

Version 1.0

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

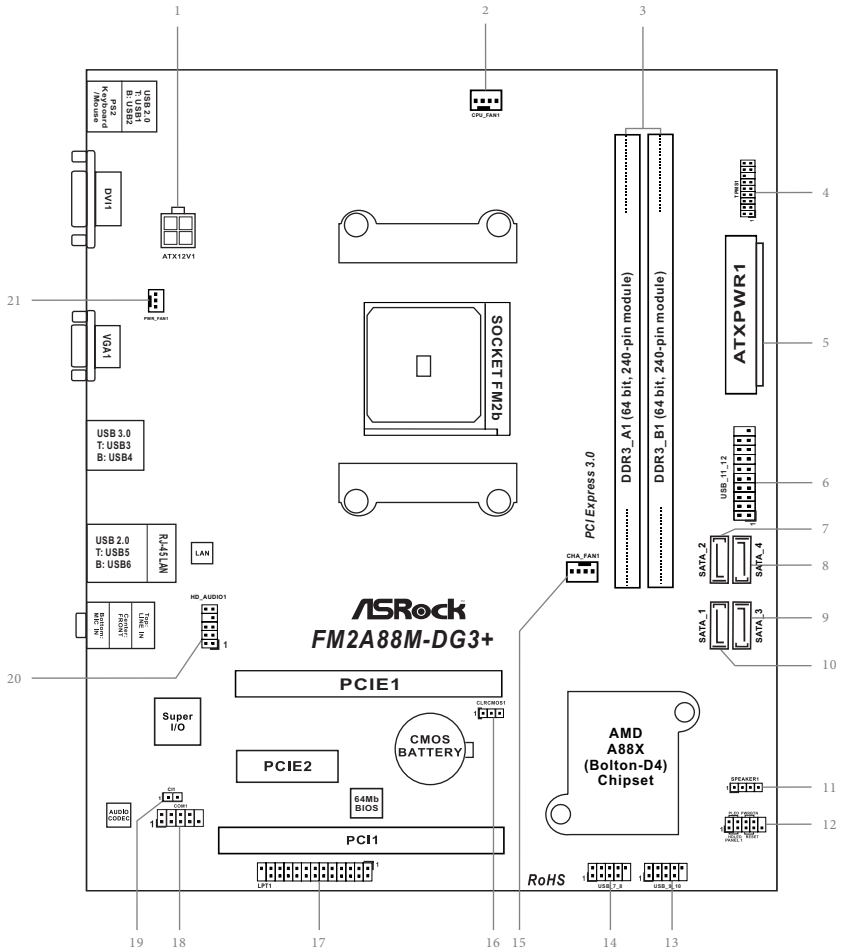
CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

“Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate”

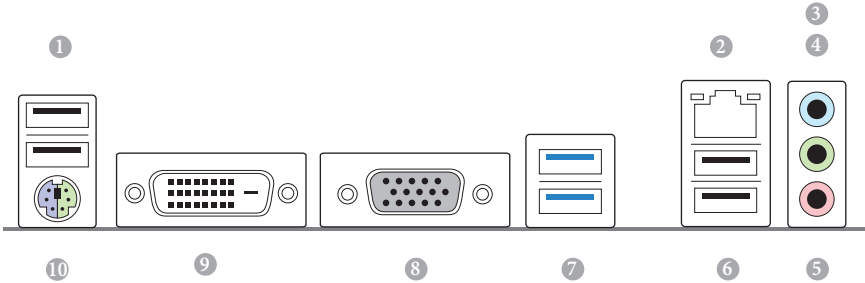
ASRock Website: <http://www.asrock.com>

Motherboard Layout



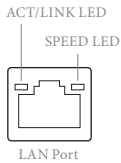
No.	Description
1	ATX 12V Power Connector (ATX12V1)
2	CPU Fan Connector (CPU_FAN1)
3	2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_B1)
4	TPM Header (TPMS1)
5	ATX Power Connector (ATXPWR1)
6	USB 3.0 Header (USB_11_12)
7	SATA3 Connector (SATA_2)
8	SATA3 Connector (SATA_4)
9	SATA3 Connector (SATA_3)
10	SATA3 Connector (SATA_1)
11	Chassis Speaker Header (SPEAKER1)
12	System Panel Header (PANEL1)
13	USB 2.0 Header (USB_9_10)
14	USB 2.0 Header (USB_7_8)
15	Chassis Fan Connector (CHA_FAN1)
16	Clear CMOS Jumper (CLRCMOS1)
17	Print Port Header (LPT1)
18	COM Port Header (COM1)
19	Chassis Intrusion Header (CI1)
20	Front Panel Audio Header (HD_AUDIO1)
21	Power Fan Connector (PWR_FAN1)

