Datasheet

Diamond Systems

Aries

The Perfect Fit for Imperfect Environments
Optimizing features, size & cost

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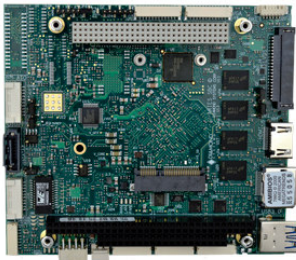
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Aries PC/104-Plus SBC

PC/104-*Plus* SBC with Intel E3800 CPU & On-Board Data Acquisition
The Best PC/104 Bay Trail SBC in the World

Top Side

Bottom Side (heat spreader removed to show components)

Description

The **Aries** PC/104-*Plus* single board computer from Diamond Systems uses the Intel "Bay Trail" E3800 series processor to deliver an unmatched combination of performance, price and power consumption. Packed with real-world features, Aries provides a complete solution for most embedded applications in a single board, saving you space, time, and money.
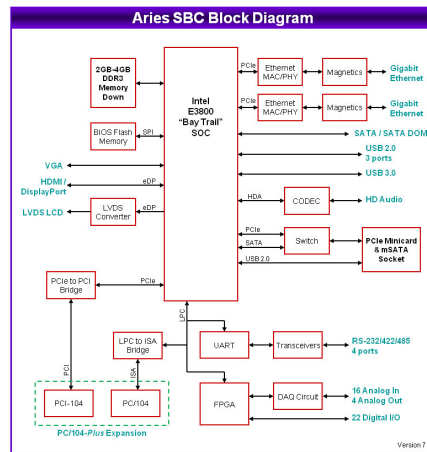
Aries goes beyond the standard processor and I/O features found on other Bay Trail SBCs to provide rugged performance along with a professional-quality data acquisition circuit supported by industry-leading software. The full rectangular shape of Aries provides more PCB area and coastline to support the extreme level of I/O offered by the board.

| Overview | I/O Features | Rugged Features | Data Acquisition | Specifications |

The Aries SBC family features the Intel E3800 "Bay Trail" processor family for high performance, low power consumption, and competitive pricing. Aries offers 2-4 times higher CPU performance over other SBCs with similar size, power consumption, and price. Key features include:

- Choice of quad core E3845 1.91GHz or dual core E3826 1.46Ghz processor
- 2 or 4GB memory soldered on board
- Dual independent display, selectable from VGA, LVDS LCD, and HDMI / DisplayPort
- A broad range of system I/O, including 4 multiprotocol serial ports, 3 USB ports, 2 10/100/1000 Ethernet ports, and 1 SATA port
- Integrated HD Audio
- PC/104-*Plus* and PCIe MiniCard / mSATA sockets
- Optional integrated professional quality 16-bit data acquisition
- Conduction cooling for improved reliability and high temperature performance
- Rugged construction throughout for shock and vibration immunity
- Compact 4.5" x 4.0" size
- -40°C to +85°C operation off the shelf
- Operating systems support for Windows 7 / XP and Linux 2.6 / 3.2 kernels

Block Diagram

Display Features

Aries supports dual simultaneous independent displays, selecting from VGA, LVDS LCD, and either HDMI or DisplayPort. (Both HDMI and DisplayPort are supported on board, however only one of these can be used at a time.)

The LVDS connection is dual channel 24-bit. The maximum resolution of VGA, LVDS and DisplayPort is 2560 x 1600. The HDMI maximum resolution is 1920 x 1080.

Backlight power and control are provided on board. LCD power is jumper selectable between 3.3V and 5V, and backlight power is jumper selectable between 5V and 12V. If needed, 12V must be provided by the system power supply and is routed through the board from the input power connector to the backlight connector.

I/O Expansion

Aries provides both a PC/104-*Plus* expansion socket and a combination PCIe MiniCard / mSATA module socket. The combination socket auto-selects for either PCIe or mSATA depending on the type of module installed. Aries supports Diamond's complete line of **PCIe MiniCards**.

