations. Contact factory for ordering info, accessories, and custom needs.

Example configurations:

- **Model AB3186** – Standard features plus 2 dual-redundant multi-function MIL-STD-1553, 8R/4T ARINC 429, 1R/1T ARINC 717 channels
- **Model AB3280** – Standard features plus 4 dual-redundant multi-function MIL-STD-1553 channels and differential discrete I/O
- **Model AB3430** – Standard features plus 16R/8T ARINC 429 and 1R/1T ARINC 717 channels
- **Model AB3342** – Standard features plus 8R/4T ARINC 429, 1R/1T ARINC 708 and 1 dual-redundant multi-function MIL-STD-1553 channel

PMC and I/O Expansion Options

Factory-installed PMC cards further expand AB3000 functionality. Possibilities include additional 1553/429/717/708 channels, synchronous/asynchronous serial, 9-port Ethernet switch, analog I/O, and more.

CONTACT INFO

Astronics Ballard Technology

11400 Airport Road
Everett, WA 98204 USA
+1.425.339.0281
Ballard.Sales@astronics.com

astronics.com/BallardTechnology