I/O Panel



No.	Description	No.	Description
1	USB 2.0 Ports (USB_1_2)	6	USB 2.0 Ports (USB_5_6)
2	LAN RJ-45 Port*	7	USB 3.0 Ports (USB_3_4)
3	Line In (Light Blue)	8	D-Sub Port
4	Front Speaker (Lime)	9	DVI-D Port
5	Microphone (Pink)	10	PS/2 Mouse/Keyboard Port

* There are two LEDs on the LAN port. Please refer to the table below for the LAN port LED indications.



Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

1. Introduction

Thank you for purchasing ASRock **FM2A88M-DG3+** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

This Quick Installation Guide contains introduction of the motherboard and step-by-step installation guide. More detailed information of the motherboard can be found in the user manual presented in the Support CD.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website <http://www.asrock.com>

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
www.asrock.com/support/index.asp

1.1 Package Contents

ASRock **FM2A88M-DG3+** Motherboard (Micro ATX Form Factor)

ASRock **FM2A88M-DG3+** Quick Installation Guide

ASRock **FM2A88M-DG3+** Support CD

2 x Serial ATA (SATA) Data Cables (Optional)

1 x I/O Panel Shield

1.2 Specifications

- Platform**
- Micro ATX Form Factor
 - All Solid Capacitor design
 - High Density Glass Fabric PCB

- CPU**
- Supports Socket FM2+ 95W / FM2 100W processors

- Chipset**
- AMD A88X (Bolton-D4)

- Memory**
- Dual Channel DDR3 Memory Technology
 - 2 x DDR3 DIMM Slots
 - Supports DDR3 2400+(OC)/2133/1866/1600/1333/1066 non-ECC, un-buffered memory (**see CAUTION 1**)
 - Max. capacity of system memory: 32GB (**see CAUTION 2**)
 - Supports Intel® Extreme Memory Profile (XMP) 1.3 / 1.2
 - Supports AMD Memory Profile Technology (AMP) up to AMP 2400

- Expansion Slot**
- 1 x PCI Express 3.0 x16 Slot (PCIe1@ x16 mode)
 - * PCIe 3.0 is only supported with FM2+ CPU. With FM2 CPU, it only supports PCIe 2.0.
 - 1 x PCI Express 2.0 x1 Slot
 - 1 x PCI Slot
 - Supports AMD Dual Graphics

- Graphics**
- Integrated AMD Radeon™ R7/R5 Series Graphics in A-series APU
 - DirectX 11.1, Pixel Shader 5.0 with FM2+ CPU. DirectX 11, Pixel Shader 5.0 with FM2 CPU.
 - Max. shared memory 2GB
 - Dual graphics output options: support DVI-D and D-Sub by independent display controllers
 - Supports Dual-link DVI-D with max. resolution up to 2560x1600 @ 60Hz
 - Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz

- Supports AMD Steady Video™ 2.0: New video post processing capability for automatic jitter reduction on home/online video
- Supports HDCP with DVI-D Port
- Supports Full HD 1080p Blu-ray (BD) playback with DVI-D Port

Audio

- 5.1 CH HD Audio (Realtek ALC662 Audio Codec)
- Supports Surge Protection (ASRock Full Spike Protection)

LAN

- PCIE x1 Gigabit LAN 10/100/1000 Mb/s
- Realtek RTL8111GR
- Supports Wake-On-WAN (**see CAUTION 3**)
- Supports Wake-On-LAN
- Supports Lightning/ESD Protection (ASRock Full Spike Protection)
- Supports LAN Cable Detection
- Supports Energy Efficient Ethernet 802.3az
- Supports PXE

Rear Panel I/O

- 1 x PS/2 Mouse/Keyboard Port
- 1 x D-Sub Port
- 1 x DVI-D Port
- 4 x USB 2.0 Ports (Supports ESD Protection (ASRock Full Spike Protection))
- 2 x USB 3.0 Ports (AMD A88X (Bolton-D4)) (Supports ESD Protection (ASRock Full Spike Protection))
- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)
- HD Audio Jacks: Line in / Front Speaker / Microphone

Storage

- 4 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1, RAID 5 and RAID 10), NCQ, AHCI and Hot Plug