The SBC also supports the installation of a SATA disk-on-module with a mounting hole for increased ruggedness. A jumper provides power directly to the module through the single SATA connector; no separate power cable is required. Both the SATA DOM and PCIe MiniCard sockets can be used simultaneously, affording a highly compact and feature-rich embedded computing solution only one "board" high.

Available Models

Four standard models are available depending on your need for performance and data acquisition. Other configurations are available by special order with a minimum order quantity.

| Model | Processor /Speed | Memory | Data Acquisition |

FEATURES

- 1.91GHz Intel quad core E3845 or 1.46GHz Intel dual core E3826 CPU
- 2GB or 4GB on-board 64-bit DDR3 SDRAM
- I/O connectors for a wide range of interfaces:
  - 2 Gigabit Ethernet ports
  - 1 SATA port
  - 3 USB 2.0 & 1 USB 3.0 ports
  - 4 RS-232/422/485 serial ports
  - VGA, LVDS, DisplayPort or HDMI video output
  - HD Audio
- On-board data acquisition circuit:
  - 16 16-bit analog inputs
  - 4 16-bit analog outputs
  - 22 digital I/O lines
  - PWMs
  - Counter/timers
- Waveform generator
- On-board mSATA flashdisk socket supports up to 64GB
- Watchdog timer
- +5VDC input power
- System expansion:
  - PC/104-*Plus* stackable I/O
  - PCIe MiniCard socket
- PC/104-*Plus* form factor
- Operating temperature range of -40°C to +85°C

ACCESSORIES
Customers who use this product also use:

DS-MPE-DAQ0804 Analog I/O Module

DS-MPE-CAN2L CANbus Module

DS-MPE-GE210 Gigabit Ethernet Module

DS-MPE-SER4M Serial Module

DS-MPE-SER4OPT Opto Serial Module

DS-MPE-GPIO Digital I/O Module

This product can be **customized** and **ruggedized**. **Click here** for more information.

ONLINE SUPPORT

- See Aries PC/104-Plus SBC Technical Resources
- Request Product information
- Request Technical Support

DOWNLOADS

- **Aries Linux BSP User Manual** (**.pdf**, 3.3 MB)
- **Aries User Manual** (**.pdf**, 1.8 MB)
- **Aries WE7 BSP User Manual** (**.pdf**, 1.7 MB)
- **Aries Universal Driver User Manual** (**.pdf**, 1.4 MB)
- **Aries 3D STP file** (**.stp**, 44.7 MB)
- **Aries Audio Driver for Windows** (**.zip**, 192.2 MB)
- **Aries 32-bit Ethernet Driver for Windows 7** (**.zip**, 21.1 MB)
- **Aries 32-bit Ethernet Driver for Windows 8** (0.0 kb)
- **Aries 64-bit Ethernet Driver for Windows 8** (**.rar**, 28.6 MB)
- **Aries 32-bit Graphics Driver for Windows 7** (**.zip**, 36.7 MB)
- **Aries Ethernet Driver for Linux** (**.zip**, 296.6 kb)
- **Aries 64-bit Ethernet Driver for Windows 7** (**.zip**, 31.6 MB)
- **Aries Drivers for Windows 8.1** (**.zip**, 145.5 MB)
- **Aries Chipset Drivers for Windows** (**.zip**, 2.3 MB)
- **Aries 64-bit Graphics Driver for Windows 7** (**.zip**, 110.3 MB)
- **Aries 64-bit IO Driver for Windows 7** (**.zip**, 9.1 MB)
- **Aries USB3.0 Driver for Windows 7** (**.zip**, 8.8 MB)
- **Aries 32-bit IO Driver for Windows 7** (**.zip**, 8.2 MB)
- **Aries LVDS Configuration Utility** (**.zip**, 1.1 MB)

