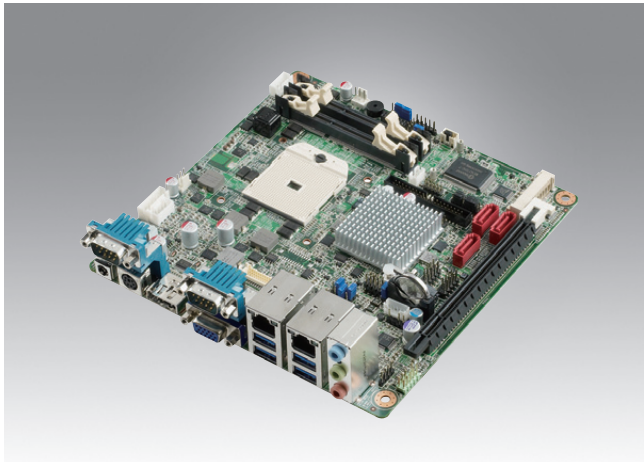


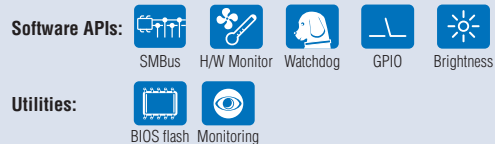
# AIMB-224

## Mobile AMD R-series Quad Core/Dual Core Mini-ITX with VGA/LVDS/HDMI/DP/eDP, 6COM and Dual LAN



### Features

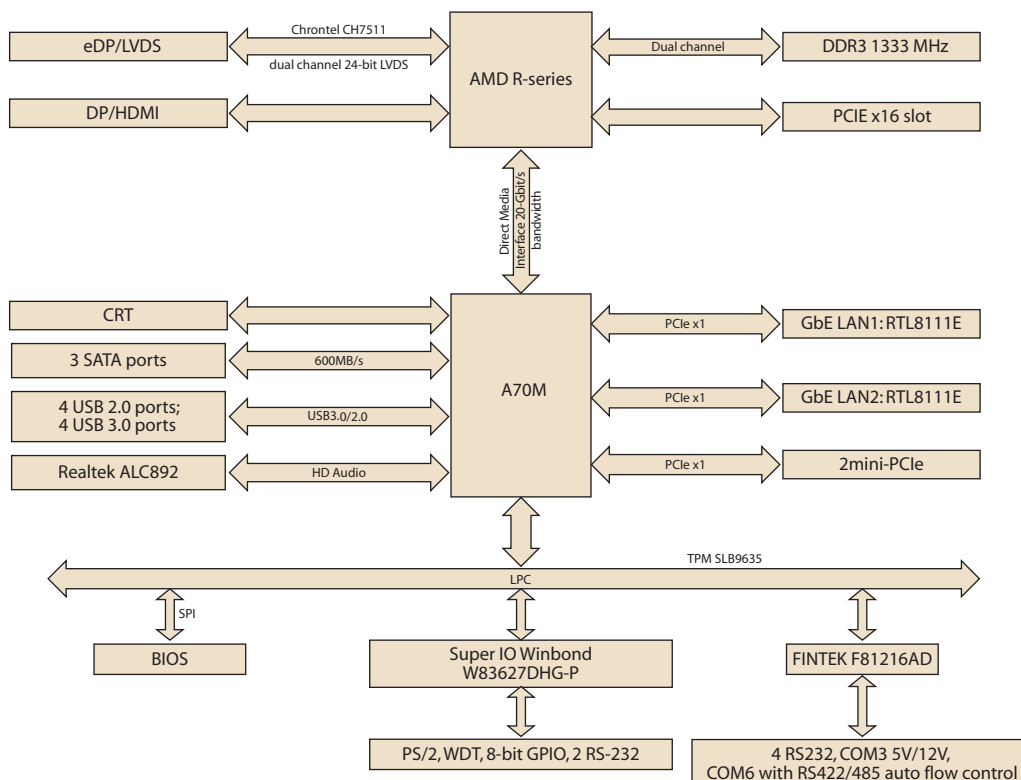
- Support AMD Mobile eTrinity Quad core/Dual Core processor
- Two 204-pin SODIMM up to 16 GB DDR3 1066/1333/1600 MHz SDRAM
- Supports VGA/LVDS/HDMI/DP/eDP
- Dual LANs, 6COM, 2Mini PCIe
- Supports embedded software APIs and Utilities