Connector

- 1 x Print Port Header
- 1 x COM Port Header
- 1 x Chassis Intrusion Header
- 1 x TPM Header
- 1 x CPU Fan Connector (4-pin)
- 1 x Chassis Fan Connector (4-pin)
- 1 x Power Fan Connector (3-pin)
- 1 x 24 pin ATX Power Connector
- 1 x 4 pin 12V Power Connector
- 1 x Front Panel Audio Connector
- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports)
(Supports ESD Protection (ASRock Full Spike Protection))
- 1 x USB 3.0 Header by AMD A88X (Bolton-D4) (Supports 2 USB 3.0 ports) (Supports ESD Protection (ASRock Full Spike Protection))

BIOS Feature

- 64Mb AMI UEFI Legal BIOS with GUI support
- Supports "Plug and Play"
- ACPI 1.1 Compliant wake up events
- Supports jumperfree
- SMBIOS 2.3.1 support
- DRAM, CPU Voltage multi-adjustment

Hardware Monitor

- CPU temperature sensing
- Chassis temperature sensing
- CPU Fan Tachometer
- Chassis Fan Tachometer
- CPU/Chassis Quiet Fan
- CPU/Chassis Fan multi-speed control
- CASE OPEN detection
- Voltage monitoring: +12V, +5V, +3.3V, Vcore

OS

- Microsoft® Windows® 8.1 32-bit / 8.1 64-bit / 8 32-bit / 8 64-bit / 7 32-bit / 7 64-bit

Certifications

- FCC, CE, WHQL
- ErP/EuP Ready (ErP/EuP ready power supply is required)

* For detailed product information, please visit our website: <http://www.asrock.com>

WARNING

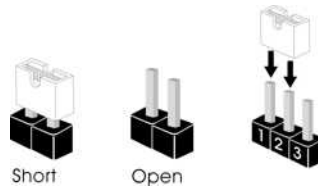
Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.



CAUTION!

1. Whether 2400/2133/1866/1600MHz memory speed is supported depends on the CPU you adopt. If you want to adopt DDR3 2400/2133/1866/1600 memory module on this motherboard, please refer to the memory support list on our website for the compatible memory modules.
ASRock website <http://www.asrock.com>
2. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 8.1 / 8 / 7. For Windows® 64-bit OS with 64-bit CPU, there is no such limitation. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.
3. Wake-On-WAN allows you to wake up this system from remote mobile devices, such as smart phones, tables, or other PCs. It needs third-party softwares and applications to utilize this feature.

1.3 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



Jumper	Setting	Description
Clear CMOS Jumper (CLRCMOS1) (see p.1, No. 16)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1_2</p>  <p>Default</p> </div> <div style="text-align: center;"> <p>2_3</p>  <p>Clear CMOS</p> </div> </div>	

Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.



If you clear the CMOS, the case open may be detected. Please adjust the BIOS option “Clear Status” to clear the record of previous chassis intrusion status.

1.4 Onboard Headers and Connectors



Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

Serial ATA3 Connectors

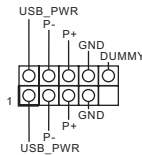
(SATA_1: see p.1, No. 10)
 (SATA_2: see p.1, No. 7)
 (SATA_3: see p.1, No. 9)
 (SATA_4: see p.1, No. 8)



These four Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

USB 2.0 Headers

(9-pin USB_7_8)
 (see p.1 No. 14)

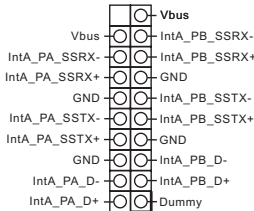


Besides four default USB 2.0 ports on the I/O panel, there are two USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

(9-pin USB_9_10)
 (see p.1 No. 13)

USB 3.0 Header

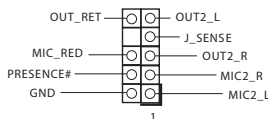
(19-pin USB_11_12)
 (see p.1 No. 6)



Besides two default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.

Front Panel Audio Header

(9-pin HD_AUDIO1)
 (see p.1 No. 20)



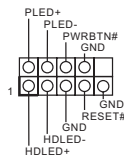
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.



1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
 - A. Connect Mic_IN (MIC) to MIC2_L.
 - B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
 - C. Connect Ground (GND) to Ground (GND).
 - D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
 - E. To activate the front mic.
For Windows® 8.1 / 8.1 64-bit / 8 / 8 64-bit / 7 / 7 64-bit 64-bit OS:
Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

System Panel Header

(9-pin PANEL1)
(see p.1 No. 12)



This header accommodates several system front panel functions.