ARS3845-4GA	E3845/1.91GHz	4GB DDR3	Yes
ARS3845-4GN	E3845/1.91GHz	4GB DDR3	No
ARS3826-2GA	E3826/1.46GHz	2GB DDR3	Yes
ARS3826-2GN	E3826/1.46GHz	2GB DDR3	No

◆ Development Kits

Aries Development Kits, DK-ARS-LNX or DK-ARS-WE7, are available with all the components you need to get started on your embedded design. Each kit contains an Aries SBC with 1.91GHz E3845 CPU, 4GB DRAM, integrated data acquisition, 32GB MLC SATA DOM flashdisk with bootable operating system, cable kit (CK-ARS-01), and Quick Start Guide.

Model Number	Description
ARS3845-4GA	Aries SBC, 1.91GHz E3845 CPU, 4GB DRAM, data acquisition
6710613	32GB MLC SATA DOM flashdisk with operating system image pre-loaded
CK-ARS-01	Cable Kit
7480613	Quick Start Guide

◆ Aries Cable Kit

The Aries cable kit, CK-ARS-01, includes cables for all I/O connectors except LCD, HDMI, and DisplayPort.

Number	Qty	Cable	Description
1	2	6980500	Dual serial cable
2	1	6980501	Digital I/O cable
3	1	6980503	Dual USB cable
4	1	6981504	Analog I/O cable
5	1	6980507	VGA cable
6	1	6980508	Audio cable
7	1	6980514	Utility cable
8	1	6980511	Battery cable
9	1	6980512	Power cable
10	1	6980513	Ethernet cable
11	1	6989101	SATA cable

top

◆ Get An Online Quote

Aries PC/104-Plus SBC

available models:

ARS3845-4GA	Aries SBC, 1.91GHz E3845 CPU, 4GB DDR3 SDRAM, analog I/O & digital I/O
ARS3845-4GN	Aries SBC, 1.91GHz E3845 CPU, 4GB DDR3 SDRAM, digital I/O
ARS3826-2GA	Aries SBC, 1.46GHz E3826 CPU, 2GB DDR3 SDRAM, analog I/O & digital I/O
ARS3826-2GN	Aries SBC, 1.46GHz E3826 CPU, 2GB DDR3 SDRAM, digital I/O
DK-ARS-WE7	Aries Development Kit with ARS3845-4GA SBC, cables and Windows Embedded 7 OS
DK-ARS-LNX	Aries Development Kit with ARS3845-4GA SBC, cables and Linux OS
SDK-ARS-WE7	Aries Windows Embedded 7 Software Development Kit
SDK-ARS-LNX	Aries Linux Software Development Kit
CK-ARS-01	Aries Cable Kit
ACC-HS104-12.7	Heat Sink Accessory

Please login or signup for an online quote request.

Cables and accessories

available models:

FDSM-64G-XT	SATA DOM MLC Flashdisk, 64GB, extended temperature

FDSM-32G-XT	SATA DOM MLC Flashdisk, 32GB, extended temperature
FDMS-8G-XT	mSATA SLC Flashdisk, 8GB, extended temperature
FDSS-64G-XT	SATA DOM SLC Flashdisk, 64GB, extended temperature
FDSS-32G-XT	SATA DOM SLC Flashdisk, 32GB, extended temperature
FDMM-64G-XT	mSATA MLC Flashdisk, 64GB, extended temperature
FDMM-32G-XT	mSATA MLC Flashdisk, 32GB, extended temperature
FDMM-16G-XT	mSATA MLC Flashdisk, 16GB, extended temperature
FDMS-64G-XT	mSATA SLC Flashdisk, 64GB, extended temperature
FDMS-32G-XT	mSATA SLC Flashdisk, 32GB, extended temperature
FDMS-16G-XT	mSATA SLC Flashdisk, 16GB, extended temperature

Please login or signup for an online quote request.

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