### Specifications

|                          |                        |                                                                                                                                                                                       |                         |                            |
|--------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------|
| Processor System         | CPU                    | AMD Quad Core R-464L                                                                                                                                                                  | AMD Quad Core R-460H    | AMD Dual Core R-272F       |
|                          | Max. Speed             | 2.3 GHz (quad core 35W)                                                                                                                                                               | 2.1 GHz (quad core 35W) | 2.6 GHz (dual core 35W)    |
|                          | L2 Cache               | 1M/per core                                                                                                                                                                           |                         |                            |
|                          | Chipset                | AMD R-series+A70M                                                                                                                                                                     |                         |                            |
|                          | BIOS                   | AMI 32 Mbit SPI                                                                                                                                                                       |                         |                            |
| Expansion Slot           | PCI                    | None                                                                                                                                                                                  |                         |                            |
|                          | Mini-PCIe              | 2                                                                                                                                                                                     |                         |                            |
|                          | PCIe                   | PClex16                                                                                                                                                                               |                         |                            |
| Memory                   | Technology             | Dual Channel DDR3 1066/1333/1600 MHz                                                                                                                                                  |                         |                            |
|                          | Max. Capacity          | 16 GB                                                                                                                                                                                 |                         |                            |
|                          | Socket                 | 2 x 204 pin SODIMM                                                                                                                                                                    |                         |                            |
| Graphics                 | Controller             | AMD Radeon™ GPUs, support DX11, UVD3                                                                                                                                                  |                         |                            |
|                          | VRAM                   | None                                                                                                                                                                                  |                         |                            |
|                          | VGA                    | Supports up to 4096 x 2400 @ 60 Hz                                                                                                                                                    |                         |                            |
|                          | LVDS                   | Supports 24-bit dual channel up to 1920 x 1200. co-lay eDP (by BOM option).                                                                                                           |                         |                            |
|                          | HDMI                   | 1920 x 1200 @ 60 MHz co-lay Display port (by BOM option)                                                                                                                              |                         |                            |
| Ethernet                 | Triple Display         | Support triple display of any three display device (CRT, LVDS or eDP, HDMI or DP)                                                                                                     |                         |                            |
|                          | Interface              | 10/100/1000 Mbps                                                                                                                                                                      |                         |                            |
| SATA                     | Controller             | GbE LAN1: Realtek 8111E; GbE LAN2: Realtek 8111E                                                                                                                                      |                         |                            |
|                          | Connector              | RJ-45 x 2                                                                                                                                                                             |                         |                            |
| EIDE                     | Max Data Transfer Rate | 600 MB/s                                                                                                                                                                              |                         |                            |
|                          | Channel                | 3                                                                                                                                                                                     |                         |                            |
| Rear I/O                 | Mode                   | None                                                                                                                                                                                  |                         |                            |
|                          | Channel                | None                                                                                                                                                                                  |                         |                            |
|                          | VGA                    | 1                                                                                                                                                                                     |                         |                            |
|                          | HDMI                   | 1 colay DP (by BOM option)                                                                                                                                                            |                         |                            |
|                          | Ethernet               | 2                                                                                                                                                                                     |                         |                            |
|                          | USB                    | 4 (four USB 3.0)                                                                                                                                                                      |                         |                            |
|                          | Audio                  | 3 (Mic-in, Line-out, Line-in)                                                                                                                                                         |                         |                            |
|                          | Serial                 | 2 (2 RS-232)                                                                                                                                                                          |                         |                            |
| Internal Connector       | DCjack                 | 1 (2.5 mm)                                                                                                                                                                            |                         |                            |
|                          | KB/MB                  | 1                                                                                                                                                                                     |                         |                            |
|                          | LVDS & Inverter        | 1                                                                                                                                                                                     |                         |                            |
|                          | USB                    | 4 (USB2.0)                                                                                                                                                                            |                         |                            |
|                          | Serial                 | 4 (3 RS-232; 1 RS-232/422/485; COM3 support 5v/12V by jumper selection)                                                                                                               |                         |                            |
|                          | IDE                    | None                                                                                                                                                                                  |                         |                            |
|                          | SATA                   | 4                                                                                                                                                                                     |                         |                            |
| Watchdog Timer           | Parallel               | None                                                                                                                                                                                  |                         |                            |
|                          | GPIO                   | 8 bit                                                                                                                                                                                 |                         |                            |
| Power Requirement        | Output                 | System reset                                                                                                                                                                          |                         |                            |
|                          | Interval               | Programmable 1 ~ 255 sec/min                                                                                                                                                          |                         |                            |
| Environment              | Typical                | Single Voltage 12V DC input by 1x External DC phone Jack or 1x Internal 2x2-pin Power Connector; AT/ATX Supported by Jumper<br>max power consumption: 90W(R-464L/R-460H+16G DDR3 RAM) |                         |                            |
|                          | Operating              |                                                                                                                                                                                       | Non-Operating           |                            |
| Physical Characteristics | Temperature            | 0 ~ 60° C (32 ~ 140° F)                                                                                                                                                               |                         | -40 ~ 85° C (-40 ~ 185° F) |
|                          | Dimensions             | 170 mm x 170 mm (6.69" x 6.69")                                                                                                                                                       |                         |                            |