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):

Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):

Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

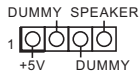
HDLED (Hard Drive Activity LED):

Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Chassis Speaker Header

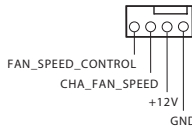
(4-pin SPEAKER 1)
(see p.1 No. 11)



Please connect the chassis speaker to this header.

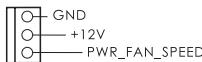
Chassis and Power Fan Connectors

(4-pin CHA_FAN1)
(see p.1 No. 15)



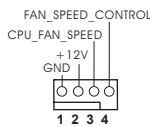
Please connect the fan cable to the fan connector and match the black wire to the ground pin.

(3-pin PWR_FAN1)
(see p.1 No. 21)



CPU Fan Connector

(4-pin CPU_FAN1)
(see p.1 No. 2)



Please connect the CPU fan cable to the connector and match the black wire to the ground pin.



Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

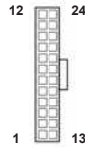
Pin 1-3 Connected ←

3-Pin Fan Installation



ATX Power Connector

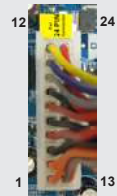
(24-pin ATXPWR1)
(see p.1 No. 5)



Please connect an ATX power supply to this connector.



Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13.



20-Pin ATX Power Supply Installation

ATX 12V Power Connector

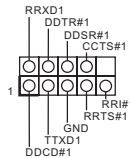
(4-pin ATX12V1)
(see p.1 No. 1)



Please connect an ATX 12V power supply to this connector.

Serial port Header

(9-pin COM1)
(see p.1 No. 18)



This COM1 header supports a serial port module.

Chassis Intrusion Header

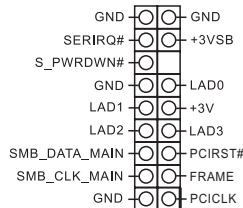
(2-pin Cl1)
(see p.1, No. 19)



This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

TPM Header

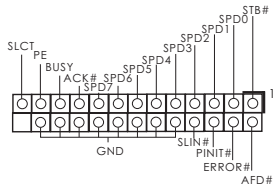
(17-pin TPMS1)
(see p.1, No. 4)



This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Print Port Header

(25-pin LPT1)
(see p.1, No. 17)



This is an interface for print port cable that allows convenient connection of printer devices.

详细规格

规格尺寸	<ul style="list-style-type: none"> • Micro ATX 规格 • 全固态电容设计 • 高密度防潮纤维电路板
处理器	<ul style="list-style-type: none"> • 支持 Socket FM2+ 95W / FM2 100W 处理器
芯片组	<ul style="list-style-type: none"> • AMD A88X (Bolton-D4)
内存	<ul style="list-style-type: none"> • 双通道 DDR3 内存技术 • 2 x DDR3 内存插槽 • 支持 DDR3 2400+(OC)/2133/1866/1600/1333/1066 non-ECC, un-buffered 内存 • 系统内存最大容量 :32GB • 支持 Intel® Extreme Memory Profile(XMP)1.3/1.2 • 支持最高 AMP 2400 的 AMD Memory Profile(AMP) 技术
扩充插槽	<ul style="list-style-type: none"> • 1 x PCI Express 3.0 x16 插槽 (PCIe1: x16 模式) *FM2+ CPU 支持 PCIe 3.0, FM2 CPU 只支持 PCIe 2.0. • 1 x PCI Express 2.0 x1 插槽 • 1 x PCI 插槽 • 支持 AMD Dual Graphics
显卡	<ul style="list-style-type: none"> • A 系列 APU 上集成 AMD Radeon™ R7/R5 显示核心 • FM2+ 为 DirectX 11、Pixel Shader 5.6; FM2 为 DirectX 11、Pixel Shader 5.0 • 最大共享显示内存 2GB • 双重 VGA 输出选项: 通过独立显示控制器提供 DVI-D 和 D-Sub 接口 • 支持 Dual-link DVI-D, 最大分辨率达 2560x1600 @ 60Hz • 支持 D-Sub, 最大分辨率达 1920x1200 @ 60Hz • 支持 AMD Steady Video™ 2.0: 全新视频后处理能力, 可为家庭 / 在线视频提供自动降低抖动的功能 • 支持 HDCP with DVI-D 接口 • 通过 DVI-D 接口支持 1080p 蓝光光盘 (BD) 高清播放
音效	<ul style="list-style-type: none"> • 5.1 声道高保真音频 (Realtek ALC662 音频编解码器) • 支持防突波 (ASRock 全防护)
网络	<ul style="list-style-type: none"> • PCIe x1 千兆网卡 10/100/1000 Mb/s • Realtek RTL8111GR • 支持广域网唤醒技术 (Wake-On-WAN) • 支持网络唤醒功能 (Wake-On-LAN) • 支持防雷击 / 防 ESD 静电 (ASRock 全防护)