## Block Diagram



## Ordering Information

| Part Number      | Display      | LAN | COM | TPM |
|------------------|--------------|-----|-----|-----|
| AIMB-224G2-00A1E | VGA/LVDS/DP  | 2   | 6   | Yes |
| AIMB-224G2-01A1E | VGA/eDP/HDMI | 2   | 6   | Yes |

## Optional Accessories

| Part Number | Description                           |
|-------------|---------------------------------------|
| 1700003195  | USB cable with two ports, 17.5 cm     |
| 1700002204  | USB cable with two ports, 27 cm       |
| 1700008461  | USB cable with four ports, 30.5 cm    |
| 1757003064  | Adapter AC100-240V, 84W, +12V/ 7A FSP |

## Packing List

| Part Number       | Quantity |
|-------------------|----------|
| AIMB-224 SBC      | 1        |
| SATA HDD cable    | 2        |
| Serial port cable | 1        |
| I/O port bracket  | 1        |
| Startup manual    | 1        |
| Driver CD         | 1        |
| CPU cooler        | 1        |

## Embedded OS/API

| OS/API       | Description    |
|--------------|----------------|
| Win XPE      | WES 2009       |
| Software API | SUSI V3.0      |
| WES7E        | WIN 7 Embedded |

# Value-Added Software Services

**Software API:** An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

## Software APIs

### Control



**GPIO**

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.



**SMBus**

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.



**I<sup>2</sup>C**

I<sup>2</sup>C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s. The I<sup>2</sup>C API allows a developer to interface with an embedded system environment and transfer serial messages using the I<sup>2</sup>C protocols, allowing multiple simultaneous device control.

### Display



**Brightness Control**

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.



**Backlight**

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

### Monitor



**Watchdog**

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.



**Hardware Monitor**

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.



**Hardware Control**

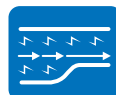
The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

### Power Saving



**CPU Speed**

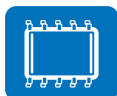
Make use of Intel SpeedStep technology to reduce power consumption. The system will automatically adjust the CPU Speed depending on system loading.



**System Throttling**

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

## Software Utilities



**BIOS Flash**

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.



**Embedded Security ID**

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.



**Monitoring**

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.



**eSOS**

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.



**Flash Lock**

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.