- 支持网线侦测
- 支持 Energy Efficient Ethernet 802.3az
- 支持 PXE

背板 I/O

- 1 个 PS/2 鼠标 / 键盘接口
- 1 个 D-Sub 接口
- 1 个 DVI-D 接口
- 4 x USB 2.0 接口 (支持防 ESD 静电 (ASRock 全防护))
- 2 x USB 3.0 接口 (AMD A88X (Bolton-D4)) (支持防 ESD 静电 (ASRock 全防护))
- 1 个网卡接口 LED 指示灯 (ACT/LINK LED 和 SPEED LED)
- HD 音频插孔: 线性书入 / 前置喇叭 / 麦克风

存储

- 4 x SATA3 6.0 Gb/s 接口, 支持 RAID (RAID 0, RAID 1, RAID 5 和 RAID 10), NCQ, AHCI 和热插拔

板载接口

- 1 x 打印机端口接针
- 1 x COM 端口接针
- 1 x 机箱开启警告功能接针
- 1 x TPM 接针
- 1x CPU 风扇接口 (1 x 4-pin)
- 1 x 机箱风扇接口 (4-pin)
- 1 x 电源风扇接口 (3-pin)
- 1 x 24 针 ATX 电源接口
- 1 x 4 针 12V 电源接口
- 1 x 前面板音频接口
- 2 x USB 2.0 针状接头 (支持 4 个 USB 2.0 接口) (支持防 ESD 静电 (ASRock 全防护))
- 1 x 由 AMD A88X (Bolton-D4) 支持的 USB 3.0 连接头 (支持 2 个 USB 3.0 接口) (支持防 ESD 静电 (ASRock 全防护))

BIOS 特性

- 支持图形界面的 64Mb AMI UEFI Legal BIOS
- 支持 “即插即用”
- 符合 ACPI 1.1, 支持唤醒与自动开机 (Wake Up Events)
- 支持免跳线
- 支持 SMBIOS 2.3.1
- DRAM, CPU 电压多功能调节器

硬件监控

- CPU 温度检测
- 机箱温度侦测
- CPU 风扇转速计
- 机箱风扇转速计

- CPU/ 机箱静音风扇（可根据处理器温度自动调节机箱风扇转速）
- CPU/ 机箱风扇多速控制
- 机箱开启侦测
- 电压实时监控：+12V，+5V，+3.3V，核心电压

操作系统

- 支持 Microsoft® Windows® 8.1 32 位元 / 8.1 64 位元 / 8 32 位元 / 8 64 位元 / 7 32 位元 / 7 64 位元

认证

- FCC, CE, WHQL
- 支持 ErP/EuP（需要搭配支持 ErP/EuP 的电源供应器）

* 请参阅华擎网站了解详细的产品信息：<http://www.asrock.com>

電子信息產品污染控制標示

依据中国发布的「电子信息产品污染控制管理办法」及 SJ/T 11364-2006「电子信息产品污染控制标示要求」，电子信息产品应进行标示，藉以向消费者揭露产品中含有的有毒有害物质或元素不致发生外泄或突变从而对环境造成污染或对人体、财产造成严重损害的期限。依上述规定，您可于本产品之印刷电路板上看见图一之标示。图一中之数字为产品之环保使用期限。由此可知此主板之环保使用期限为 10 年。



图一

有毒有害物質或元素的名稱及含量說明

若您欲了解此产品的有毒有害物质或元素的名称及含量说明，请参照以下表格及说明。

部件名称	有害物质或元素					
	铅 (Pb)	镉 (Cd)	汞 (Hg)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及电子组件	X	O	O	O	O	O
外部信号连接头及线材	X	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求，然该部件仍符合欧盟指令 2002/95/EC 的规范。

备注：此产品所标示之环保使用年限，系指在一般正常使用状况下。

Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information. For technical questions, please submit a support request form at <http://www.asrock.com/support/tsd.asp>

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